AN EXPLORATION OF THE RELATIONSHIP BETWEEN MINDFULNESS AND FORGIVENESS

by

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Abstract

It was hypothesized that mindfulness training, in addition to decreasing stress, would increase levels of forgiveness for a recent hurt, levels of self-forgiveness, and empathy. These hypotheses were tested by comparing a group of individuals who completed Mindfulness-Based Stress Reduction (MBSR) programs with a group of individuals on an MBSR waitlist and a group of students. All participants in the study were volunteers previously unfamiliar with mindfulness meditation.

All participants completed the NEO PI R at outset. Measures of other-forgiveness (Enright Forgiveness Inventory, Enright, 1994), self-forgiveness (Forgiveness of Self, Mauger, 1992), state and trait anxiety (STAI, Spielberger et al., 1970), mindfulness (MAAS, Ryan and Brown, 2003), and perspective taking and empathic concern (IRI, Davis, 1983) were completed pre and post program for the MBSR group participants and at equivalent time intervals for control group participants.

The results were in the expected direction. Significant mean differences were observed on other-forgiveness, self-forgiveness, state and trait anxiety, and mindfulness, between the MBSR group and control groups, controlling for scores at outset and appropriate covariates. However, no differences among groups were observed on empathy. Correlations between total practice time for the MBSR group and changes on dependent variables were not significant.
The effect size for self-forgiveness (partial eta squared = .36) was moderate and the effect size for other-forgiveness was small (partial eta squared = .117). This suggests that individuals seeking therapy for issues of forgiveness might benefit from mindfulness training and therefore that further research is warranted into the counselling uses of MBSR and mindfulness training. Limitations of the study were discussed.
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Chapter One

Introduction

For several decades psychologists have been investigating the clinical uses of meditation for managing stress. In the 1950s, Selye (1984, 1974) defined stress as the non-specific physiological response of the organism to pressure or demand. He identified meditation as a possible intervention that could strengthen the body’s defences against stress, by providing a rest period in an altered state of consciousness during which the body would have time to forget stereotypic somatic reactions to stress. Several standardized therapeutic protocols of meditation have been developed since the 1970s, including Respiratory One Meditation and Relaxation Response (Benson, 1975) and Clinically Standardized Meditation (Carrington, 1978).

In the early 1980s Jon Kabat-Zinn developed a program called Mindfulness-Based Stress Reduction (hereinafter MBSR) to help individuals dealing with chronic pain that could not be alleviated by medications. Kabat-Zinn (1994) defined mindfulness as paying attention in a particular way: on purpose, in the present moment, and non-judgmentally. Mindfulness is derived from Buddhist meditation but it can be practiced without any religious convictions. The goal of MBSR is not to teach patients to relax but to use mindfulness meditation to be aware in an intentional focused way. Kabat-Zinn believed that through mindfulness, pain patients could learn to observe their bodily sensations in a detached manner and could learn to uncouple the simple sensory experience of pain from their mental distress about it to achieve some relief of their psychological suffering (Kabat-Zinn, 1982). The MBSR program later expanded to treat
not only pain patients but also individuals with high levels of anxiety connected with a variety of clinical conditions.

Kabat-Zinn reported that in addition to stress reduction, many people in his MBSR courses underwent deeper changes at the level of how they perceived themselves and their relationships to others and to the environment. In an early interview Kabat-Zinn claimed that participants in his program gained “a greater sense of caring for others, grounded in a revolutionary newfound caring for themselves” (Primary Point, 8, 1991). Most research on the clinical uses of mindfulness has focused on symptom relief and not on this deeper type of change.

As a facilitator of MBSR groups, I heard about both kinds of changes from participants in the program. In addition to reporting symptom improvement such as better sleep and decreased stress, a number of program completers reported being happier. Some spontaneously reported experiences of forgiveness. Some described either forgiving themselves or forgiving other people who had hurt them in some significant way. Most described it as an unexpected benefit and felt that it was directly the result of their mindfulness practice. This led me to think that one of the deeper types of changes was forgiveness, and to hypothesize that mindfulness, which emphasizes presence and awareness without judgment, can facilitate forgiveness. Kabat-Zinn, as quoted above, is arguing that mindfulness increases self-compassion and empathy. Empathy plausibly aids a person to forgive. It is a commonly held belief that if one can understand another person’s remorsefulness; one is more likely to forgive. This suggests that mindfulness through the generation of empathy might facilitate forgiveness.
There have been many studies correlating mindfulness meditation and MBSR with decreased psychological distress in a broad variety of physical conditions, but until very recently, there were no studies on both mindfulness and forgiveness. Therefore, the current study was developed to explore whether mindfulness as taught in MBSR systematically correlates with increased other-forgiveness for a specific offence, and with increased self-forgiveness. If mindfulness has an effect on forgiveness, this knowledge would be very useful to counsellors and therapists working with individuals or couples that might appropriately want to forgive either themselves or another but cannot.

