ABSTRACT

An Investigation of the Feasibility of
Mindfulness-Based Hypnotherapy for Stress and Anxiety

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Mindfulness Based Stress Reduction (MBSR) programs have shown considerable promise for reducing anxiety and stress. However, group mindfulness interventions often involve 8 weekly 2 hour sessions and a one-day retreat, and mindfulness interventions have not generally been shown to be superior to alternative treatments. It is theoretically possible that hypnosis can be used to deliver a mindfulness-based intervention, reducing the total time required for sessions while maintaining or enhancing treatment gains. However, the feasibility of a mindfulness-based hypnotherapy intervention is not yet known since no feasibility studies have been conducted. The purpose of the present investigation was to evaluate the feasibility of implementing Mindfulness-Based Hypnotherapy (MBH), a novel intervention for anxiety and stress. Forty-two students with elevated stress levels participated in the study, and were randomly assigned to either MBH or waitlist control conditions. MBH participants each completed an eight-week intervention with each session lasting approximately one hour. Feasibility of the intervention was determined by participant satisfaction, treatment adherence, and a low rate of significant adverse events attributable to the intervention. Treatment effect

outcomes were determined by measures of perceived stress, distress, and mindfulness. Hypnotizability was explored as a potential moderator as measured by the Elkins Hypnotizability Scale (EHS). Results indicated significant and large decreases in perceived stress and distress, and significant, large increases in mindfulness, self-compassion, spirituality, and meaning in life. Although further research is needed, the results of this study indicate that Mindfulness-Based Hypnotherapy is a feasible intervention that holds considerable promise as a treatment for stress and psychological distress.

An Investigation of the Feasibility of
Mindfulness-Based Hypnotherapy for Stress and Anxiety

by

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A Dissertation

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DEDICATION

To my family, whose love and support is unwavering.

CHAPTER ONE

Introduction

History, and Cultural Context for Mindfulness

Mindfulness has been defined as "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally" (Kabat-Zinn, 1994, p.4). Since the late 1970's it has been used as a secular intervention for a wide variety of psychological and physiological concerns, but has its roots in religious practices dating back more than two and a half millennia. Secular mindfulness borrows most heavily from Buddhism, a religion which was founded during the 5th century B.C.E. in India (though it should be noted that Buddhism itself did not develop in a vacuum, and was influenced by earlier Vedic and pre-Vedic traditions in the Indus valley). According to the Buddhist religious traditions, mindfulness is one of the factors of an "eight-fold path" that will lead to the reduction, and ultimately the cessation, of psychological suffering.

After the Buddha's death (c. 400 BCE), Buddhism developed over the next several centuries into several related traditions and gradually moved from its homeland in Northeast India across the whole of Asia.. The earliest and most classical strand of these traditions is called "Theravada" Buddhism (trans: "the Teaching of the Elders"), and survived by taking hold in the island nation of Sri Lanka beyond the reach of the bellicose vicissitudes of the mainland. It gradually spread from Sri Lanka to Burma, Siam, and the islands off the Asian mainland, and continues to be the dominant religion of these regions (Olendzki, 2014). Over the course of the following centuries, Buddhism

also spread North along trade routes to Central Asia and China, eventually taking hold in Korea and Japan. In these later phases Buddhism comingled with local culture and religion, becoming a second major sect of Buddhism known as "Mahayana" (trans: "the Greater Vehicle"). This sect retained many of the basic tenants of Theravada Buddhism, but expanded upon the cosmological complexity of the original teachings and developed new doctrines and practices. Mahayana Buddhism includes schools of practice and belief such as Madhyamaka, Yogacara, Ch'an/Zen, and various forms of Pure Land Buddhism. Later still, tantric forms Buddhism spread from India to Tibet, where it mingled with local culture and religion to become the third major sect of Buddhism, known as "Vajrayana" (trans: "Diamond" or "Thunderbolt" Vehicle). Vajrayana and Tibetan forms of Buddhism retain core teachings and beliefs from the Theravada and Mahayana traditions, but again expand upon these basic teachings with further cosmological complexity and a range of unique practices.

For thousands of years, mindfulness was taught in the context of these three religious sects in the East, but in the West meditation and mindfulness were fairly obscure practices throughout the 19th century and the first half of the 20th century. During this time, mindfulness was mostly practiced by displaced Buddhist monks and to some extent by lay Buddhist immigrants. These practices became more prevalent during the counter-cultural spiritual explorations of the late 1950s and 1960s, and Buddhism became a matter of increasing attention from academics during this period (Olendzki, 2014).

As a direct result of mindfulness and meditation becoming more prevalent in the West in the second half of the 20th century, these practices became a matter of empirical

scrutiny and researchers began to wonder what impact they had on physiology and mental health. By the mid-1970s, a significant number of such studies began to accumulate, and Smith (1975) reported that "at least 100 scholarly books and journals have argued that meditation [a practice related to mindfulness] does have psychotherapeutic potential…"

However, it is important to note that these studies were mainly observational in nature. Mindfulness and meditation were embedded within their religious and cultural roots, and as such they were rarely used by psychologists as interventions in a secular therapy context. Therefore, even those studies that supported health benefits from mindfulness or concentrative meditation usually used participants who were already engaged in regular meditation. A contemporary parallel would be the fact that prayer would generally not be recommended as an intervention to an atheist in a clinical context, despite findings that prayer can have beneficial effects on those who engage in the practice. Similarly, therapists in the 1960s and 1970s may have felt that the ritualistic and religious trappings of these practices made them less accessible to individuals whose religious beliefs differed from meditation's culture of origin, or the therapists themselves may have felt discomfort with teaching them. Whatever the cause, the so-called "third wave" of cognitive behavioral interventions, which is characterized by integrating mindfulness into *clinical* interventions, did not begin in earnest until the advent of Mindfulness-Based Stress Reduction (MBSR) in the early 1980's.

Development of Mindfulness-Based Stress Reduction and Related Programs

MBSR was developed by Kabat-Zinn at the University of Massachusetts Medical School as a treatment for chronic pain (Kabat-Zinn, 1982). His intervention borrows

from both the Theravada and Zen Buddhist traditions, but he was careful to adapt most of the cultural trappings of Buddhism and remove any devotional or religious practices from his mindfulness intervention. These adaptations of mindfulness practice resulted in a secular, ten-week group mindfulness intervention which had a significant positive impact on the tolerance of chronic pain and mood symptoms (Kabat-Zinn, 1982). This ten-week intervention was later refined and reduced to eight weeks, and was found efficacious for stress and anxiety reduction (Arch et al., 2013; Baer, Carmody, & Hunsinger, 2012; Cavanagh et al., 2013). Today MBSR is one of the best known standardized "third wave" interventions, and is taught to both clinical and non-clinical populations for a variety of issues. The success of MBSR inspired similar programs such as Mindfulness-Based Cognitive Therapy (MBCT) (Deckersbach et al., 2012; Manicavasgar, Parker, & Perich, 2011; Teasdale et al., 2000) and Mindfulness-Based Relapse Prevention (Bowen et al., 2009; Witkiewitz, Marlatt, & Walker, 2005), which modified the standard course material of MBSR to be more germane to depression relapse and drug addiction, respectively.

As MBSR was gaining greater popularity, other mindfulness-based and mindfulness-influenced therapies were being developed which diverged from the standard eight-week intervention. The earliest of these was Dialectical Behavioral Therapy (DBT) (Linehan, 1987). DBT was developed as an intervention that uses a team of therapists to provide group therapy and individual therapy as an intervention for parasuicidal behaviors. The success of DBT in treating these behaviors in borderline patients was a remarkable accomplishment, and helped DBT to gain rapid recognition and early adoption in the psychotherapy community. Like MBSR for chronic pain, DBT

staked its claim in the world of clinical psychology by addressing an intractable problem with no established, safe and efficacious therapy. In another parallel to MBSR, the success of DBT for a specific population with a specific problem led to researchers to study DBT for a wide variety of conditions and populations. Consequently, DBT gained empirical support for treating other chronic psychological issues, such as eating disorders (Chen, Matthews, Allen, Kuo, & Linehan, 2008; Safer, Telch, & Agras, 2001; Telch, Agras, & Linehan, 2001) and substance-use disorders (Axelrod, Perepletchikova, Holtzman, & Sinha, 2011; Linehan et al., 1999)

While MBSR was gaining popularity and DBT was just starting, Acceptance and Commitment Therapy (ACT) was developing in the same time period (Hayes, 1987; Hayes & Wilson, 1993), and ACT was a complete and distinct therapy by 1994 (Hayes & Wilson, 1994). ACT is an individual therapy based on Relational Frame Theory (RFT), and uses mindfulness principles to address a wide range of issues including depression and anxiety (Hayes & Twohig, 2008), psychosis (Bach & Hayes, 2002; Gaudiano & Herbert, 2006), chronic pain (Dahl, Wilson, & Nilsson, 2004; Vowles & McCracken, 2008), and substance use (Gifford et al., 2004; Hayes et al., 2004; Luoma, Kohlenberg, Hayes, & Fletcher, 2012).

Clinical Research on Mindfulness Interventions for Stress and Anxiety

Recent epidemiological studies have found that stress and anxiety are extremely common psychological concerns (McLean, Asnaani, Litz, & Hofmann, 2011). The Centers for Disease Control report that between 30-40% of respondents said that their job was “frequently” or “often” stressful (Centers for Disease Control, 2009) and according to a 2012 survey by the American Psychological Association, 72% of respondents

reported that their stress level has stayed the same or increased over the past year, and 20% rated their stress as an 8, 9, or 10 on a 10 point scale (American Psychological Association, 2012). These are troubling statistics, given that both chronic and acute psychosocial stress can have serious consequences for physical and mental health. Examples of medical complications from chronic stress include suppressed immune response, cardiovascular disease, obesity, bone demineralization, the agitation of stress-related disease trajectories, the atrophy of cells in the central nervous system, and reductions in hippocampal volume (Caspi et al., 2003; Juster, McEwen, & Lupien, 2010; Lucini, Di Fede, Parati, & Pagani, 2005; Lupien et al., 1998). Meanwhile, the impact on mental health can be just as dire due to the role of stress in catalyzing a wide range of serious mental disorders in genetically vulnerable populations. For instance, stress has been implicated as a precipitating factor in first-time episodes of major depressive disorder and schizophrenia (Corcoran et al., 2003; Monroe & Simons, 1991; Walker & Diforio, 1997).

On an economic level, high stress also translates to an estimated cost of $300 *billion* per year to U.S. industry due to absenteeism, employee turnover, diminished productivity, medical expenditures, and other associated costs (McLean et al., 2011; Rosch, 2001), and healthcare spending is nearly 50% greater for highly stressed employees than their low-stress counterparts (Goetzel et al., 1998). Given the near-ubiquity of these presenting problems in clinical settings and their deleterious impact at both the personal and community level, there is a pressing need for effective treatment interventions.

One such intervention that has shown growing promise is mindfulness. Mindfulness can refer either to a state of mind, a trait, or to mindfulness *meditation,* a technique which cultivates a mindful state and a predisposition toward daily mindfulness. As previously mentioned, mindfulness is considered to be the quintessential element in so-called "third wave" cognitive-behavioral therapies such as Mindfulness-Based Stress Reduction (MBSR) (Kabat-Zinn, 1994), Mindfulness-Based Cognitive Therapy (MBCT) (Teasdale et al., 2000), Acceptance and Commitment Therapy (ACT) (Hayes & Wilson, 1994), and Dialectical Behavioral Therapy (DBT) (Linehan, 1987). One of the hallmark aspects of mindfulness interventions is that rather than changing thoughts and feelings directly, they focus on changing an individual's *relationship* to their experience. This in turn leads to less distress in the presence of negative thoughts and emotions.

Although mindfulness has been investigated for use in a wide variety of conditions, one of the more promising avenues of investigation is the impact of mindfulness on stress and anxiety. For example, Forman et al. (2007) compared ACT to Cognitive Therapy (CT) in a naturalistic university setting using an RCT study design. Participants were 101 non-traditional students with elevated levels of anxiety and/or depression, and results indicated that after approximately 15 sessions of individual treatment both groups exhibited large and significant reductions in symptoms. Despite the fact that CT is often the treatment of choice for both anxiety and depression, there were no significant differences between groups for symptom reduction. In 2013, Arch et al. (2013) showed similar results in their comparison study of the effects of MBSR vs. CBT. In this effectiveness study of 105 veterans, the authors predicted that CBT would out-perform MBSR in reducing the severity of anxiety disorders. They rejected this

hypothesis, since the two groups showed equivalent reductions in anxiety severity. Furthermore the MBSR group showed slightly better results insofar as this group showed a significantly lower rate of comorbid mood and anxiety disorders at the conclusion of the study compared to baseline. A third example of a randomized controlled trial where mindfulness showed promise is Hayes-Skelton, Roemer, and Orsillo (2013). Eighty-one individuals with generalized anxiety disorder were randomized into either Acceptance Based Behavior Therapy (ABBT) or Applied Relaxation (AR), the latter of which included progressive muscle relaxation and diaphragmatic breathing. After 16 sessions, both groups showed significant and large reductions in anxiety severity, though the authors of this study found no significant differences in effectiveness between the two groups.

Unfortunately, there has been a dearth of large, randomized controlled trials (RCT's) of mindfulness interventions. However, the evidence of several meta-analysis seems to show a consensus that mindfulness can be efficacious in the treatment of stress and anxiety disorders (Grossman, Niemann, Schmidt, & Walach, 2004; Hofmann, Sawyer, Witt, & Oh, 2010; Powers & Vörding, 2009; Piet, Würtzen, & Zachariae, 2012). For example, a meta-analyses by Powers & Vörding, 2009 which included active-treatment RCT's found that ACT performed equally to established anxiety treatments such as behavioral and cognitive-behavioral therapy (Powers & Vörde Vörding, 2009). Furthermore, the literature suggests that these gains tend to be well maintained at long-term follow up (Carlson, Speca, Faris, & Patel, 2007; Grossman, Tiefenthaler-Gilmer, Raysz, & Kesper, 2007; Miller, Fletcher, & Kabat-Zinn, 1995). One example that illustrates this effect is a study performed by Miller et al. (1995), which examined a

sample of 18 individuals with anxiety disorders and compared their pre-treatment scores with their post-treatment, 3-month follow-up, and 3-year follow-up. Results indicated that stress and anxiety were significantly improved post-treatment, and that gains remained significant at each of the follow-up time points.

Evidence also suggests that mindfulness can be safe and effective for use with a variety of diverse client populations, including non-clinical populations, individuals with anxiety disorders, and stressed and anxious individuals with physical maladies such as cancer and chronic pain. Baer et al. (2012) conducted a particularly valuable study of a non-clinical population. The investigators not only tracked weekly changes in stress over the course of MBSR, but were able to establish that changes in mindfulness mediated changes in stress. A total of 75 clients with problematic levels of stress were enrolled in an eight-week MBSR program and completed weekly measures of mindfulness (as measured by the Five Facet Mindfulness Questionnaire-Abbreviated) (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) and perceived stress (as measured by the Perceived Stress Scale) (Cohen, Kamarck, & Mermelstein, 1983). Results indicated that MBSR was associated with significantly increased mindfulness, with effect sizes for each of the five facets ranging from $d = 0.24$ to $d = 0.90$ and significantly decreased stress with an effect size of $d = 1.04$. The authors also found that (a) significant changes in mindfulness preceded significant changes in perceived stress, and (b) changes in mindfulness over the first three weeks predicted changes in perceived stress over the entire course of treatment. These findings support the prevailing assumption in third-wave interventions that mindfulness is an active ingredient in the benefits observed in these treatments.

Chiesa and Serretti (2009) conducted a meta-analysis of ten mindfulness studies published prior to 2008. After calculating Cohen's d based on gain scores and pooled standard deviations for each of the studies, they found that healthy individuals who participate in MBSR treatment generally experienced a large, significant reduction in their level of stress overall. Additionally, their findings suggested that mindfulness-based stress reduction reduced anxiety and ruminative thinking and resulted in increased empathy and self-compassion in comparison to the relaxation condition.

Investigations of individuals diagnosed with social anxiety disorder (Goldin & Gross, 2010; Koszycki, Benger, Shlik, & Bradwejn, 2007), generalized anxiety disorder (Evans et al., 2008), and heterogeneous anxiety disorders (Arch et al., 2013) have all shown a significant beneficial impact on clinical symptoms of stress and anxiety. For example, Goldin and Gross (2010) conducted a pre-post fMRI study of the neurological impact of MBSR on 16 individuals diagnosed with social anxiety disorder. Such subjects generally exhibit an exaggerated amygdala response when presented with socially threatening stimuli such as harsh faces or critical comments, and this was indeed the case with the cohort of socially anxious subjects prior to the MBSR intervention when they were presented with self-critical statements. Phenomenologically, these neurological changes often co-occur with aversive feelings of shame and fear followed by behavioral avoidance. However, post-intervention subjects showed significantly greater activation of the orbital pre-frontal cortex along with a brief spike in amygdala activity followed by a rapid diminishing of activity. The authors speculate that this may indicate that subjects were able to recognize the threatening stimuli and modulate their emotional responsiveness to that threat. Furthermore, regular mindfulness practice led to this

process occurring at an automatic and implicit level rather than consciously. In another well-controlled study of heterogeneous anxiety disorders, investigators used a 2 x 3 longitudinal research design to compare group CBT with MBSR and followed the 124 subjects over the course of 3-months post-intervention follow-up. Diagnostic severity of anxiety disorders decreased significantly in both groups and there were no significant differences in severity ratings between the two groups. In addition to this main finding of equivalent effectiveness, the authors note that the MBSR group "…outperformed CBT on reducing the number of clinician-rated co-occurring mood and anxiety disorders."

A third population where mindfulness treatment has resulted in significantly lower levels of stress and anxiety is individuals with a cancer diagnosis. Several studies have demonstrated that treatments with an active mindfulness component has been effective in patients with a cancer diagnosis (Ando et al., 2009; Birnie, Garland, & Carlson, 2010; Ledesma & Kumano, 2009; Speca, Carlson, Goodey, & Angen, 2000). A global overview of cancer-findings via meta-analysis highlights the distinctive approach of mindfulness-based treatments versus traditional CBT. Ledesma and Kumano (2009) analyzed 10 RCT's and observational studies involving a population of individuals coping with the stress and physical symptoms of cancer. They found that although there was a substantial improvement in the mental health of cancer patients (Cohen's $d = 0.48$), these improvements occurred independently of improvements in physical health (Cohen's $d = 0.18$). This highlights the fact that third-wave interventions focus on changing an individual's *relationship* to their experience, meaning that subjective distress can be reduced even if circumstances causing the anxiety are beyond the power of psychological treatment to change. In an RCT with waitlist control studying 90 heterogeneous cancer

outpatients in various stages of illness, Speca et al. (2000) found that individuals in the medical treatment-plus MBSR arm showed significantly improved symptoms for anxiety and stress as measured by the Profile of Mood States (POMS) (Shacham, 1983), and their overall mood scores on the POMS were reduced by 65% compared to a 6% reduction for medical treatment without an MBSR intervention.

Shortcomings of Mindfulness Interventions

Despite these findings indicating that mindfulness could be an efficacious intervention for stress and anxiety in a variety of populations, there are several shortcomings of existing mindfulness treatments. There is a need to identify delivering mindfulness interventions in a time-effective manner could be feasible. Mindfulness treatments such as MBSR or MBCT can be administered to a large group of people in only eight sessions, but sessions are typically 2-2.5 hours long in order to allow sufficient time to offer an experiential mindfulness exercise during each session and these interventions usually include an all-day mindfulness retreat. ACT for stress and anxiety does not typically necessitate an all-day retreat and is usually delivered individually in one hour sessions, but often takes 12 or more sessions to complete. If a mindfulness treatment could be developed that could obtain results equal to existing mindfulness treatments but with shorter or fewer sessions, it would represent an improvement over existing treatments. Clearly, an ideal treatment for stress and anxiety would retain or improve upon the efficacy of mindfulness-based treatments while delivering that intervention in a time-effective manner.

Another area for potential improvement for mindfulness-based interventions would be to determine if briefer individual delivery could achieve significant reductions

in stress and anxiety such as that of established treatments such as MBSR. Despite wide use of mindfulness-influenced and mindfulness-based treatments, they have not consistently been found to be superior to standard cognitive behavioral therapy in well-controlled empirical studies of stress and anxiety (Forman, Herbert, Moitra, Yeomans, & Geller, 2007; Khoury et al., 2013; Manicavasgar et al., 2011; Öst, 2008). For example, in a randomized controlled trial comparing MBSR to cognitive behavioral group therapy (CBGT) for social anxiety disorder, participants improved in both groups but measures of social anxiety were significantly lower in clients who had received cognitive behavioral group therapy compared to MBSR (Koszycki et al., 2007).

Integrating Hypnosis into Standard Therapy

A combined mindfulness and hypnosis intervention may address these shortcomings. However, the feasibility of a mindfulness-based hypnosis intervention has not been determined. Hypnosis is "A state of consciousness involving focused attention and reduced peripheral awareness characterized by an enhanced capacity for response to suggestion" (Elkins, Barabasz, Council, & Spiegel, 2015, p.6). Rather than a stand-alone treatment, hypnotherapy involves integrating hypnosis into existing treatment modalities (Elkins, Fisher, Johnson, Carpenter, & Keith, 2013), and there is evidence to suggest that integrating hypnosis into a mindfulness-based treatment (MBT) can address the shortcomings of MBT discussed above. For example, Kirsch, Montgomery, and Sapirstein (1995) reviewed 18 studies and found that clients receiving cognitive-behavioral hypnotherapy showed greater improvement than at least 70% of clients receiving non-hypnotic treatment. Although there is a need for further research on the impact of integrating hypnosis into standard treatment for anxiety disorders specifically

(Golden, 2012), there is some initial evidence that integrating hypnosis into standard therapy can produce greater therapeutic gains than therapy without hypnosis. For example, one study of public speaking anxiety investigated the efficacy of a hypnotic delivery of cognitive behavioral treatment versus a non-hypnotic delivery of cognitive behavioral treatment (Schoenberger, Kirsch, Gearan, Montgomery, & Pastyrnak, 1998). In the study, participants were randomly assigned to one of two groups. Cognitive behavioral therapy (CBT) was administered to both groups, with the only difference being that in the CBT plus hypnosis group suggestions for entering a hypnotic trance were given before relaxation instructions while in the non-hypnosis group instructions for relaxation were given without suggestions for trance. In a pre-post comparison of anxiety symptoms in a public speaking scenario, participants showed a significantly greater reduction in anxiety symptoms in the CBT plus hypnosis condition than the non-hypnosis CBT condition. This significant increase in effectiveness corresponds to an effect size of 0.8 in the CBT condition versus an effect size of 1.25 in the hypnosis condition, and the client's pre-intervention expectation of hypnosis efficacy was found to moderate treatment gains.

In another comparison of cognitive behavioral therapy and cognitive therapy with hypnosis, Alladin and Alibhai (2007) found that the hypnosis condition significantly reduced anxiety and depression when compared to CBT without hypnosis in a sample of 84 depressed patients. In this study, CBT based on Beck, Rush, Shaw, and Emery (1979) was compared to cognitive therapy with hypnotic suggestions for ego strengthening, expansion of awareness, positive mood induction, and post-hypnotic suggestions for diminishing depression and motivation. A repeated-measures ANOVA was used to

determine that both conditions significantly improved, but the hypnosis condition improved 16% more on measures of anxiety than the non-hypnosis condition, and improved 5% more on measures of depression.

In a third study of the additive effects of hypnosis to standard therapy, Bryant, Moulds, Guthrie, and Nixon (2005) recruited 87 civilian trauma survivors who met the diagnostic criteria for acute stress disorder. Participants were randomly assigned to one of three groups for six sessions of treatment. The CBT group was given a standard progression of psychoeducation, imaginal exposure, cognitive restructuring, and in-vivo exposure, the CBT plus hypnosis condition received an identical treatment, but included a hypnotic induction prior to imaginal exposure which included suggestions for being able to engage fully and deeply in the exercise. The third group administered supportive counseling (SC) only, including problem solving skills, education about trauma in general, and an explicit avoidance of cognitive restructuring or hypnosis. Post-intervention analysis revealed that both CBT and CBT plus hypnosis had significantly greater reductions in PTSD symptoms compared to SC, and re-experiencing symptoms of PTSD were significantly lower in the CBT plus hypnosis group when compared to the CBT group. Contrary to the author's hypothesis CBT plus hypnosis did not result in significant clinical gains over CBT beyond the finding regarding re-experiencing. However, the authors noted in retrospect that limiting the hypnosis intervention to re-experiencing and not using hypnosis in cognitive restructuring, in-vivo exposure, and anxiety management was a limiting factor that explains the lack of findings in these domains.

Together, these studies provide substantive evidence that when hypnotherapy is integrated into standard cognitive behavioral treatment, therapeutic gains tend to be superior to CBT alone. On the basis of this general trend it is theorized that third wave cognitive therapies are not only compatible with hypnosis, but treatment gains may even be *enhanced* by a hypnotic delivery and reinforcement of content. To date, no studies have been published which seamlessly integrate mindfulness treatment with hypnosis and an empirical study of Mindfulness-Based Hypnotherapy would be a valuable addition to the literature.

Integration of Hypnosis and Mindfulness: Theoretical Foundation for Mindfulness-Based Hypnotherapy

The integration of hypnosis into mindfulness-based therapy has a substantial theoretical backing. In several early examples of hypnosis and meditation research, peer-reviewed articles have compared the phenomenological and physiological correlates of mindfulness and hypnosis (Forte, Brown, & Dysart, 1987; Sabourin, Cutcomb, Crawford, & Pribram, 1990; Walrath & Hamilton, 1975). Findings indicate that although the physiological response to mindfulness meditation and hypnosis are fairly similar to one another (Walrath & Hamilton, 1975), the phenomenological experience of the two states are distinct (Brown, Forte, Rich, & Epstein, 1982). Brown et al. (1982) studied 122 subjects divided into four groups. The self-hypnosis group practiced one hour daily for two weeks, a mindfulness meditation group went on a two week intensive retreat, a second mindfulness meditation group went on a two day intensive retreat, and the study also included a "waking dreaming" condition that was part of an ongoing therapy program conducted by another investigator. Following the interventions, a self-

administered Profile of Trance, Imaging, and Meditation Experience (TIME) questionnaire was administered and indicated that subjects in the hypnosis condition experienced a change in attention with a special focus on the role of suggestion, whereas individuals in the meditation arms reported a greater awareness of their stream of experiences as they are occurring, a subjective slowing of time, an altered sense of self (feeling as though mental and physical events are an impersonal process), and in experienced meditators a sense of weightlessness.

In a special issue on mindfulness and hypnosis, several authors contributed articles to the *Journal of Mind Body Regulation* with different perspectives on the overlap between these two interventions. Lynn, Malaktaris, Maxwell, Mellinger, & van der Kloet (2012) argued that hypnosis and mindfulness inhabit a common domain involving suggestion. After comparing and contrasting mindfulness and hypnotic approaches to suggestion, the authors discuss some of the clinical implications for their conclusions. For instance, mindfulness and hypnosis could be used interchangeably according to variable client characteristics, or hypnosis could be used to enhance the effectiveness of a mindfulness intervention. The authors go on to highlight the fact that hypnosis and meditation have barely been explored from an empirical standpoint and suggest that controlled empirical trials studying the overlap of hypnosis and mindfulness are "vitally important" (Lynn et al., 2012, p. 21). In the same issue, Grant (2012) offers a cautionary commentary where he highlights some of the methodological difficulties of meaningfully comparing hypnosis to mindfulness. His arguments include the fact that meditation and even mindfulness can include a diverse array of interventions, and he also points out that several benefits of mindfulness are attained only by long-term practice whereas secular

clinical interventions often focus on the effects short-term practice. While none of his arguments are prohibitive for empirically investigating the possibility that hypnosis and mindfulness inhabit a common domain, they do emphasize the importance of clear definitions of the constructs under investigation and careful methodology when investigating those constructs.

Harrer (2009) described a complementary and synergistic relationship between mindfulness and hypnosis, where each intervention presents unique expressions of the same central constructs. Harrer presents eight constructs with analogues in hypnosis and mindfulness for the reader's consideration, such as the fact that hypnosis is often characterized by attentional "absorption," whereas mindfulness is usually described in terms of an "open awareness". Rather than viewing these two poles of attention as diametrically opposed, Harrer suggests that there is a spectrum of clinically useful experiences between the two, and that using only hypnosis *or* mindfulness is unnecessarily restrictive. A logical consequence of Harrer's line of reasoning is that it may be possible to integrate mindfulness and hypnosis into a personalized intervention which is superior to either intervention alone. Along similar lines, Lynn, Surya Das, Hallquist, and Williams (2006) suggest that:

> …hypnosis and mindfulness-based approaches can be used in tandem to create adaptive response sets and to deautomatize maladaptive response sets…They also suggest that mindfulness can serve as a template for generating an array of suggestions that provides cognitive strategies to contend with problems in living and to ameliorate stress and negative affect more generally. (p. 143)

More recently Lynn, Barnes, Deming, and Accardi (2010) have published a sample hypnotic mindfulness induction for use in MBCT courses and call the combination of mindfulness and hypnosis "…a natural marriage with excellent prospects." Furthermore, Yapko (2011) has written a book detailing the theoretical argument for the integrated use of mindfulness and hypnosis, though he does not describe a specific mindfulness/hypnotherapy intervention that can be used in clinical settings.

Summary

Evidence and theory are clearly converging on the probability that mindfulness and hypnosis are compatible therapeutic modalities which might be productively combined into a single, integrated intervention. Despite professional interest in combining hypnosis and mindfulness approaches as well as theoretical descriptions of such an approach, there is currently no manualized treatment for an integrated mindfulness and hypnosis intervention, nor has there been any empirical investigation into the feasibility or the clinical effects of combining these approaches. The present study aims to address this gap in the empirical literature by investigating the feasibility of a Mindfulness-Based Hypnotherapy intervention for stress and anxiety.

Aims of the Study

Aim 1: Investigate the feasibility of the MBH intervention.

H1.1: At least 75% of patients will be retained from baseline to treatment completion. Study attrition will be investigated, and will be measured as a simple percentage of individuals who participated in the study. Whenever

possible, reasons for dropping out or being removed from the study will be recorded as qualitative feedback.

H1.2: Patients completing treatment will find the intervention to be satisfactory. The degree of satisfaction will be 6 or better in the following domains:

H1.2a: Overall Satisfaction

H1.2b: Number of sessions

H1.2c: Ease of practice

H1.2d: Clarity of content

H1.3: There will be few adverse events in the study, and adverse events will represent equal to or less than 5% of the MBH group. Adverse events will be reported as a percentage of individuals who participated in the intervention group. Individuals who experience an adverse event will be reported as a percentage of the total participants participating in the intervention group. Qualitative data regarding the adverse events will also be reported.