The rest of this chapter will consist of five sections. The first section mindfulness will be discussed, the MBSR program described, and research on the efficacy of mindfulness reviewed. In the second section the concept of forgiveness will be described, models of forgiveness discussed, and the research literature on forgiveness relevant to this study reviewed. In the third section the studies that cover both mindfulness and forgiveness will be reviewed. In the fourth section an overall summary will be provided prior to a discussion of the hypotheses.

\textit{Mindfulness}

\textit{The Concept of Mindfulness}

Mindfulness meditation, as employed by MBSR, comes from the oldest Buddhist tradition, the Theravada tradition of Southeast Asia. Buddhism teaches that as long as one craves sensation, is prone to anger, and believes that one is a separate self with an inner reality, suffering ensues. Meditation is a Buddhist tool to overcome suffering. Buddhism
teaches that the deep practice of uninterrupted mindfulness, along with morality, leads to enlightenment and the experience of interconnectedness with all beings, and to the development of a true compassion toward all (Gunaratana, 1985).

There are two basic types of meditation, mindfulness meditation and concentration meditation. In concentration meditations, such as Transcendental Meditation, the meditator focuses exclusively on an image or a word or phrase in the mind and seeks to sustain that image or sound in the mind to the exclusion of everything else. Concentration meditations lead to deeper and deeper levels of absorption, and exist in all religious traditions (Naranjo & Ornstein, 1971). On the other hand, mindfulness is the intentional state of open awareness in which for a period of time one attends to and accepts all thoughts, feelings and sensations as they arise and deliberately refrains from performing any inference from those thoughts or sensations. Mindfulness meditation depends on the ability to pay attention in a relaxed and alert state. According to Buddhist theory, the traditional "four foundations of mindfulness" are awareness of the body (both the breath and the physical nature of the body), of feelings, of thinking, and of the objects of mind (Vajiranana, 1962; Nyanaponika Thera, 1962), and these categories comprise all possible types of present-moment experiences.

Mindfulness, when done in a formal manner, is usually done in a sitting position. The meditator is advised to sit upright and she typically begins by resting attention on the breath as it naturally occurs, and then eventually opens her awareness to notice impartially whatever feelings, sensations, perceptions or thoughts may arise. Mindfulness has been compared to a mirror that reflects what there is (Rosenberg, 1999). The
meditator notices a thought rather than uses it, but if she becomes distracted in a train of thought, she would attempt to return without judgment to impartial alert awareness. Even the thought that one has become distracted can be impartially observed. Mindfulness meditation is not usually relaxing for beginners for two reasons. It is easy to become distracted and it takes effort to catch oneself and return to impartial alert awareness. Secondly, when the contents of mind consist of unresolved and/or troubling issues, the experience of the moment is often not pleasant.

Within mindfulness traditions another type of meditation, called a directed meditation (Satipatthana Samyutta 47.10), is occasionally done for limited periods of time when it is hard to practice undirected mindfulness and/or to overcome mental sluggishness. In a directed meditation, attention is directed to a “satisfactory object”, such as image of the Buddha, or a quality such as loving kindness, to engage that quality or aspect of the self as a skilful means to overcome sluggishness or difficulty in mindfulness.

Psychologists are attempting to identify the specific components or skills that are involved in mindfulness. Brown and Ryan (2004) define mindfulness as present awareness and attention, both of which are naturally occurring qualities of consciousness that serve a self-regulatory function, and which can be cultivated with practice. For Brown and Ryan, present awareness and attention entail acceptance.

Bishop et al. (2004) identified mindfulness as the self-regulation of attention within attitudes of acceptance, curiosity and openness. The various skills of attention include the sustaining of attention on the here and now, the switching of attention back to
the here and now when it wanders, and inhibition of inference or elaboration of thoughts and feelings.

Baer, Smith and Allen (2004) identified four skills of mindfulness, which are observing, describing, acting with awareness, and accepting without judgment. A factor analysis (Baer, Smith, Hopkins, Kreitmeyer & Toney, 2006) of various mindfulness questionnaires found five factors. Four factors – describing, acting with awareness, non-judging and non-reacting – were found to be elements of an overarching mindfulness construct. The latter three had incremental validity in the prediction of psychological symptoms, and thus were indicated as useful to teach for symptom reduction. A fifth factor, observation, was present only in the college students in their sample who meditated regularly.