H1.4: Average compliance with home self-hypnosis practice will be 75% or better in the intervention group. Compliance with the home practice component of the intervention will be measured by a daily practice log, and will be reported as a percentage of actual practice compared to ideal practice (7 times per week).

Aim 2: Investigate the impact of MBH on stress.

H2.1: Participation in the MBH intervention will result in a statistically significant decrease in perceived stress compared to the waitlist control condition. Changes in perceived stress from baseline to post-intervention follow-up will be measured by the Perceived Stress Scale and the Visual Analogue Scale, and this hypothesis will be evaluated based on a repeated-measures ANOVA. A paired-samples t-test will be provided as ancillary data showing the absolute change in both groups from baseline to 8-week follow-up.

Aim 3: Investigate the impact of MBH on mindfulness.

H3.1: The MBH condition will result in statistically significant increases in mindfulness from baseline to post-intervention follow-up. This aim will be evaluated based on the Five-Facet Mindfulness Questionnaire, and data from the Acceptance and Action Questionnaire II will be included as an ancillary measure of mindfulness. This aim will be quantitatively evaluated using a repeated-measures ANOVA for each measure of mindfulness. A paired-samples t-test will be provided for each measure showing the absolute changes in both groups from baseline to 8-week follow-up.

Aim 4: Investigate the impact of MBH on mood state.

H4.1: Participation in the MBH intervention will result in statistically significant improvements in psychological distress when compared to the control group. Changes in psychological distress from baseline to post-

intervention follow-up will be measured by the State Psychological Distress Profile, and this hypothesis will be evaluated based on a repeated-measures ANOVA. A paired-samples t-test will be provided as ancillary data showing the absolute change in both groups from baseline to 8-week follow-up.

Aim 5: Investigate the role of hypnotizability as a potential moderator for changes in perceived stress

H5.1: Scores on the Elkins Hypnotizability Scale will moderate improvements in perceived stress as measured by the Perceived Stress Scale. A hierarchical linear regression will be used to test this hypothesis.

CHAPTER TWO

Methods

Overview

Forty-two college students participated in a randomized trial of Mindfulness-Based Hypnotherapy. Participants randomly assigned to the intervention group completed 8 weekly, one-hour sessions of Mindfulness-Based Hypnotherapy. Participants randomly assigned to the waitlist control group received no intervention during that time, but were offered the opportunity to complete the intervention at the conclusion of their participation in the study. Assessments were conducted at baseline and at post intervention (eight weeks after baseline, for waitlist-controls; see Appendix A: Study Flow Diagram), and the Perceived Stress Scale was administered at baseline, 4-weeks, and 8-weeks.

Participants and Recruitment

Participants were students recruited from Baylor University through personal contact, flyers posted on campus, email bulletins through various departments, and through an online system for students who need to participate in research as part of their class requirements. There were 13 individuals who completed the screening process and were randomly assigned to groups, but who failed to respond to further attempts at contact. Only individuals who completed at least one follow-up assessment or attended at least one intervention session are considered to be "participants" in this study. Only

participants are reported in the results section in the attrition data. Demographics for participants are reported in the results section.

Eligibility

In order to be eligible for the study, individuals were required to be proficient in English, at least 18 years of age, and self-identify as highly stressed as indicated by a score of 50% or higher on a visual analog scale measuring overall stress. Individuals with either diagnostic indicators or a history of borderline personality disorder or schizophrenia (or related psychiatric disorder involving psychosis) were also excluded from the study due to contraindication with hypnosis. Ineligible individuals were debriefed and given a referral to a community treatment provider if necessary.

Informed Consent and Randomization

Eligible participants were given informed consent by a member of the Mind-Body Medicine Research Lab followed by baseline questionnaires. Each participant was assigned a study ID number from ranging from 01 – 55 (assigned chronologically), and an electronic random-assignment algorithm was used to randomly determine group assignment (www.random.com). Study participants were informed of their group assignment following the completion of baseline questionnaires and the EHS.

Instruments

Baseline questionnaires consisted of a demographics questionnaire, Perceived Stress Scale (PSS) (Cohen et al., 1983), a visual analogue scale for anxiety and for quality of life (Pfennings, Cohen, & van der Ploeg, 1995), the State Psychological Distress Profile (Johnson, 2014; Elkins & Johnson, 2015), the Self-Compassion Scale

(SCS) (Neff, 2003), the Compassion Scale (CS) (Pommier, 2010), the Daily Spiritual Experiences Scale (DSES) (Underwood & Teresi, 2002), the Meaning in Life Questionnaire (MLQ) (Steger, Frazier, Oishi, & Kaler, 2006), the Acceptance and Action Questionnaire (AAQII) (Bond et al., 2011) and the Five Facet Mindfulness Questionnaire (Baer et al., 2006). The Elkins Hypnotizability Scale (EHS) (Elkins, Johnson, A.J. Johnson, & Sliwinski, 2015; Kekecs, Bowers, Johnson, Kendrick, & Elkins, 2016) was conducted by a research assistant after baseline forms were completed and before the participant was assigned to a group. In order to help manage participant and clinician bias, the participant's score was not shared with the interventionist or the participant until the conclusion of the study. All participant data was kept in a locked office inside of a locked file cabinet, and will be destroyed within two years of the conclusion of the study.

Demographics

The Demographics Questionnaire is a self-report measure that aids in the collection of information about individual participants. It can be used to match for specific variables or remove nuisance variables from data analysis. The demographic questionnaire includes questions that ask the individual's age, race, gender, and marital status.

Perceived Stress Scale (PSS)

The Perceived Stress Scale is a 10-item self-report questionnaire which measures the respondent's global levels of perceived stress (Cohen et al., 1983). Respondents are asked to rate how often they have experienced various events and feelings during the past month on a scale from 0 (Never) to 4 (Very Often), yielding a total PSS score of 0-40.

The PSS was designed for use with a community sample with at least a junior high school education. For a college population, the mean score is 23.18 (SD = 7.31), with an alpha reliability of 0.84.

State Psychological Distress Profile (SPDP).

The SPDP is a self-report measure of psychological distress which assesses four constructs of psychological distress: depression, hopelessness, anxiety, and anger (Elkins & Johnson, 2015). Each item is rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Reliability and validity has been established (Elkins & Johnson, 2015). Alpha coefficients for each of the factors range from .87 to .95. In regard to validity, the depression construct of the PDP correlation with the Beck Depression Inventory-II, $r(529) = .867$, $p < .01$; the anxiety construct correlation with the Beck Anxiety Inventory, $r(529) = .851$, $p < .01$; the hopelessness construct with the Beck Hopelessness Scale $r(529) = .819$, $p < .01$; and the anger construct correlation with the State subscale of the State Trait Anger Expression Inventory-II, $r(529) = .678$, $p < .01$ demonstrating acceptable convergent validity.

Visual Analog Scale –Stress (VAS-Stress)

The VAS consists of a 100mm line with anchor points indicating a continuum of stress from "Very Relaxed" to "Very Stressed". The respondent was asked to make a mark on the line indicating the degree of global stress they have felt, and the distance from the anchor point to their mark was measured. The length was converted to a percentage score (0-100) according to a conversion algorithm (Pfennings et al., 1995).

Visual Analog Scale –Quality of Life (VAS-QOL)

The VAS-QOL consists of a 100mm line with anchor points indicating a continuum of quality of life from "Extremely Bad" to "Extremely Good". The respondent was asked to make a mark on the line indicating their global quality of life, and the distance from the anchor point to their mark was measured. The length was converted to a percentage score (0-100) according to a conversion algorithm (Pfennings et al., 1995).

Self-Compassion Scale (SCS)

The SCS is a 26-item self-report questionnaire that assesses the positive and negative aspects of three dimensions of self-compassion. This results in 6 sub-scales and a total score for self-compassion. The pairs of positive and negative qualities are represented by Self-Kindness/Self-Judgement, Common Humanity/Isolation, and Mindfulness/Over-Identification. The respondent rates each item on a 5-point Likert scale ranging from "Almost Always" to "Almost Never". The alpha reliability for the Self-Compassion Scale is 0.97 (Neff, 2003).

Compassion Scale (CS)

The CS is 24-item self-report questionnaire that assesses the positive and negative aspects of three dimensions of compassion. This results in 6 sub-scales and a total score for compassion. The pairs of positive and negative qualities are represented by Kindness/Indifference, Common Humanity/Separation, and Mindfulness/Disengagement. The respondent rates each item on a 5-point Likert scale ranging from "Almost Always" to "Almost Never". The alpha reliability for the Compassion Scale is 0.90.

Meaning in Life Questionnaire (MLQ)

The MLQ is a brief 10-item self-report questionnaire that assesses meaning across two dimensions: Search for Meaning, and Presence of Meaning. The respondent rates each item on a 7-point Likert scale ranging from "Absolutely Untrue" to "Absolutely True", and separate scores for meaning are calculated for each dimension of meaning in life. The alpha reliability for Presence of Meaning ranges from 0.81-0.86 and the alpha reliability for Search for Meaning ranges from 0.84 to 0.92 (Steger et al., 2006).

Daily Spiritual Experiences Scale (DSES)

The DSES is a 16-item self-report questionnaire that is designed to measure a person's perception of and experiences with spirituality in daily life. This includes experiences of the transcendent, God, or the divine, but is not limited to experiences with any particular religion. The assessment is also not intended to measure particular beliefs, but rather is designed to measure experiences within whatever set of beliefs frame a person's sense of spirituality. The respondent rates each item on a 6-point Likert scale ranging from "Many times per day" to "Never." The alpha reliability for the DSES ranges from 0.94-0.95 (Underwood & Teresi, 2002).

Acceptance and Action Questionnaire (AAQ-II)

The AAQ-II is a brief 10-item self-report measure of acceptance, experiential avoidance, and psychological inflexibility, each of which are integral to 3rd wave treatments and mindfulness as a whole. The respondent rates their endorsement of each item on a 7-point Likert scale ranging from "Never True" to "Always True.". The mean alpha coefficient has been measured to be 0.84 (Bond et al., 2011).

Five Facet Mindfulness Scale (FFMQ).

The FFMQ is a self-report measure of mindfulness which assesses five facets of a general tendency to be mindful in daily life: observing, describing, acting with awareness, non-reactivity to inner experience, and nonjudging of inner experience. It is rated on a five-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). Alpha coefficients for each of the factors range from .72 to .92, although a study including a student sample found that the internal consistency of the "non-reactivity" facet to be lower (.67) compared to other populations (.81-.86).

Elkins Hypnotizability Scale (EHS).

The Elkins Hypnotizability Scale (EHS) is a brief 12 item evaluation which takes 20-30 minutes to complete. It is a measure of hypnotizability which is administered by a trained assessor. The EHS includes a hypnotic relaxation induction followed by a series of hypnotic suggestions. Suggestions range from simple motor responses to difficult suggestions such as post-hypnotic amnesia which are only experienced by more hypnotizable individuals. Responses are scored based on subjective experience of the participant and observation by the assessor on a scale from 0-12. The EHS correlates with the Stanford Hypnotizability Scale at a .82 level and has good test-retest reliability (Elkins, 2014; Elkins et al., 2015; Kekecs et al., 2016, in press).

Daily Practice Log

Participants were given a daily practice log in order to record how many days they engaged in home practice over the course of the eight week intervention. A new, blank log was provided each week beginning with session 1. This resulted in a total of 7 daily

practice logs assigned to each participant, since there was no opportunity for follow-up the week after the 8th session.

Group Descriptions

Participants randomly assigned to the intervention group participated in eight weekly, one hour sessions of Mindfulness-Based Hypnotherapy. All intervention sessions was completed at the Mind-Body Medicine Lab at Baylor University, with the exception of one physically disabled individual whose sessions were conducted off-site to accommodate mobility difficulties. The intervention includes an abbreviated psychological intake in session 1, and each session includes a didactic teaching component as well as a hypnotic induction tailored to the content of each session. At the end of each session, the participant receives a home-practice audio CD based on the content presented that week (or digital equivalent at the participant's discretion). Participants are instructed to practice with the audio every day, and record their practice in their practice logs. The progression of material for each week is as follows: present-moment awareness, nonjudgmental awareness of the 5 senses, nonjudgmental awareness of thoughts and feelings, self-hypnosis, compassion for self and others, awareness of personal values and meaning in life, integrated mindfulness, and termination/transition to long-term practice. A detailed summary of each session can be found in Appendix D.

Participants randomly assigned to the waitlist control group did not receive the study intervention during their participation. Waitlist control participants were evaluated at baseline, 4-weeks, and 8-weeks post-baseline. Waitlist control participants were offered the opportunity to complete the MBH intervention upon finishing their participation in the study and completing their 8-week follow-up questionnaires.

CHAPTER THREE

Results

Statistics Used to Calculate Results

For tests of specific aims which relied upon simple percentages and descriptive statistics, the calculations and results are described below under the heading "Aim 1: Feasibility Results". For efficacy results, a paired-samples t-test was calculated for each variable to determine whether within-group scores differed from baseline to 8-week follow-up, followed by a repeated-measures ANOVA to compare the effect for each dependent variable between groups. A conservative measure of effect size, Hedges g, was used in place of Cohen's d in order to compensate for the relatively small sample size that was recruited into this pilot study. Hedges g has the same conventional thresholds for determining effect size as the more common Cohen's d, with 0.2 representing a small effect, 0.5 representing a medium effect, and 0.8 representing a large effect.

Overall, significant results were obtained for the intervention group for most of the constructs measured, and effect sizes were large in the domains of stress, mindfulness, psychological distress, and self-compassion. Results for meaning and spirituality were more moderate, and surprisingly: compassion for others was not significantly changed from pre- to post- intervention. With few exceptions, changes from pre- to post- were not significant in the control group and this is commensurate with expectations. The exceptions where there was significant change in the control group are

presented in their respective sections, and may be due to natural variations in stress over the course of the semester.

A repeated measures ANOVA was performed for each scale and subscale in order to determine whether there were differences between the means of the two groups. Overall, significant and large differences were found between groups for perceived stress, total mindfulness and many of the subscales of mindfulness, all of the subscales of psychological distress, most of the subscales of self-compassion, spirituality, and presence of meaning in life. In contrast, significant differences were not generally found between groups with regard to compassion for others or search for meaning.

Due to the multitude of t-tests and ANOVA performed in the data analysis, the threshold for rejecting the null hypothesis was systematically controlled using a procedure described by Benjamini, Drai, Elmer, Kafkafi, and Golani (2001). The False Discovery Rate: Benjamini-Hochberg (FDR-BH) procedure used performs well even in the presence of a correlation between the hypothesis tests. Although the FDR-BH procedure is not as conservative as the Bonferroni correction, the Bonferroni correction is often criticized for being excessively conservative which increases the possibility of a type II error. In the case of the current set of hypothesis tests, the Bonferroni correction would put the significance threshold at $\alpha = 0.0014644$ for all 36 tests involved in the primary analysis (that is, tests involved in evaluating the specific aims). While some of the changes in the intervention group are statistically reliable enough to meet this threshold, the chance of a type II error (false negative) was judged to be too high, especially given that the current study is meant to explore the possible impact of the

MBH intervention rather than definitively establish its efficacy. The adjustment in the cutoff threshold for statistical significance does not impact the calculation for effect size.

Demographics

Participants in this study were all students at Baylor University, and were predominantly undergraduate, white, female, and between the ages of 18-21 (See Table 1). The intervention and control group were approximately equal in demographic characteristics in most categories. The differences that did exist between groups were generally small and unlikely to have much impact on the interpretation of statistical data. For example, there were no 21-year-olds randomized to the intervention group, but there were an abundance of individuals in a similar age range. One small but important difference between groups was the fact that both Asian participants were randomly assigned to the control group. This means that feasibility of the intervention was not demonstrated for Asians in the Mindfulness-Based Hypnotherapy group. Overall demographics for race were similar to Baylor's demographic characteristics. In contrast, gender in the sample differed from Baylor's overall gender demographics. Females in the sample represented an 85% majority versus the university's 58% majority.

Aim 1: Feasibility Results

Before the attrition rate (H1.1) can be calculated, the total participation in the study must be established. The study initially aimed to randomize 44 participants, split evenly between the two groups. However, there was an unexpectedly high number of individuals who never responded to attempts to contact them after they were randomly assigned to their group. Given that a similar number of participants were lost at this stage

in both groups, it seems unlikely that this attrition is attributable to the intervention and therefore they are not considered in the "drop-out" or retention statistics for the study. Additional individuals were screened and randomly assigned to groups in the Spring semester of 2015, and forty-two individuals remained in the study beyond the baseline random assignment (22 in the intervention group, 20 in the control group). In the first step of completing Aim 1, the first hypothesis (H1.1) was evaluated based on this sample size of 42 (See Table 2).

Of the 22 individuals randomly assigned to the intervention group, 5 dropped from the study, 2 were removed from the study due to a contraindication for continued participation, and 1 individual missed their 8th session and did not complete their follow-up measures. Furthermore, 4 individuals from the control group completed their 4-week measures but did not respond to attempts to contact them for the 8-week measures. Reasons for removal from the study and dropping (where participants provided them) are provided in Appendix C. This resulted in 14 members of the intervention group and 16 in the control group whose data could be used in the paired-sample t-tests, repeated-measures ANOVA, and hierarchical linear regression. Overall, this dropout/removal rate resulted in a 68% completion rate in the intervention group. Although this fell short of the 75% predicted retention rate for the study predicted in H1.1, the 23% dropout rate in the intervention and the 20% dropout rate of the control group lends credence to the supposition that dropouts may have had more to do with the study population than the study intervention.

Table 1

Demographics

Characteristic	n			%		
	MBH	WLC	Total	MBH	WLC	Total
Marital Status						
Married	23	20	43	--	--	100
Age						
18	9	5	14	39	25	33
19	8	7	15	35	35	35
20	3	5	8	13	25	19
21	0	2	2	0	10	5
24	1	0	1	4	0	2
26	1	1	2	4	5	5
29	1	0	1	4	0	2
Gender						
Female	18	17	35	78	85	81
Male	5	3	8	22	15	19
Race						
White	15	13	28	65	65	65
Hispanic/Latino	6	2	8	26	10	19
More Than One Race	1	2	3	4	10	7
Black/African-American	1	1	2	4	5	5
Asian	0	2	2	0	10	5
Education						
Freshman	10	8	18	44	40	42
Sophomore	8	7	15	35	35	35
Junior	2	4	6	9	20	14
Senior	2	1	3	9	5	7
Graduate Student	1	0	1	4	0	2

Table 2

Retention

Statistic Category	Intervention (n)	%	Control	%	Total	%
Participated in Study	22	--	20	--	42	--
Dropped	5	23%	4	20%	9	21%
Removed	2	9%	0	0%	2	5%
Completed	15[a]	68%	16	80%	31	74%

[a]One participant completed treatment but could not be included in ANOVA or t-tests. See "Attrition"

Regarding participant satisfaction (hypothesis H1.2a-d), the descriptive statistics reported below indicate that participants were highly satisfied with the study, surpassing the predicted threshold of 6 or better that was defined before the study began (See Table 3). Intervention participants were satisfied with the number of sessions, ease of practice with the home practice hypnosis CDs, the session content, and their overall participation in the MBH intervention. Of the two participants who offered qualitative feedback suggesting alterations to the 8-session model, one suggested more sessions and one stated that it was difficult to complete the 8-sessions with a busy schedule. All participants that commented on the audio CDs indicated that these were excellent additions to the study, and one participant commented that they liked the shorter practice CDs the best. Participants that commented on session content indicated that they were "very satisfied" with the content and found the introductions to sessions to be very clear, and one participant commented that some sessions were easier to work on than others. In the space left for overall feedback, participants commented that the study was of significant value to them, and one participant suggested that spending two weeks of practice with each CD would have been helpful for their learning process.

Table 3

Participant Satisfaction

Satisfaction Measure	Minimum Score (out of 10)	Maximum Score (out of 10)	Mean Score (out of 10)	SEM
Number of Sessions	7	10	8.85	0.26
Ease of Practice	6	10	9.15	0.32
Session Content	8	10	9.46	0.18
Overall Satisfaction	7	10	8.92	0.30

Note. n = 13. One participant did not fill out this portion of the intervention satisfaction survey

Regarding the presence of adverse events (H1.3), the number and percentage is somewhat subjective depending on what one considers to be an adverse event. If both participants who were removed from the study are considered to be adverse events regardless of the causal connection to their participation, the adverse event rate is 9% (see Table 2; % removed, above). However, one of the two individuals removed from the study had untreated pre-morbid depression. If depression is left untreated, empirical evidence suggests that this condition will remain present or get worse in 77% of cases over a 3-month period (Whiteford et al., 2013). If this individual is assumed to be an adverse event *unrelated* to study participation, the adverse event rate is 4.5%. Both interpretations of the adverse event rate are presented here in order to avoid bias in interpreting adverse events. Regardless, this data provides information regarding possible obstacles to the implementation of MBH, and successfully accomplishes this portion of the first specific aim.

Regarding adherence to home practice guidelines (H1.4), the average participant practiced almost every day over the course of the study (See Table 4); a fact which bodes well for feasibility given that this does not even include the "practice" they got during their weekly intervention session. Participants were asked to practice every day, so a mean practice of 5.9 times per week represents an 84% compliance rate. This exceeds the 75% compliance rate predicted in H1.4. This result can be regarded as an excellent adherence to home self-hypnosis practice, and the SEM and range of practice indicate that the average practice per week has not been overly inflated due to a few overzealous outlier participants. However, these positive results should still be interpreted cautiously given the inconsistent return rate for home practice logs. Some participants forgot to

bring their practice logs to the session with them, and it is possible that participants who neglected to return their logs did not practice as often as those who did return their logs.

Table 4:

Practice Log Data

	Week							Mean
	1	2	3	4	5	6	7	
Min. Times Practiced	4	3	4	4	2	3	4	3.4
Max. Times Practiced	7	9	11	11	10	7	7	7.3
Mean Times Practiced	5.7	6.1	6.5	6.3	5.9	5.0	5.5	5.9
SEM for Home Practice	0.23	0.58	0.65	0.62	0.64	0.38	0.34	1.68
n (Returned Practice Log)	15	12	12	12	11	11	10	n/a
Max n (Enrolled in MBH)	22	19	19	18	15	14	14	n/a
Percent Returned	68%	63%	63%	67%	73%	79%	71%	69%

Aim 2: Stress Results

Within groups, there were slightly different pre-post results found for the Perceived Stress Scale (PSS) and the Visual Analogue Scale (VAS) for stress. For the PSS, there was a large, significant reduction in stress for the intervention group but not for the control group (See Table 5-6). However, the VAS for stress showed large and significant reductions in stress for *both* the intervention group and the control group. Although the SPDP was not used to evaluate Aim 2, Anxiety was measured as a sub-scale of distress, and results for that measure can be found in the "Aim 4: Mood State and Psychological Distress Results" section, below. Correcting for multiple hypothesis tests did not impact the findings for stress for the PSS or VAS-Stress scale with regard to statistical significance.

With regard to between-groups differences, the PSS showed a significant, large effect of group assignment across time points, with the intervention group having a lower mean stress by the end of the study compared to the control group (See Table 7). There was a trend toward decreased stress as measured by the VAS for stress, but the findings did not reach the threshold for being statistically reliable. Despite the slight discrepancies between the two measures of stress, the large and statistically reliable reduction in stress in the PSS and the trend toward reduced distress seems to validate the second hypothesis stating that MBH would result in reduced stress. Correcting for multiple hypothesis tests did not impact the findings for stress for the PSS or VAS-Stress scale with regard to statistical significance.

Table 5

Descriptive Statistics for Stress

Scale	Group Size	Mean (SEM)		
		Pre	4 week	Post
PSS	Waitlist Ctrl: 16	26.71 (1.00)	22.50 (1.15)	25.50 (1.38)
	Intervention: 14	27.08 (1.30)	18.92 (1.53)	15.35 (1.54)
VAS Stress	Waitlist Ctrl: 16	7.49 (0.22)	--	6.25 (0.44)
	Intervention: 14	6.98 (0.17)	--	4.56 (0.55)

Table 6

Pre-Post t-Test for Stress

Scale	Group Size	Significance	Significant with FDR-BH Correction?	Hedges g
PSS	Waitlist Ctrl: 16	0.377133	no	-0.28
	Intervention: 14	0.000000*	yes	-2.47
VAS Stress	Waitlist Ctrl: 16	0.008007	yes	-0.88
	Intervention: 14	0.000930	yes	-1.55

*$p < 0.000001$

Table 7

Pre-Post ANOVA for Stress

Scale	Group Size	Significance	Significant with FDR-BH Correction?	Hedges g
PSS	Waitlist Ctrl: 16 Intervention: 14	0.000004	Yes	-1.14
VAS Stress	Waitlist Ctrl: 16 Intervention: 14	0.095037	No	-0.45

Aim 3: Mindfulness Results

Both before and after the FDR-BH correction, three of the five facets of mindfulness were found to be significant in the intervention group and two of these facets were found to be significantly worse in the control group (with no change in the intervention group. See Table 8-9). Where significance was found, effect sizes ranged from medium to large, and where significance was not found there was a trend in the expected direction toward significance and salutogenic outcomes for the intervention group. Specific results for each facet of mindfulness are detailed in the following paragraph.

The effect size was large and statistically reliable for the t-tests of overall mindfulness (AAQ-II), the Nonjudgement subscale, and Non-Reactivity subscale. The Observe scale was statistically reliable for both groups with a medium effect size in opposite directions. The Describe subscale of the FFMQ was found to be trending in the direction of significance, but the study was not sufficiently powered to determine whether the difference was statistically reliable, especially when he FDR-BH correction is taken into account. The Act with Awareness subscale of the FFMQ was found to be statistically significant in the control group in the direction of less "acting with awareness," and this

change remained reliable after the FDR-BH correction. The intervention group was not found to have any significant changes on this subscale for the within-groups analysis. For the sake of reference, the effect size for this facet of mindfulness is generally found to be medium (Baer et al., 2012; Carmody & Baer, 2008; Carmody, Baer, Lykins, & N. Olendzki, 2009), and therefore the lack of statistical significance for this scale may be a reflection of the the small sample size limiting the power to detect medium or small effect sizes.

Table 8

Descriptive Statistics for Mindfulness

Scale	Group Size	Mean (SEM)	
		Pre	Post
AAQII	Waitlist Ctrl: 16	37.22 (1.75)	38.81 (2.11)
	Intervention: 14	38.07 (2.52)	50.07 (2.04)
FFMQ Observe	Waitlist Ctrl: 16	27.63 (1.03)	24.81 (0.95)
	Intervention: 14	28.21 (1.48)	31.21 (1.66)
FFMQ Describe	Waitlist Ctrl: 16	25.00 (1.97)	24.19 (1.47)
	Intervention: 14	25.57 (1.58)	27.64 (1.11)
FFMQ Act with Awareness	Waitlist Ctrl: 16	22.00 (1.06)	19.44 (0.92)
	Intervention: 14	21.86 (1.19)	23.57 (0.87)
FFMQ Nonjudgement	Waitlist Ctrl: 16	20.94 (1.74)	23.38 (1.21)
	Intervention: 14	23.00 (2.05)	29.00 (1.88)
FFMQ Non-Reactivity	Waitlist Ctrl: 16	19.50 (0.90)	20.06 (0.62)
	Intervention: 14	18.93 (0.82)	25.07 (1.13)

The significant findings for t-tests in the control group were unexpected, since increases in mindfulness have been shown to lead to reductions in stress, but there was no empirically-based reason to anticipate that fluctuations in stress throughout the semester would lead to reductions in these facets of mindfulness. Although the Compassion and Self-Compassion scales are not specifically designed to measure mindfulness, they each

contain a sub-scale of mindfulness which are summarized in their respective sections below, “Self-Compassion” and “Compassion”.

Table 9

Pre-Post t-Test for Mindfulness

Scale	Group Size	Significance	Significant with FDR-BH Correction?	Hedges g
AAQII	Waitlist Ctrl: 16	0.343682	No	0.20
	Intervention: 14	0.000007	Yes	1.36
FFMQ Observe	Waitlist Ctrl: 16	0.026256	Yes	-0.69
	Intervention: 14	0.024680	Yes	0.50
FFMQ Describe	Waitlist Ctrl: 16	0.599476	No	-0.11
	Intervention: 14	0.104847	No	0.39
FFMQ Act with Awareness	Waitlist Ctrl: 16	0.010746	Yes	-0.64
	Intervention: 14	0.210924	No	0.43
FFMQ Nonjudgement	Waitlist Ctrl: 16	0.033969	No	0.32
	Intervention: 14	0.003653	Yes	0.91
FFMQ Non-Reactivity	Waitlist Ctrl: 16	0.518798	No	0.14
	Intervention: 14	0.000041	Yes	2.14

There were statistically significant changes found for most of the scales and subscales for mindfulness when comparing the two groups (See Table 10). The findings were statistically significant and large for the AAQII and the Observe, Act with Awareness, and Non-Reactivity subscales of the FFMQ. The Nonjudgement subscale of the FFMQ was trending in the direction of significance but did not reach the necessary threshold. All findings and trends for mindfulness were in favor of the MBH group becoming more mindful by the end of the study, and therefore H3.1 appears to be confirmed.

Table 10

Pre-Post ANOVA for Mindfulness

Scale	Group Size	Significance	Significant with FDR-BH Correction?	Hedges g
AAQII	Waitlist Ctrl: 16 Intervention: 14	0.000125	Yes	1.11
FFMQ Observe	Waitlist Ctrl: 16 Intervention: 14	0.001453	Yes	1.31
FFMQ Describe	Waitlist Ctrl: 16 Intervention: 14	0.153372	No	0.54
FFMQ Act with Awareness	Waitlist Ctrl: 16 Intervention: 14	0.009606	Yes	1.03
FFMQ Nonjudgement	Waitlist Ctrl: 16 Intervention: 14	0.076786	No	0.53
FFMQ Non-Reactivity	Waitlist Ctrl: 16 Intervention: 14	0.000218	Yes	1.14

Aim 4: Mood State/Psychological Distress Results

The fourth specific aim of this study was to investigate the impact of MBH on mood state as measured by the psychological distress scale. All findings for psychological distress as measured by the SPDP in the intervention group were large, significant, and in a direction indicating reduced distress (see Table 11-12). These findings were robust enough that after correcting for multiple t-tests, overall distress and each of its subscales remained significant. All findings for psychological distress for the control group were non-significant both before and after correction.

There were also large and statistically reliable difference between the intervention and control groups for overall distress and each of its subscales. The direction and effect size of the differences found indicate a pronounced reduction in distress and its subscale components for the MBH group in comparison to controls (see Table 13). Therefore,

H4.1 stating that MBH would result in statistically significant improvements in mood state is confirmed.