Mindfulness-Based Stress Reduction

Mindfulness-Based Stress Reduction (MBSR) is typically an eight- to ten-week program. The MBSR program is described in Full Catastrophe Living (Kabat-Zinn, 1990), a book that aims to be both informative and inspiring and thus is a combination of theory, instructions and testimonials. On the first page the reader is invited to “embark upon a journey of self-development, self-discovery, learning, and healing” and move toward greater levels of health and well-being. The growth-oriented possibilities of MBSR are strongly emphasized by Kabat-Zinn. He states that in addition to the meditation practice itself, a “personal vision of what or who you might be if you were to
let go of the fetters of your own mind and the limitation of your own body” (Kabat-Zinn, p. 46) may be necessary for growth and change to occur.

A set of attitudes with which mindfulness meditation should be undertaken is recommended. These are non-judging, patience, beginner's mind, trust, non-striving, acceptance, and letting go (Kabat-Zinn, 1990). Beginner's mind is a term from Zen and the Japanese martial arts meaning that even the most accomplished expert should undertake a skill with the freshness and openness of a novice. Poems, such as Rumi’s The Guest House which are evocative of the recommended attitudes of openness and acceptance are occasionally introduced. All experience should be welcomed like a guest while at the same time understood as temporary and transient.

Kabat-Zinn designed the MBSR program to incorporate a number of beneficial non-specific factors. He lists them as follows: the group format, the expectation of relief, the non-goal orientation, the emphasis on self-responsibility, the finite duration, the low cost, and the inclusion of a spectrum of several meditation techniques and didactic material on the stress response (Kabat-Zinn, 1982).

The individual expertise and personality of the instructor are also important to effectively teach mindfulness (Carrington, 1993). According to the current head of the Centre for Mindfulness, it typically requires five years for an already qualified person to become a skilled MBSR teacher (Santorelli, 2001). Effective MBSR teachers are experienced meditators, good communicators, and embody the qualities of calmness, kindness, openness, and acceptance and model them in their interactions with MBSR
group members. When the instructor is attractive and/or a high-status individual such as a medical doctor, positive projections may come into play and may influence outcomes.

MBSR groups range in size from a dozen to thirty or more. Kabat-Zinn tends to prefer large groups. In large urban centres, group members are often complete strangers to each other. The group sits in a large circle and the instructor gives the directions, guides the meditation and answers questions. People tend to sit in the same places. While they may chat with their immediate neighbours, there tends not to be a great deal of regular verbal interaction between members of the larger group, although over the weeks they gaze at each other and project qualities, competencies and strengths or the lack of them onto each other. MBSR includes some scheduled small group discussions among members. These discussions centre on themes such as what is stressful, or how one handles stress in one’s life. In these small groups, individuals can share personal details if they wish. In these sessions, when complete strangers, who may have seemed so competent, reveal their private woes, the commonality of the condition of suffering is experienced quite powerfully. Individuals often give and receive emotional support to each other quite spontaneously and individuals may experience themselves and their own situations in a different way from what is usual for them.

At the first MBSR session, participants are presented with some ambiguous drawings, such as the duck/rabbit drawing or Necker cube, to illustrate the fact that raw sensory input is ambiguous, and our brains through largely unconscious processes present us with meanings. The nine-dot problem is presented in the homework. Most people are
unable to solve the problem until they suddenly realize that they have been looking at the problem in the wrong way.

The core of the MBSR program consists of weekly instruction and practice in sitting meditation, the body scan meditation and yoga postures. Sitting meditation is the formal practice of mindfulness for timed periods beginning with five to ten minutes and extending to forty-five minutes by the end of the program. The body scan is a forty-five to fifty minute meditation done lying down, during which attention is brought to each part of the body in sequence to fully experience whatever sensation or feeling is found in that region. Mindful yoga is the guided practice of stretches and postures to relax the body and develop mindfulness in movement. Homework is part of the program, usually about forty to fifty minutes per day of some combination of mindfulness, body scan or yoga, and supported by recorded instructions by the course leader, delivered in what is intended to be a calm reassuring voice. Some written homework exercises encourage the cultivation of mindfulness in daily life, such as while eating or brushing teeth. Some journaling is done of pleasant and unpleasant moments during the day. The MBSR course also includes a raisin-eating meditation, walking meditation and a basic explanation of the physiology of stress. Each session begins with an invitation to participants to ask questions or share their experience of the week’s home mindfulness practice. Occasional small group discussions provide an opportunity for peer support among members.