Table 11

Descriptive Statistics for Distressed Mood

Scale	Group Size	Mean (SEM)	
		Pre	Post
SPDP Depression	Waitlist Ctrl: 16	13.75 (0.87)	12.94 (1.17)
	Intervention: 14	14.07 (0.91)	8.36 (0.87)
SPDP Hopelessness	Waitlist Ctrl: 16	12.69 (0.97)	12.44 (1.18)
	Intervention: 14	13.29 (1.07)	7.71 (0.80)
SPDP Anxiety	Waitlist Ctrl: 16	15.75 (0.83)	14.25 (1.23)
	Intervention: 14	15.79 (0.80)	9.43 (0.69)
SPDP Anger	Waitlist Ctrl: 16	13.69 (0.66)	12.44 (1.16)
	Intervention: 14	13.14 (0.99)	7.64 (0.68)
SPDP Total	Waitlist Ctrl: 16	55.91 (3.02)	52.06 (4.45)
	Intervention: 14	56.29 (3.37)	33.14 (2.85)

Table 12

Pre-Post t-Test for Distressed Mood

Scale	Group Size	Significance	Significant with FDR-BH Correction?	Hedges g
SPDP Depression	Waitlist Ctrl: 16	0.427736	No	-0.19
	Intervention: 14	0.000000*	Yes	-1.66
SPDP Hopelessness	Waitlist Ctrl: 16	0.810923	No	-0.06
	Intervention: 14	0.000006	Yes	-1.53
SPDP Anxiety	Waitlist Ctrl: 16	0.093184	No	-0.35
	Intervention: 14	0.000000*	Yes	-2.22
SPDP Anger	Waitlist Ctrl: 16	0.222009	No	-0.32
	Intervention: 14	0.000007	Yes	-1.67
SPDP Total	Waitlist Ctrl: 16	0.284394	No	-0.25
	Intervention: 14	0.000000*	Yes	-1.92

*p<0.000001

Table 13

Pre-Post ANOVA for Distressed Mood

Scale	Group Size	Significance	Significant with FDR-BH Correction?	Hedges g
SPDP Depression	Waitlist Ctrl: 16 Intervention: 14	0.000324	Yes	-1.06
SPDP Hopelessness	Waitlist Ctrl: 16 Intervention: 14	0.000354	Yes	-1.16
SPDP Anxiety	Waitlist Ctrl: 16 Intervention: 14	0.000088	Yes	-0.99
SPDP Anger	Waitlist Ctrl: 16 Intervention: 14	0.002383	Yes	-0.88
SPDP Total	Waitlist Ctrl: 16 Intervention: 14	0.000081	Yes	-1.09

Aim 5: Moderation Results

A hierarchical linear regression was used to test whether hypnotizability moderated reductions in perceived stress in the intervention group. Although Step 1 of the regression was found to be significant, Step 2 and Step 3 of the analysis did not support hypnotizability as a moderator for the impact MBH had on perceived stress as measured by the PSS (See Table 14-16).

Table 14

Moderation Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df 1	df 2	Sig. F Change
1	0.82	0.67	0.63	4.42	0.67	16.01	3	24	0.00
2	0.86	0.74	0.67	4.17	0.07	1.99	3	21	0.15
3	0.86	0.75	0.66	4.23	0.00	0.34	1	20	0.57

Predictors were initially mean centered and entered simultaneously in Step 1 of the regression. Post-intervention PSS score was the dependent variable, with other variables in Step 1 being baseline PSS Score, group assignment (which was dummy coded as 0=control and 1=intervention), and EHS score. As recommended by Aiken and West (1991) when testing continuous interaction effects, in Step 2 an interaction effect was then computed for group and EHS (calculated as the product of the centered predictors) and then entered into the regression model. In Step 2 of the regression, the interaction effect between group and EHS was found to be non-significant (see Table 13). In Step 3 of the regression, the three way interaction between baseline perceived stress, group, and mean-centered EHS was calculated and was also found to be non-significant (see Table 13). Therefore, hypnotic ability was not found to be a moderator for changes in perceived stress. H5.1 predicted that hypnotic ability would moderate changes in distress, and this evidence does not support that hypothesis.

Table 15

Moderation ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	936.97	3	312.32	16.01	$p < 0.001$
1	Residual	468.20	24	19.51	--	--
	Total	1405.17	27	--	--	--
	Regression	1040.60	6	173.43	9.99	$p < 0.001$
2	Residual	364.58	21	17.36	--	--
	Total	1405.17	27	--	--	--
	Regression	1046.61	7	149.52	8.34	$p < 0.001$
3	Residual	358.56	20	17.93	--	--
	Total	1405.17	27	--	--	--

Table 16

Moderation Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	25.82	1.11	--	23.26	0.000
	Mean Centered PSS	0.44	0.19	0.27	2.30	0.031
	Mean Centered EHS	0.43	0.33	0.16	1.31	0.203
	Group	-11.22	1.74	-0.78	-6.47	0.000
2	(Constant)	25.63	1.06	--	24.17	0.000
	Mean Centered PSS	0.01	0.30	0.01	0.03	0.975
	Mean Centered EHS	0.50	0.38	0.18	1.32	0.202
	Group	-9.83	1.74	-0.69	-5.66	0.000
	PSSXEHS	-0.14	0.09	-0.21	-1.55	0.136
	PSSXGroup	0.72	0.41	0.31	1.76	0.093
	PSSXGroup	-0.96	0.73	-0.19	-1.31	0.205
3	(Constant)	25.59	1.08	--	23.71	0.000
	Mean Centered PSS	-0.04	0.32	-0.02	-0.11	0.912
	Mean Centered EHS	0.47	0.39	0.17	1.20	0.243
	0=Control, 1=Intervention	-9.97	1.79	-0.70	-5.59	0.000
	PSSXEHS	-0.16	0.10	-0.25	-1.63	0.119
	PSSXGroup	0.75	0.42	0.33	1.79	0.088
	EHSXGroup	-0.93	0.75	-0.18	-1.25	0.225
	PSSXEHSXGroup	0.14	0.24	0.07	0.58	0.569

a. Dependent Variable: 8-Week PSS Follow-Up Scores

Exploratory Analyses: Self-Compassion:

The intervention group showed significant, large improvements in total self-compassion and all sub-scales of the SCS, while the control group did not show any significant changes (See Table 17-18). These significant findings reflected an increase in all of the beneficial traits of self-compassion (Self-Kindness, Common Humanity, and Mindfulness), and a decrease in all of the detrimental traits that run counter to self-compassion (Self-Judgement, Isolation, and Over-Identification) from pre- to post-

intervention for the MBH group. The changes observed remained significant in the MBH group after correcting for multiple hypothesis tests, and no changes in significance were observed in the control group.

Table 17

Descriptive Statistics for Self-Compassion

Scale	Group Size	Mean (SEM)	
		Pre	Post
Self-Kindness	Waitlist Ctrl: 16	12.38 (0.66)	13.38 (0.96)
	Intervention: 14	12.21 (0.87)	15.86 (1.03)
Self-Judgement	Waitlist Ctrl: 16	18.94 (0.77)	19.06 (0.78)
	Intervention: 14	20.00 (1.10)	15.29 (0.97)
Common Humanity	Waitlist Ctrl: 16	11.56 (0.76)[a]	11.56 (0.61)[a]
	Intervention: 14	12.07 (0.99)	15.86 (0.56)
Isolation	Waitlist Ctrl: 16	16.44 (0.68)	15.75 (0.76)
	Intervention: 14	15.79 (0.70)	10.43 (1.03)
Mindfulness	Waitlist Ctrl: 16	11.13 (0.81)	11.81 (0.56)
	Intervention: 14	12.00 (0.55)	14.93 (0.85)
Over-Identification	Waitlist Ctrl: 16	15.75 (0.71)	14.88 (0.77)
	Intervention: 14	14.29 (0.87)	10.00 (0.83)
Total	Waitlist Ctrl: 16	10.32 (0.55)	10.84 (0.53)
	Intervention: 14	10.70 (0.56)	14.82 (0.77)

[a] Despite changes in individual scores, the mean of scores did not change

There were also large and statistically significant increases in self-compassion in the intervention group compared to the control group (see Table 19). These findings were significant for total self-compassion, Self-Judgement, Common Humanity, Isolation, and Over-Identification. The Mindfulness and Self-Kindness subscales trended toward significance, although the study was not sufficiently powered to provide statistical reliability for the effect size of these subscales. The FDR-BH correction did not impact the significance of the findings for self-compassion.

Table 18

Pre-Post t-Test for Self-Compassion

Scale	Group Size	Significance	Significant with FDR-BH Correction?	Hedges g
Self-Kindness	Waitlist Ctrl: 16	0.383671	No	0.30
	Intervention: 14	0.000990	Yes	0.99
Self-Judgement	Waitlist Ctrl: 16	0.811650	No	0.04
	Intervention: 14	0.001179	Yes	-1.17
Common Humanity	Waitlist Ctrl: 16	1.000000 [a]	No	0.00
	Intervention: 14	0.002195	Yes	1.22
Isolation	Waitlist Ctrl: 16	0.565545	No	-0.08
	Intervention: 14	0.000593	Yes	-1.19
Mindfulness	Waitlist Ctrl: 16	0.302374	No	0.24
	Intervention: 14	0.007323	Yes	1.06
Over-Identification	Waitlist Ctrl: 16	0.181856	No	-0.29
	Intervention: 14	0.000344	Yes	-1.31
Total	Waitlist Ctrl: 16	0.287083	No	0.02
	Intervention: 14	0.000141	Yes	1.91

[a] Despite changes in individual scores, the mean of scores did not change

Table 19

Pre-Post ANOVA for Self-Compassion

Scale	Group Size	Significance	Significant with FDR-BH Correction?	Hedges g
Self-Kindness	Waitlist Ctrl: 16 Intervention: 14	0.077004	No	0.58
Self-Judgement	Waitlist Ctrl: 16 Intervention: 14	0.000382	Yes	-1.22
Common Humanity	Waitlist Ctrl: 16 Intervention: 14	0.002299	Yes	1.05
Isolation	Waitlist Ctrl: 16 Intervention: 14	0.000206	Yes	-1.10
Mindfulness	Waitlist Ctrl: 16 Intervention: 14	0.051767	No	0.64
Over-Identification	Waitlist Ctrl: 16 Intervention: 14	0.003469	Yes	-0.88
Total	Waitlist Ctrl: 16 Intervention: 14	0.000343	Yes	1.09

Exploratory Analysis: Compassion

With the exception of the Disengagement subscale, compassion for others was a null finding from pre- to post- intervention (see Table 20-21). Disengagement in the intervention group improved by decreasing (since this is an undesirable trait to have with regard to compassion, therefore a decrease represents an improvement). The effect size was large, and the finding was statistically reliable both before and after the correction for multiple hypothesis tests. Indifference, Separation, Mindfulness, and the Total score for Compassion could be generously construed as trending in the desired and predicted direction before the correction for multiple hypothesis tests, although the study was not sufficiently powered to provide further evaluation. Common Humanity appeared to be trending in the opposite direction for the control group, though this finding does not reach the threshold for statistical reliability.

Table 20

Descriptive Statistics for Compassion for Others

Scale	**Group Size**	**Mean (SEM)**	
		Pre	**Post**
Kindness	Waitlist Ctrl: 16	16.94 (0.72)	17.00 (0.68)
	Intervention: 14	16.64 (0.67)	17.21 (0.59)
Indifference	Waitlist Ctrl: 16	9.00 (0.77)	8.94 (0.62)
	Intervention: 14	8.14 (0.61)	7.21 (0.30)
Common Humanity	Waitlist Ctrl: 16	17.81 (0.37)	16.94 (0.59)
	Intervention: 14	17.43 (0.75)	17.57 (0.43)
Separation	Waitlist Ctrl: 16	8.38 (0.62)	7.00 (0.61)
	Intervention: 14	8.43 (0.70)	7.79 (0.70)
Mindfulness	Waitlist Ctrl: 16	16.00 (0.52)	15.94 (0.57)
	Intervention: 14	16.07 (0.55)	17.00 (0.48)
Disengagement	Waitlist Ctrl: 16	7.75 (0.74)	8.13 (0.53)
	Intervention: 14	8.86 (0.63)	6.79 (0.33)
Total	Waitlist Ctrl: 16	24.41 (0.72)	24.45 (0.68)
	Intervention: 14	24.18 (0.66)	25.50 (0.33)

There was a large difference between the intervention and control group for the Disengagement scale of compassion (see Table 22). This change was found to be statistically reliable both before and after the correction for multiple hypothesis tests. No other statistically reliable differences were found between the intervention and the control group for compassion.

Table 21

Pre-Post t-Test for Compassion for Others

Scale	**Group Size**	**Significance**	**Significant with FDR-BH Correction?**	**Hedges g**
Kindness	Waitlist Ctrl: 16	0.918669	No	0.02
	Intervention: 14	0.536507	No	0.23
Indifference	Waitlist Ctrl: 16	0.931568	No	-0.02
	Intervention: 14	0.171524	No	-0.50
Common Humanity	Waitlist Ctrl: 16	0.14504	No	-0.43
	Intervention: 14	0.834477	No	0.06
Separation	Waitlist Ctrl: 16	0.134948	No	-0.55
	Intervention: 14	0.539305	No	-0.24
Mindfulness	Waitlist Ctrl: 16	0.891758	No	-0.03
	Intervention: 14	0.176800	No	0.47
Disengagement	Waitlist Ctrl: 16	0.471139	No	0.14
	Intervention: 14	0.016397	Yes	1.06
Total	Waitlist Ctrl: 16	0.944012	No	0.02
	Intervention: 14	0.123717	No	0.66

Exploratory Analyses: Meaning, Spirituality, and Quality of Life

Spiritual experiences increased by a medium and statistically significant degree from baseline to 8-week follow-up in the intervention group (since the DSES is reverse scored such that reductions in score indicate an increase in spiritual experiences; See Table 23-24). No significant differences were found in the control group, indicating that increases in spirituality were not merely a natural trend observed as the end of the

semester approaches. With regard to presence of meaning, there was a large and statistically reliable increase from baseline to 8-week follow-up in the intervention group but not in the control group. Similarly, members of the intervention group showed a large and statistically significant increase in quality of life as represented by the visual analogue scale, and members of the control group showed no change. No significant changes were detected in either group from baseline to 8-week follow-up for Search for Meaning. There were no changes in the findings summarized above after the FDR-BH correction for multiple hypothesis tests.

Table 22

Pre-Post ANOVA for Compassion for Others

Scale	**Group Size**	**Significance**	**Significant with FDR-BH Correction?**	**Hedges g**
Kindness	Waitlist Ctrl: 16 Intervention: 14	0.634482	No	0.18
Indifference	Waitlist Ctrl: 16 Intervention: 14	0.380919	No	-0.03
Common Humanity	Waitlist Ctrl: 16 Intervention: 14	0.253665	No	0.04
Separation	Waitlist Ctrl: 16 Intervention: 14	0.586929	No	-0.20
Mindfulness	Waitlist Ctrl: 16 Intervention: 14	0.211987	No	0.46
Disengagement	Waitlist Ctrl: 16 Intervention: 14	0.010164	Yes	-0.96
Total	Waitlist Ctrl: 16 Intervention: 14	0.225088	No	0.45

There was a large and statistically reliable increase in the intervention group's daily spiritual experiences and sense of meaning in life in comparison to the control group (See Table 25). No significant differences were found between groups with regard

for the search for meaning or quality of life. This indicates that although quality of life did increase in the intervention group by a significant margin from the beginning to the end of the study, these differences did not remain significant after controlling for group. Controlling for multiple hypothesis tests did not change the results described above.

Table 23

Descriptive Statistics for Spirituality, Quality of Life, and Meaning in Life

Scale	**Group Size**	**Mean (SEM)**	
		Pre	**Post**
Daily Spiritual Experiences [a]	Waitlist Ctrl: 16	56.16 (4.32)	58.50 (4.23)
	Intervention: 14	57.34 (3.59)	47.29 (4.07)
Presence of Meaning	Waitlist Ctrl: 16	22.44 (1.45)	21.69 (1.74)
	Intervention: 14	22.14 (1.76)	26.71 (0.99)
Search for Meaning	Waitlist Ctrl: 16	29.13 (1.49)	28.31 (1.26)
	Intervention: 14	27.00 (1.86)	27.93 (2.04)
Quality of Life	Waitlist Ctrl: 16	5.41 (0.41)	5.90 (0.39)
	Intervention: 14	5.05 (0.40)	6.51 (0.44)

[a] A decrease in score on the DSES corresponds to an *increase* in spiritual experiences

Table 24

Pre-Post t-Test for Spirituality, Quality of Life, and Meaning in Life

Scale	**Group Size**	**Significance**	**Significant with FDR-BH Correction?**	**Hedges g**
Daily Spiritual Experiences	Waitlist Ctrl: 16	0.283251	No	0.13
	Intervention: 14	0.001763	Yes	-0.68
Presence of Meaning	Waitlist Ctrl: 16	0.570379	No	-0.11
	Intervention: 14	0.003081	Yes	0.83
Search for Meaning	Waitlist Ctrl: 16	0.383330	No	-0.14
	Intervention: 14	0.426553	No	0.12
Quality of Life (VAS)	Waitlist Ctrl: 16	0.397729	No	0.30
	Intervention: 14	0.007522	Yes	0.90

Table 25

Pre-Post ANOVA for Spirituality, Quality of Life, and Meaning in Life

Scale	**Group Size**	**Significance**	**Significant with FDR-BH Correction?**	**Hedges g**
Daily Spiritual Experiences	Waitlist Ctrl: 16 Intervention: 14	0.000779	Yes	-1.28[a]
Presence of Meaning	Waitlist Ctrl: 16 Intervention: 14	0.006703	Yes	1.01
Search for Meaning	Waitlist Ctrl: 16 Intervention: 14	0.234545	No	0.46
Quality of Life (VAS)	Waitlist Ctrl: 16 Intervention: 14	0.201683	No	0.44

[a] A decrease in score on the DSES corresponds to an *increase* in spiritual experiences

CHAPTER FOUR

Discussion

Specific Aims

This study provided the first empirical evaluation of Mindfulness-Based Hypnotherapy, an intervention which incorporates elements of both mindfulness and hypnosis. The aggregate results regarding the first specific aim of this study support the hypothesis that MBH is a feasible, highly satisfactory intervention with an acceptable rate of attrition and adverse events. Intervention participants who completed the reported the intervention to be highly palatable, and seemed to be motivated to comply with daily practice guidelines to an extent that surpassed even the optimistic expectations of the study's creators. The drop-out rate for the intervention group was comparable to the drop-out rate for the control group, which suggests that the drop-out rate may have been due to demographic factors unrelated to the burdensomeness or palatability of the intervention. For example, participants may have dropped out after receiving course credit for participation in research or lacked an intrinsic motivation for participating in a research study, since participants were not recruited from a clinical population.

Future studies should continue an investigation into the rate of adverse events and contraindications for Mindfulness-Based Hypnotherapy. Given the limited sample size, it is difficult to determine whether the two adverse events involving depression and trauma-related symptoms were related to participation in the study. Further research could help to clarify whether individuals with ongoing trauma or a history of trauma should be excluded from treatment with MBH, or whether the presence of a major depressive

episode is contraindicative for MBH. Further research could also point toward modifications to the MBH protocol that would enable effective treatment for these conditions if they are indeed contraindicative for the current MBH protocol.

The second specific aim of the study was to investigate the impact of MBH on stress. Results of the study suggest that MBH coincides with a large, statistically reliable, and clinically significant reduction in stress as measured by the Perceived Stress Scale (PSS) and the Visual Analogue Scale for Stress (VAS-Stress), and although the ANOVA for the VAS-Stress was non-significant, the PSS is considered to be a more reliable and well-validated instrument. Based on the fact that that the PSS showed a strong effect for stress reduction, MBH seems to show real promise for being an effective intervention for stress. This is an important finding, given the prevalence of stress in modern society and the impact of stress on psychological and physical health.

The third specific aim of the study was to investigate the impact of MBH on mindfulness. Overall results supported the hypothesis that mindfulness would increase for the participants who received MBH. The largest impact appeared to be for overall mindfulness and psychological flexibility as measured by the AAQ-II, as well as the Observe, Act with Awareness, and Non-reactivity subscales of the FFMQ. A larger study may have provided statistical reliability for the trends toward greater mindfulness among the other facets of mindfulness, especially if the true effect size for these subscales is in the moderate range.

The fourth specific aim of the study was to investigate the impact of MBH on mood state. The findings with regard to this aim were noteworthy, and results showed a pronounced, global impact on distress. The reductions in anxiety, global distress, and

even anger were expected outcomes for an intervention that is designed to reduce anxiety by increasing mindfulness. However, the intervention was not specifically designed to reduce hopelessness or depression so it was surprising to find large effects found for both of these as well. Speculatively, this finding may represent a broad impact on several measures of affective distress due to increased distress tolerance. Although further research is clearly indicated before any firm conclusions can be drawn, the MBH group's large and statistically reliable reductions in negative affective states raise the possibility that the stress reduction observed in the study were merely one small part of a much broader trend in increased psychological wellbeing. If this proves to be the case in future studies, MBH may be useful in ameliorating suffering associated with a broad range of psychological conditions.

The fifth specific aim of the study was to investigate whether reductions in perceived stress were moderated by hypnotizability. The results did not support the hypothesis that perceived stress would be moderated by hypnotizability. While this finding conflicted with the initial hypothesis, it means that the positive outcomes, it seems to indicate that the positive outcomes that were observed for the Mindfulness-Based Hypnotherapy intervention do not depend upon an individual's hypnotic ability. Therefore, MBH may be an intervention with broader applicability than initially hypothesized, since the results for stress reduction do not depend upon hypnotic ability.

Discussion of Exploratory Measures

Aside from the measures designed to address the specific aims, several other measures were included in order to serve as a foundation for future studies and to explore

the potential impact of MBH on other dimensions of psychological wellness. The areas studied were self-compassion, compassion for others, spirituality, and meaning in life.

The results of the study were quite different for self-compassion versus compassion. The results for self-compassion showed large and statistically reliable improvements for almost every facet of self-compassion, indicating that by the end of the study participant were feeling much higher degrees of self-kindness and common humanity compared to the control group. The intervention group also evinced a lower degree of isolation, self-judgement, and over-identification compared to waitlist controls. In contrast to these promising findings for self-compassion, changes in compassion for others were virtually nonexistent from a statistical point of view. The one exception to this null finding was disengagement, which was significantly lower in the intervention group than in the control group. Since the intervention was trending toward improvement, it may be that the sample size in this study was simply too small to detect a moderate or small effect size. It is also possible that MBH is simply not an effective means of increasing compassion for others in a college population.

The results of the study in regard to spirituality and meaning-in life are also promising. Spirituality is usually regarded to be an important dimension of human experience and thriving. Spiritual experiences in the intervention group became more frequent when compared to the control group, and the result was both large and statistically significant. In addition, individuals who completed Mindfulness-Based Hypnotherapy expressed that their felt sense of meaning in life increased. The degree of change was large when compared to the control group, and this result was found to be

statistically reliable. In contrast, there did not appear to be any statistically significant changes in participants' search for meaning in life or their quality of life.

Limitations

Despite the promise shown by the study results, the study design has several limitations. The first limitation is that the small sample size impedes the ability to draw conclusions about the reliability of the effect size of the intervention. The small sample size could result in only larger effect sizes being detected as significant (Button et al. (2013). Another consequence of a small sample size is the possibility of a false-negative. Due to the limitation of having a low-powered study, some of the measures that were found to be non-significant, such as compassion for others, may actually be influenced by the MBH intervention. A larger sample size would enable a more powerful evaluation of whether the small effect size for compassion was statistically reliable. Given that the most important measures in this study showed a significant outcome, the danger of a type II error is less critical. Nevertheless, a larger study would do a better job of establishing the strengths and weaknesses of MBH from a statistical standpoint. With regard to the first limitation, it is important to note that this study was designed to determine feasibility rather than test efficacy. The question of efficacy may be addressed in future studies.

A second limitation is that the study utilized a wait-list control and did not include an active control condition. This was appropriate given that the intervention has never been tested before and the study was designed to demonstrate feasibility. However, if future studies support the efficacy of MBH, it should then be compared to an active control or even an active intervention to determine whether MBH holds any advantage

over standard care. Until these steps are taken, it cannot be determined whether the effects demonstrated in the intervention provide unique improvement over mindfulness-alone or standard hypnotherapy interventions for stress/anxiety. Furthermore, in this study the waitlist control would have had little to no expectation of improvement since they were not receiving an intervention. In contrast, the intervention group invested considerable time and effort into their participation in the study, which would have provided a conscious or unconscious bias towards reporting an improvement that would have made this time-investment worthwhile.

A third limitation is that the study's demographics were predominantly white (61%) and female (81%). Baylor's student body is comprised of 58% females and 42% males (demographics for non-binary students are available), so women were over-represented in our sample. Although there were slightly more Hispanic/Latino participants in our sample (19% vs. the university's 14%), black/African-American and Asian participants were slightly underrepresented (5% each, vs. university's 7% and 6%, respectively). Furthermore, Native Americans and Pacific Islanders were not included in the sample at all. Discrepancies in race are likely due to the small sample size, and in future studies it will be important to attend closely to the recruitment of individuals of black/African-American, Asian, and Latino descent in order to assure that the results of the study are generalizable to individuals with these ethnic/racial identities. In addition, the sample included only college students at a single university, and the students all fell within a fairly narrow range for age. Therefore the generalizability to diverse populations (racially, age-wise, and education-wise) has not been demonstrated in this feasibility

study. The study may serve as provisional evidence for efficacy in a college population, but has limited generalizability beyond this group.

A fourth limitation is that there is evidence that researcher allegiance leads to bias in research (Munder, Brütsch, Leonhart, Gerger, & Barth, 2013). It goes without saying that there were no conscious attempts to bias the results of this study. In fact, every effort was made to include careful control of the study and examine the statistical results from an objective standpoint. Nevertheless, the possibility of unconscious bias should be considered as a potential limitation of the study. In the case of this intervention, the principal investigators were the creators of Mindfulness-Based-Hypnotherapy and therefore researcher allegiance is inevitable. The potential for (unconscious) researcher bias may also be amplified by the fact that the study served as the basis for Mr. Olendzki's dissertation, which is a considerable and important milestone in one's professional career. Furthermore, both Dr. Elkins and Mr. Olendzki have a book publication on Mindfulness-Based Hypnotherapy pending, which could contribute to researcher allegiance. If results of future studies support the efficacy of MBH, the research should be replicated by unbiased or negatively biased investigators to determine the effect that this has on the outcome of the intervention.

Future Directions

Future research into MBH should correct for the largest weaknesses of the current study. For example, any future study should include a larger and more diverse sample size as well as verification of intervention fidelity. Of particular importance would be to compare MBH to an active control in order to determine its efficacy relative to existing treatments. Conducting a study of MBH that includes treatment arms of mindfulness

without hypnotherapy and a hypnotic intervention without mindfulness would be instrumental in establishing whether hypnosis and mindfulness are active ingredients in the MBH intervention. Without such a study, it remains a possibility that mindfulness or hypnotherapy are inert components of the treatment, in which case MBH is a unique but meaningless reiteration of existing treatments. If a future study is able to correct for the dearth of diverse patients in this pilot study, it would help to establish the generalizability of MBH to different populations, such as non-students, different age groups, and clinical and non-clinical individuals in various treatment and work settings.

If the findings from future studies support the efficacy of MBH for stress and anxiety, another direction for further study could be to investigate the applicability of MBH to different types of presenting problems. Given the strong results found for depression, hopelessness, and anger, depressive disorders or externalizing disorders may be an excellent place to start. In addition, non-hypnotic mindfulness interventions have been shown to have some research support for bipolar disorder, chronic pain, and (in the case of dialectical behavioral therapy), difficult to treat psychological struggles such as borderline personality disorder and eating disorders. Given the promising results that MBH has had on stress, it may be worth investigating whether the intervention can be applied to these important clinical issues.

Additional research is needed to examine the impact of MBH delivery in a group format. A positive aspect of Mindfulness-Based Stress Reduction (MBSR), Mindfulness-Based Cognitive Therapy (MBCT), and Dialectical-Behavioral Therapy (DBT) is that it can be delivered in groups of people. Group delivery of MBH could be beneficial such as treatment settings under-resourced and inundated with clients in great psychological

need. Group therapy is an excellent solution to this problem, enabling many individuals to be served at the same time. Both mindfulness and hypnotherapy can be delivered in a group context, and therefore it would seem reasonable to expect that MBH can be adapted to group delivery of the intervention.

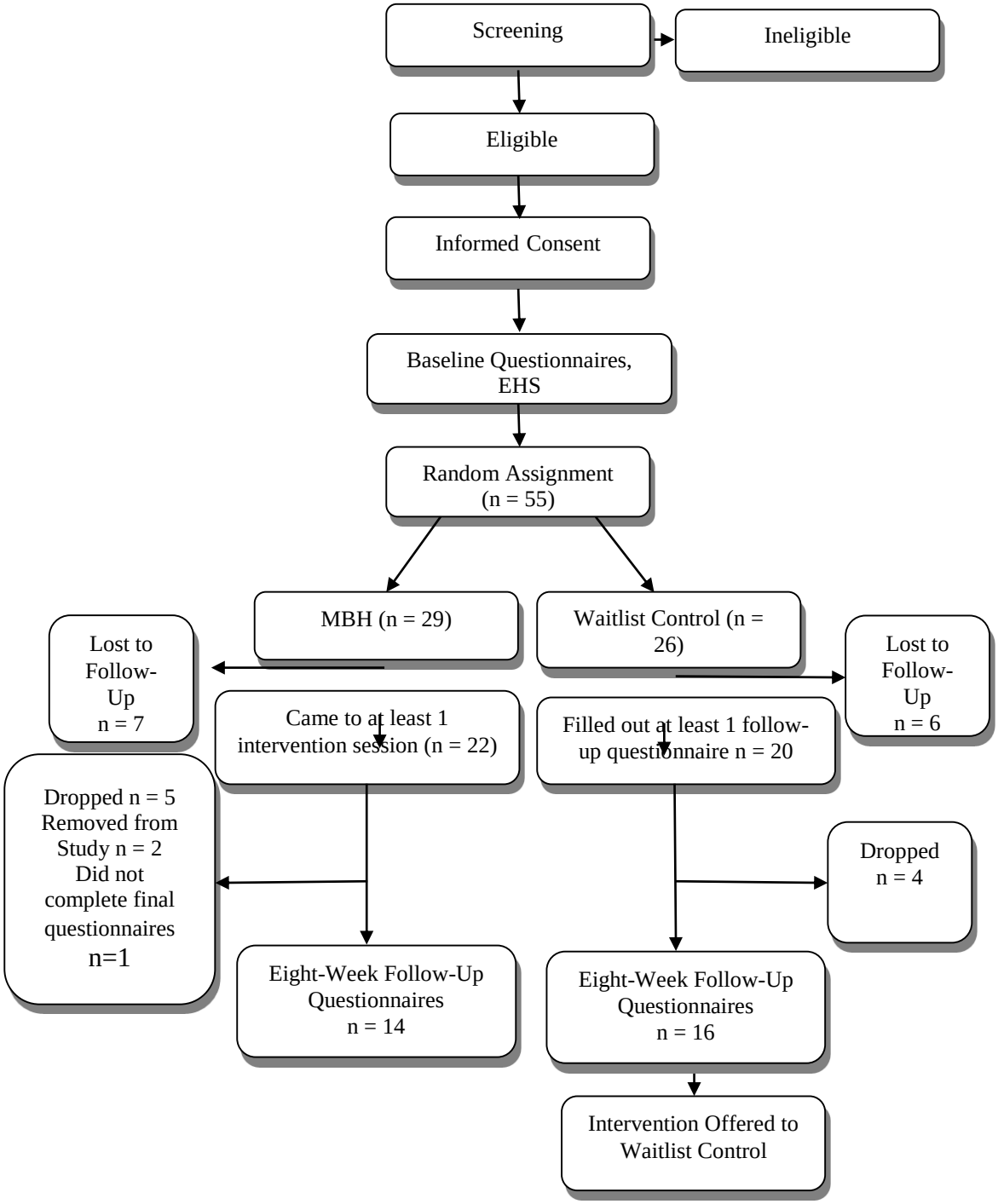
Conclusion

Mindfulness-Based Hypnotherapy shows promise for being a powerfully effective intervention for stress and distress. Given that the results for mindfulness and self-compassion were comparable or superior to mindfulness interventions delivered in a non-hypnotic context, this novel intervention shows promise for being a unique and valuable contribution to clinical psychology. Of course, the results provided were based on a relatively small sample size, and should be confirmed from larger RCT's before they can be considered to be an empirically supported treatment (EST). There is a critical need for more effective treatments for stress and anxiety, and given the promising findings for MBH, future research using this intervention is strongly indicated.

APPENDICES

APPENDIX A

Study Flow Diagram



APPENDIX B

Full, Ranked Lists of Significance Values Based on FDR-BH:

Color Code (For Ease of Reference):

- Mindfulness-Based Hypnotherapy t-Test
- Waitlist Control t-Test
- ANOVA

Specific Aims Ranked Significance with Corresponding FDR-BH Thresholds

Scale	Test	Group	p-value	FDR: BH Significance Threshold	Significant?
PSS	Paired Samples t-Test	Intervention	<0.000001	0.001428571	Yes
SPDP Depression	Paired Samples t-Test	Intervention	<0.000001	0.002857143	Yes
SPDP Anxiety	Paired Samples t-Test	Intervention	<0.000001	0.004285714	Yes
SPDP Total	ANOVA	N/A	<0.000001	0.005714286	Yes
PSS	ANOVA	N/A	0.000004	0.007142857	Yes
SPDP Hopelessness	Paired Samples t-Test	Intervention	0.000006	0.008571429	Yes
AAQII	Paired Samples t-Test	Intervention	0.000007	0.010000000	Yes
SPDP Anger	Paired Samples t-Test	Intervention	0.000007	0.011428571	Yes
FFMQ Non-Reactivity	Paired Samples t-Test	Intervention	0.000041	0.012857143	Yes
SPDP Total	ANOVA	N/A	0.000081	0.014285714	Yes
SPDP Anxiety	ANOVA	N/A	0.000088	0.015714286	Yes
AAQIIANOVA	ANOVA	N/A	0.000125	0.017142857	Yes
FFMQ Non-Reactivity	ANOVA	N/A	0.000218	0.018571429	Yes
SPDP Depression	ANOVA	N/A	0.000324	0.020000000	Yes
SPDP Hopelessness	ANOVA	N/A	0.000354	0.021428571	Yes
VAS Stress	Paired Samples t-Test	Intervention	0.00093	0.022857143	Yes

FFMQ Observe	ANOVA	N/A	0.001453	0.024285714	Yes
SPDP Anger	ANOVA	N/A	0.002383	0.025714286	Yes
FFMQ Nonjudgement	Paired Samples t-Test	Intervention	0.003653	0.027142857	Yes
VAS Stress	Paired Samples t-Test	Control	0.008007	0.028571429	Yes
FFMQ Act with Awareness	ANOVA	N/A	0.009606	0.030000000	Yes
FFMQ Act with Awareness	Paired Samples t-Test	Control	0.010746	0.031428571	Yes
FFMQ Observe	Paired Samples t-Test	Intervention	0.02468	0.032857143	Yes
FFMQ Observe	Paired Samples t-Test	Control	0.026256	0.034285714	Yes
FFMQ Nonjudgement	Paired Samples t-Test	Control	0.033969	0.035714286	Yes
FFMQ Nonjudgement	ANOVA	N/A	0.076786	0.037142857	No
SPDP Anxiety	Paired Samples t-Test	Control	0.093184	0.038571429	No
VAS Stress	ANOVA	N/A	0.095037	0.040000000	No
FFMQ Describe	Paired Samples t-Test	Intervention	0.104847	0.041428571	No
FFMQ Describe	ANOVA	N/A	0.153372	0.042857143	No
FFMQ Act with Awareness	Paired Samples t-Test	Intervention	0.210924	0.044285714	No
SPDP Anger	Paired Samples t-Test	Control	0.222009	0.045714286	No
SPDP Total	Paired Samples t-Test	Control	0.284394	0.047142857	No
AAQII	Paired Samples t-Test	Control	0.343682	0.048571429	No
PSS	Paired Samples t-Test	Control	0.377133	0.050000000	No

Exploratory Analyses Ranked Significance with Corresponding FDR-BH Thresholds

Scale	Test	Group	p-value	FDR: BH Significance Threshold	Significant?
Total Self-Compassion	Paired Samples t-test	Intervention	0.000141	0.000925926	Yes
Isolation (SCS)	ANOVA	N/A	0.000206	0.001851852	Yes
Self-compassion Total	ANOVA	N/A	0.000343	0.002777778	Yes
Over-Identification (SCS)	Paired Samples t-Test	Intervention	0.000344	0.003703704	Yes
Self-Judgement (SCS)	ANOVA	N/A	0.000382	0.004629630	Yes
Isolation (SCS)	Paired Samples t-Test	Intervention	0.000593	0.005555556	Yes
Daily Spiritual Experiences	ANOVA	N/A	0.000779	0.006481481	Yes
Self-Kindness (SCS)	Paired Samples t-Test	Intervention	0.00099	0.007407407	Yes
Self-Judgement (SCS)	Paired Samples t-Test	Intervention	0.001179	0.008333333	Yes
Daily Spiritual Experiences	Paired Samples t-Test	Intervention	0.001763	0.009259259	Yes
Common Humanity (SCS)	Paired Samples t-Test	Intervention	0.002195	0.010185185	Yes
Common Humanity (SCS)	ANOVA	N/A	0.002299	0.011111111	Yes
Presence of Meaning	Paired Samples t-Test	Intervention	0.003081	0.012037037	Yes
Over-Identification (SCS)	ANOVA	N/A	0.003469	0.012962963	Yes
Presence of Meaning	ANOVA	N/A	0.006703	0.013888889	Yes
Mindfulness (SCS)	Paired Samples t-Test	Intervention	0.007323	0.014814815	Yes
Quality of Life (VAS)	Paired Samples t-Test	Intervention	0.007522	0.015740741	Yes
Disengagement (CS)	ANOVA	N/A	0.010164	0.016666667	Yes
Disengagement(CS)	Paired Samples t-Test	Intervention	0.016397	0.017592593	Yes
Mindfulness (SCS)	ANOVA	N/A	0.051767	0.018518519	No
Self-Kindness (SCS)	ANOVA	N/A	0.077004	0.019444444	No
Compassion Total (CS)	Paired Samples t-Test	Intervention	0.123717	0.020370370	No
Separation (CS)	Paired Samples t-Test	Control	0.134948	0.021296296	No

Common Humanity (CS)	Paired Samples t-Test	Control	0.14504	0.022222222	No
Indifference(CS)	Paired Samples t-Test	Intervention	0.171524	0.023148148	No
Mindfulness(CS)	Paired Samples t-Test	Intervention	0.176800	0.024074074	No
Over-Identification (SCS)	Paired Samples t-Test	Control	0.181856	0.025000000	No
Quality of Life (VAS)	ANOVA	N/A	0.201683	0.025925926	No
Mindfulness (CS)	ANOVA	N/A	0.211987	0.026851852	No
Compassion Total (CS)	ANOVA	N/A	0.225088	0.027777778	No
Search for Meaning	ANOVA	N/A	0.234545	0.028703704	No
Common Humanity (CS)	ANOVA	N/A	0.253665	0.029629630	No
Daily Spiritual Experiences	Paired Samples t-Test	Control	0.283251	0.030555556	No
Total Self-Compassion	Paired Samples t-Test	Control	0.287083	0.031481481	No
Mindfulness (SCS)	Paired Samples t-Test	Control	0.302374	0.032407407	No
Indifference (CS)	ANOVA	N/A	0.380919	0.033333333	No
Search for Meaning	Paired Samples t-Test	Control	0.38333	0.034259259	No
Self-Kindness (SCS)	Paired Samples t-Test	Control	0.383671	0.035185185	No
Quality of Life (VAS)	Paired Samples t-Test	Control	0.397729	0.036111111	No
Search for Meaning	Paired Samples t-Test	Intervention	0.426553	0.037037037	No
Disengagement(CS)	Paired Samples t-Test	Control	0.471139	0.037962963	No
Kindness (CS)	Paired Samples t-Test	Intervention	0.536507	0.038888889	No
Separation(CS)	Paired Samples t-Test	Intervention	0.539305	0.039814815	No
Isolation (SCS)	Paired Samples t-Test	Control	0.565545	0.040740741	No
Presence of Meaning	Paired Samples t-Test	Control	0.570379	0.041666667	No
Separation (CS)	ANOVA	N/A	0.586929	0.042592593	No
Kindness (CS)	ANOVA	N/A	0.634482	0.043518519	No
Self-Judgement (SCS)	Paired Samples t-Test	Control	0.81165	0.044444444	No

Common Humanity(CS)	Paired Samples t-Test	Intervention	0.834477	0.045370370	No
Mindfulness(CS)	Paired Samples t-Test	Control	0.891758	0.046296296	No
Kindness (CS)	Paired Samples t-Test	Control	0.918669	0.047222222	No
Indifference(CS)	Paired Samples t-Test	Control	0.931568	0.048148148	No
Compassion Total (CS)	Paired Samples t-Test	Control	0.944012	0.049074074	No
Common Humanity (SCS)	Paired Samples t-Test	Control	1.000000	0.050000000	No

APPENDIX C

Reasons for Attrition

In the intervention group, 7 individuals dropped the study or removed for the following reasons:

1. Dropped in session 2 due to unrelated emergent circumstances, saying that they did not feel that they could give the study sufficient time and attention.
2. Dropped after session 2 due to a change in their schedule, resulting in insufficient time to devote to the study
3. Dropped after session 2 due to not having enough time to devote to the study.
4. Completed 5 sessions, but failed to respond to future attempts at contact. No reason was given. This participant is counted as having dropped from the study.
5. Completed 5 sessions, but failed to respond to future attempts at contact after class credit had been assigned by their professor. This participant is counted as having dropped from the study.
6. Was removed from the study by investigators. It became clear by session 4 that depression symptoms that were present before the study started were getting worse, and depression-focused treatment was indicated.
7. Was removed from the study after session 5. The participant had symptoms of PTSD and was experiencing ongoing trauma. Session 5 of the intervention coincided with an increase in symptoms, so the participant was referred to their current therapist for future treatment.

In the control group, 4 individuals provided data for their 4-week follow up but not for their 8-week follow-up questionnaires. These participants did not respond to attempts to contact them, and therefore their reasons for not completing the study are unknown

APPENDIX D

Detailed Summary of the MBH Intervention

Week 1: Intake and Focusing on the Present Moment

Confidentiality was reviewed and a brief psychological intake was completed. Hypnosis was introduced, including misconceptions about hypnosis. Individual information was also collected as necessary for personalizing hypnosis. In the final portion of the didactic part of the session, mindfulness was briefly introduced, with an emphasis on present-moment awareness.

Hypnotic Induction: The hypnotic induction for session 1 consisted of suggestions for "centering" oneself via present-moment awareness of raw sense-data such as sounds, bodily sensations, and visual stimuli. The hypnotic induction included post-hypnotic suggestions for being able to do this easily in times of stress. At the conclusion of the session, the participant was provided with a home practice CD for session 1.

Week 2: Nonjudgmental Awareness of Bodily Sensations

At the beginning of the session home practice was reviewed, and there was a discussion regarding how well material from the previous week had been integrated into the client's life. New material began with psychoeducation regarding how the body responds to stressors. Next, mindfulness was explained with an emphasis on present-moment awareness of bodily sensations, and the client was encouraged to cultivate an awareness of these sensations without judging them as "good" or "bad".

Hypnotic Induction: The hypnosis portion of session 2 focuses on present-moment awareness of bodily sensations, without judgment. Post-hypnotic suggestions were given

for regular practice and integrating mindful awareness of the body into daily life. At the conclusion of the session, the participant was provided with a home practice CD for session 2.

Week 3: Mindfulness of Thoughts and Emotions

In this session, the concept of mindfulness is elaborated upon by building on previous sessions. After reviewing home practice and any questions that have arisen in integrating the previous week's material, new material is added. Whereas the focus for session 2 was nonjudgemental awareness of physical sensations (that is, anything perceptible with the 5 senses), in session 3 this same attitude is practiced with regard to thoughts and emotions. As with all sessions, these mindfulness skills are applied to the client's individual stressors and needs.

Hypnotic Induction: The hypnosis portion of session 3 focuses on a guided experience of becoming mindfully aware of thoughts and emotions. In session, participants are asked become aware of a mild or moderately stressful recent event and then are guided through being mindfully aware of the stress. Post-hypnotic suggestions are given for daily mindfulness of thought and emotion, as well as dealing with stress mindfully on a daily basis. At the conclusion of the session, the participant was provided with a home practice CD for session 3, and in the audio for session 3 participants are encouraged to pay attention to whatever thoughts and feelings arise, without needing to control or respond. This general awareness of emotion takes the place of the suggestion for awareness of stress that occurs during the in-vivo script, but is otherwise identical.

Week 4: Integrating Self-Hypnosis into Mindfulness-Based Hypnotherapy

Before the session begins, the participant completes the perceived stress scale. As usual, home practice and any obstacles to practice are discussed, following which the participant is instructed on the principles of self-hypnosis. Where appropriate, self-suggestions can be tailored to the participant's particular needs. For example, someone who has a preference for using sound to enter a hypnotic trance can use sound, and someone who has a preference for paying attention to the sensations of breathing to enter trance can do that instead.

Hypnotic Induction: Session 4 includes two hypnotic inductions. The first induction includes detailed instruction, guiding the participant through each step of hypnosis and naming each step of self-hypnosis as it is performed. The second hypnosis session includes the name of each step and minimal guidance, relying upon the subject to guide himself or herself through the experience of hypnosis in their own way. At the conclusion of the session, the participant is provided with a home practice CD for session

Week 5: Compassion for Self and Others

In this session, the new material involves exploring examples of how stress can be made worse with self-reprisals, self-hatred, or a lack of self-compassion and introduces self-compassion as a useful attitude. Like the concept of acceptance, this is an attitudinal shift and does not *necessarily* include a shift in behavior. The clinician explores with the participant any reservations they may have in cultivating greater self-compassion as well as specific areas of their life when self-compassion may be particularly difficult to practice.

Hypnotic Induction: After suggestions for relaxation and deepening trance, the participant is guided to bring to mind someone who has acted with benevolence and love

toward them (parent, mentor, God, etc.) and allow natural thoughts and feelings of goodwill and compassion to extend toward this person. Suggestions are then given for experiencing that same compassion toward a neutral party, someone with whom it is difficult to get along, and also toward themselves. Post-hypnotic suggestions are given to enable them to experience this frequently during the week and recall it at will in times of stress. Finally, the participant is provided with a "Mindful Self-Compassion" home practice CD for session 5.

Week 6: Hypnotherapy for Acceptance and Awareness of Values

As with previous sessions home practice and any obstacles to practice are reviewed, and the participant is reminded of material from the previous sessions to give context to the new material. The participant's values and sense of meaning in life is explored, as well as the extent to which the participant has been acting congruently with these values and pursuing a meaningful life. If the participant's life and values have been congruent, the session focuses on how MBH can support and deepen this lifestyle while becoming more appreciative of the meaning that is already present in life. If incongruence is found, obstacles to congruence are identified and newly-learned MBH skills are brought to bear in overcoming these obstacles.

Hypnotic Induction: Hypnotic suggestions for session 6 focus on the participant's individual values and sources of meaning in life. Suggestions are given for an enhanced sense of meaning and dedication to personal values based on the participant's earlier description, integrating principles of mindfulness as appropriate to support the participant's congruence with these values and pursuit of personally meaningful life goals.

Week 7: Individualization of Mindfulness-Based Hypnotherapy

Before the session begins, the participant completes her or his weekly PSS, then home practice and any obstacles to practice are reviewed. Next is a discussion of the client's progress in integrating mindfulness into daily life (outside of formal practice) and mindfulness concepts that the participant is having trouble understanding or integrating are reinforced with further education and discussion. The bulk of this session is used to individualize MBH and focus on areas that have been particularly difficult for the participant to integrate or understand.

Hypnotic Induction: The hypnosis session for session 7 is an integrated mindfulness induction focused on the participant's individual goals and needs. A script for session 7 is provided, with the stipulation that individual suggestions should be integrated as needed into this script in order to reinforce the client's individual goals and address any lingering shortcomings to mindfulness practice. Finally, the participant is provided with the "Integrated Mindfulness-Based Hypnosis" home practice CD.

Week 8: Termination and Transition to Long-Term Practice

Before the session begins, the participant completes her or his weekly PSS, then home practice and any obstacles to practice are reviewed. This session is devoted to the therapeutic tasks of termination. For example, the participant's progress over the course of the past eight weeks is reviewed, highlighting reductions in stress or other positive effects (if present) and the changes in perception and attitude that allowed the participant to make these positive life changes. If the participant struggled to make positive changes, the discussion focuses on identifying the factors that contributed to the struggle to make changes. The therapist and client then collaborate to outline what steps can be taken to

help address these obstacles in the future to enable positive change. Finally, if MBH was helpful to the participant, strategies are discussed that will enable the participant to continue MBH practice with self-hypnosis in order to maintain positive gains.

Hypnotic Induction: In this termination session, hypnotic suggestions for relaxation and present-moment, nonjudgmental awareness are given. This awareness includes an awareness of thoughts, sensations, and emotions without trying to "push" any of these experiences away nor hold on to them. Instead, the participant is guided toward becoming aware of the present moment with equanimity and compassion/self-compassion. Post-hypnotic suggestions are given for the long-term continuation of daily MBH practice (including both formal and informal practice) as well as integrating mindfulness as a trait and an easily accessed state of mind.

APPENDIX E

Scales in the Public Domain

VAS Rating Scales

Participant ID #: _____ Study ID #: _____
Date Completed (MM/DD/YEAR): _____ Research Therapist Name: _____ ***(Please print legibly)*** **Week #:** ☐ Screening/Baseline ☐ Week 8/Followup

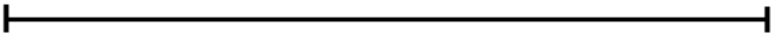
STRESS

Please mark the line at the point that best represents your ***stress level over the <u>past week</u>*** on the scale below from "No Stress" to "Extreme Stress (Worst Imaginable)".

No Stress **Extreme Stress (Worst Imaginable)**

Quality of Life

Please mark the line at the point that best represents your ***quality of life over the <u>past week</u>*** on the scale below from "Extremely Bad" to "Extremely Good".



Extremely Bad **Extremely Good**

Sample of Daily Practice Log

Daily Practice Log 

Day One

Did you practice mindfulness-based hypnotherapy with your pre-recorded CD's today? **Yes** ☐ **No** ☐ **Partially*** ☐

*(Stopped before completing CD, etc.)

Comments and Reflections (Optional):

Demographics Questionnaire

2. **1. Gender:**

☐ Female ☐ Male ☐ Other (Please specify)
_____

3. **Marital Status:** ☐ Single ☐ Married

4. **Age** _____

5. **Race ("X" ONLY one with which you MOST CLOSELY identify):**

☐ American Indian or Alaska Native
☐ Asian
☐ Black or African-American
☐ Latino/a or Hispanic
☐ Native Hawaiian or Other Pacific Islander
☐ White
☐ More than one race
☐ Unknown or not reported

6. **Education ("X" current year in school if student or highest level completed if not in school):**

☐ Freshman
☐ Sophomore
☐ Junior
☐ Senior
☐ Graduate School
☐ Other (Specify)_____

7. **Major (If Applicable)** _____

Compassion for Others

HOW I TYPICALLY ACT TOWARDS OTHERS

Please read each statement carefully before answering. To the right of each item, indicate how often you behave in the stated manner, by circling the number that best represents your experience.

	Almost Never				**Almost Always**
1) When people cry in front of me, I often don't feel anything at all.	1	2	3	4	5
2) Sometimes when people talk about their problems, I feel like I don't care.	1	2	3	4	5
3) I don't feel emotionally connected to people in pain.	1	2	3	4	5
4) I pay careful attention when other people talk to me.	1	2	3	4	5
5) I feel detached from others when they tell me their tales of woe.	1	2	3	4	5
6) If I see someone going through a difficult time, I try to be caring toward that person.	1	2	3	4	5
7) I often tune out when people tell me about their troubles.	1	2	3	4	5
8) I like to be there for others in times of difficulty.	1	2	3	4	5

9) I notice when people are upset, even if they don't say anything.	1	2	3	4	5
	Almost Never				**Almost Always**
10) When I see someone feeling down, I feel like I can't relate to them.	1	2	3	4	5
11) Everyone feels down sometimes, it is part of being human.	1	2	3	4	5
12) Sometimes I am cold to others when they are down and out.	1	2	3	4	5
13) I tend to listen patiently when people tell me their problems.	1	2	3	4	5
14) I don't concern myself with other people's problems.	1	2	3	4	5
15) It's important to recognize that all people have weaknesses and no one's perfect.	1	2	3	4	5
16) My heart goes out to people who are unhappy.	1	2	3	4	5
17) Despite my differences with others, I know that everyone feels pain just like me.	1	2	3	4	5
18) When others are feeling troubled, I usually let someone else attend to them.	1	2	3	4	5
19) I don't think much about the concerns of others.	1	2	3	4	5
20) Suffering is just a part of the common human experience.	1	2	3	4	5

21) When people tell me about their problems, I try to keep a balanced perspective on the situation.	1	2	3	4	5
	Almost Never				**Almost Always**
22) I can't really connect with other people when they're suffering.	1	2	3	4	5
23) I try to avoid people who are experiencing a lot of pain.	1	2	3	4	5
24) When others feel sadness, I try to comfort them.	1	2	3	4	5

Self Compassion Scale

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the right of each item, indicate how often you behave in the stated manner, by circling the number that best represents your experience:

	Almost Never				**Almost Always**
25) I'm disapproving and judgmental about my own flaws and inadequacies.	1	2	3	4	5
26) When I'm feeling down I tend to obsess and fixate on everything that's wrong.	1	2	3	4	5
27) When things are going badly for me, I see the difficulties as part of life that everyone goes through.	1	2	3	4	5
28) When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world	1	2	3	4	5
29) I try to be loving towards myself when I'm feeling emotional pain.	1	2	3	4	5
30) When I fail at something important to me I become consumed by feelings of inadequacy.	1	2	3	4	5

	Almost Never				Almost Always
31) When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.	1	2	3	4	5
32) When times are really difficult, I tend to be tough on myself.	1	2	3	4	5
33) When something upsets me I try to keep my emotions in balance.	1	2	3	4	5
34) When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.	1	2	3	4	5
35) I'm intolerant and impatient towards those aspects of my personality I don't like.	1	2	3	4	5
36) When I'm going through a very hard time, I give myself the caring and tenderness I need.	1	2	3	4	5
37) When I'm feeling down, I tend to feel like most other people are probably happier than I am.	1	2	3	4	5
38) When something painful happens I try to take a balanced view of the situation.	1	2	3	4	5
39) I try to see my failings as part of the human condition.	1	2	3	4	5
40) When I see aspects of myself that I don't like, I get down on myself.	1	2	3	4	5

	Almost Never				Almost Always
41) When I fail at something important to me I try to keep things in perspective.	1	2	3	4	5
42) When I'm really struggling, I tend to feel like other people must be having an easier time of it.	1	2	3	4	5
43) I'm kind to myself when I'm experiencing suffering.	1	2	3	4	5
44) When something upsets me I get carried away with my feelings.	1	2	3	4	5
45) I can be a bit cold-hearted towards myself when I'm experiencing suffering.	1	2	3	4	5
46) When I'm feeling down I try to approach my feelings with curiosity and openness.	1	2	3	4	5
47) I'm tolerant of my own flaws and inadequacies.	1	2	3	4	5
48) When something painful happens I tend to blow the incident out of proportion.	1	2	3	4	5
49) When I fail at something that's important to me, I tend to feel alone in my failure.	1	2	3	4	5
50) I try to be understanding and patient towards those aspects of my personality I don't like.	1	2	3	4	5

The Daily Spiritual Experience Scale

The list that follows includes items you may or may not experience. Please consider how often you directly have this experience, and try to disregard whether you feel you should or should not have these experiences. A number of items use the word 'God.' If this word is not a comfortable one for you, please substitute another word that calls to mind the divine or holy for you.

	Many Times A Day	**Every Day**	**Most Days**	**Some Days**	**Once in a While**	**Never**
1) I feel God's presence	1	2	3	4	5	6
2) I experience a connection to all of life.	1	2	3	4	5	6
3) During worship, or at other times when connecting with God, I feel joy which lifts me out of my daily concerns.	1	2	3	4	5	6
4) I find strength in my religion or spirituality.	1	2	3	4	5	6
5) I find comfort in my religion or spirituality.	1	2	3	4	5	6
6) I feel deep inner peace or harmony.	1	2	3	4	5	6
7) I ask for God's help in the midst of daily activities.	1	2	3	4	5	6
8) I feel guided by God in the midst of daily activities.	1	2	3	4	5	6
9) I feel God's love for me, directly.	1	2	3	4	5	6
	Many Times A Day	**Every Day**	**Most Days**	**Some Days**	**Once in a While**	**Never**

10) I feel God's love for me, through others.	1	2	3	4	5	6
11) I am spiritually touched by the beauty of creation.	1	2	3	4	5	6
12) I feel thankful for my blessings.	1	2	3	4	5	6
13) I feel a selfless caring for others.	1	2	3	4	5	6
14) I accept others even when they do things I think are wrong.	1	2	3	4	5	6
15) I desire to be closer to God or in union with the divine.	1	2	3	4	5	6

	As Close As Possible	**Very Close**	**Somewhat Close**	**Not at All**
16) In general, how close do you feel to God?	1	2	3	4

The Meaning in Life Questionnaire

Please take a moment to think about what makes your life feel important to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below:

	Absolutely Untrue	**Mostly Untrue**	**Somewhat Untrue**	**Can't Say True or False**	**Somewhat True**	**Mostly True**	**Absolutely True**
1) I understand my life's meaning	1	2	3	4	5	6	7
2) I am looking for something that makes my life feel meaningful	1	2	3	4	5	6	7
3) I am always looking to find my life's purpose	1	2	3	4	5	6	7
4) My life has a clear sense of purpose	1	2	3	4	5	6	7
5) I have a good sense of what makes my life meaningful	1	2	3	4	5	6	7
6) I have discovered a satisfying life purpose	1	2	3	4	5	6	7
7) I am always searching for something that makes my life feel significant	1	2	3	4	5	6	7

	Absolutely Untrue	Mostly Untrue	Somewhat Untrue	Can't Say True or False	Somewhat True	Mostly True	Absolutely True
8) I am seeking a purpose or mission for my life.	1	2	3	4	5	6	7
9) My life has no clear purpose	1	2	3	4	5	6	7
10) I am searching for meaning in my life	1	2	3	4	5	6	7

Mindfulness-Based Hypnotherapy Satisfaction Survey

Participant ID #: _____ Study ID #: _____
Date Completed (MM/DD/YEAR): _____ Research Therapist Name: _____ ***(Please print legibly)***

Overall Satisfaction with Mindfulness-Based Hypnotherapy

0	1	2	3	4	5	6	7	8	9	10

Very dissatisfied Very Satisfied

Comments (optional):

The number of sessions was appropriate

0	1	2	3	4	5	6	7	8	9	10

Very dissatisfied Very Satisfied

If dissatisfied with number of sessions:

☐ Too Many Sessions

☐ Too Few Sessions

Comments (optional):

The Mindfulness-Based Hypnotherapy CD's made it easier to practice daily mindfulness

0	1	2	3	4	5	6	7	8	9	10

Very dissatisfied Very Satisfied

Comments (optional):

The content of each Mindfulness-Based Hypnotherapy session was presented clearly

0	1	2	3	4	5	6	7	8	9	10

Very dissatisfied Very Satisfied

Comments (optional):

Other Feedback: Please feel free to comment on any part of your experience in the study or other ways to improve Mindfulness-Based Hypnotherapy. Feel free to use the back page if necessary.

Elkins Hypnotizability Scale

(Springer Publishing. Scoring Page Included Here With Permission)

EHS SCORING SUMMARY

Name: _____ Age: _____

Examiner: _____ Date: _____

1. Subjective Heaviness	Yes _____ No_____
2. Arm Immobilization	Yes _____ No_____
3. Subjective Lightness	Yes _____ No_____
4. Arm Levitation	Yes _____ No_____
5. Elbow Lift	Yes _____ No_____
6. Imagery	Yes _____ No_____
7. Dissociation	Yes _____ No_____
8. Faint Rose Smell	Yes _____ No_____
9. Distinct Rose Smell	Yes _____ No_____
10. Vague Hallucination	Yes _____ No_____
11. Clear Hallucination	Yes _____ No_____
12. Recalls One or Less Items	Yes _____ No_____
TOTAL SCALE SCORE	_____

0 – 1	Very Low
2 – 3	Low
4 – 8	Middle
9 – 10	High
11 – 12	Very High

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