A special day-long session is scheduled between the sixth and seventh MBSR sessions. It consists of a full schedule of mindfulness meditation, body scan, yoga, and walking meditation, and it includes a directed meditation called a Loving Kindness
Meditation. (Most instructors include a Loving Kindness meditation in the day-long session, although some choose to include it in one of the weekly sessions.) In this meditation, which takes about thirty minutes, loving kindness and compassion are first mentally directed toward oneself, then towards a person one loves, such as a parent or child, then to a neutral person, and finally to a person for whom one has negative feelings. In each case, one is asked to experience kindness and positive emotions. Coming after weeks of intense mindfulness practice, it can have a powerful effect, although it is a minor part of the MBSR program. In Full Catastrophe Living, Kabat-Zinn talks about one participant’s reaction to this meditation, saying that:

...she had been able to direct some love and kindness toward herself and that she found she was able to forgive her husband just a little for years of violence and physical abuse that she said had almost killed her. She said it felt good to let go of it in this way, just the little bit that she had, that it felt as if something was being healed inside of her by forgiving him. She said she saw that she didn’t have to carry her anger around with her like an enormous weight forever and that she could move on with her life she let this be behind her.

(Kabat-Zinn, 1990, p. 127)

A Model of Mindfulness and Empathy

Kristeller and Johnson (2005) developed an explanation of how mindfulness can lead to empathy. Kristeller and Hallett (1999) had developed a Mindfulness-Based Eating Awareness Training for individuals with binge eating disorder. Their program combined elements of MBSR with cognitive behaviour therapy and with guided eating meditations and a self-compassion meditation. In 1999 they reported that of eighteen women who completed their program, only four still met criteria for binge eating disorder. Based on the data collected in that study, Kristeller and Johnson developed the following two-stage
model: initially mindfulness practice is the self-centered and non-judgmental awareness of one’s typical patterns of responses to situations and people and leads to better adjustment and coping and increased well-being. However through the introduction of outward-directed meditations, there is a movement toward the engagement of empathy, compassion and altruistic behaviour towards others. Kristeller and Johnson offer the following account from a binge eating and mindfulness study of such a transcendent experience resulting from a self-forgiveness meditation:

In our work with individuals with eating disorders (Kristeller & Hallett, 1999) we include a forgiveness meditation late in the eight-week treatment. At this point most individuals report dramatic shifts in their relationship to food – they are able to discriminate between physical hunger and emotional hunger, and find that they can savor even favorite foods without losing control. The forgiveness meditation begins with asking them to forgive themselves for not taking care of their body, for the harsh judgments they have made of themselves, for using food to comfort themselves. This is a very powerful emotional meditative experience. For many participants, the focus of the forgiveness shifts spontaneously from forgiveness of themselves to forgiveness of others. For one woman, the meditation experience facilitated forgiveness toward an abusive father and husband. When she came in the week following the introduction of the forgiveness meditation, she said that she had finally let go of 30 years of anger – and of the need to cover that anger with eating uncontrollably in the middle of the night.

(Markeller & Johnson, Zygon, 40, 2005, p.402)

Mindfulness and Coping

Coping has been defined as the process or effort to manage a stressful situation (Lazarus and Folkman, 1984). Stress is appraisal-based and Folkman (2006) at a talk given at a conference on mindfulness proposed that the practice of mindfulness could
result in increased clarity about oneself and one’s situation, and thus facilitate more realistic appraisals and more adaptive coping. Folkman described how mindfulness could contribute to three types of coping: emotion-focused, problem-focused and meaning-focused.

Emotion-focused coping strategies are varied and range from distancing and experiential avoidance on the one hand to seeking emotional support and positive reappraisal on the other. Mindfulness, by replacing experiential avoidance with acceptance of all thoughts and experiences, even noxious ones, is a type of emotion-focused coping. In terms of problem-focused coping, the practice of mindfulness can facilitate letting go of impossible goals, thus allowing resources to go toward small but attainable goals and thus helping to restore some sense of control, which is associated with positive affect and improved mood. In terms of meaning-focused coping, the practice of mindfulness can bring greater clarity to one’s values and beliefs, and infuse ordinary events with positive meaning in a greater frame of reference. For example, even in dire conditions, mindful moments allow one to notice and be touched by the beauty of nature.

People experience positive emotions even when stressed (Folkman & Moscowitz, 2000 & 2004), for example, positive emotions were found to co-occur with negative emotions even in dire circumstances such as the death of a child and in cases of severe spinal cord injury. While negative emotions heighten arousal and narrow one’s focus to face a threat, positive emotions reduce the arousal from stress and broaden one’s possibilities for attending, thinking and behaving (Tugade, Fredrickson & Barrett, 2004).
Positive emotions promote health and help people overcome negative emotions faster. Folkman suggests that mindfulness can reinforce positive beliefs about oneself and the world, and in conditions of ongoing stress, mindfulness practice generates positive states of mind.

**Efficacy Research on MBSR and Related Mindfulness Interventions**

The research on mindfulness in the areas of increased positive states of mind, emotional regulation, and empathy and self-compassion is relevant to forgiveness. These will be dealt with in four separate sections.

*MBSR and increased positive states of mind.* Research on MBSR consistently shows that the treatment is associated with decreases in psychological symptoms and improved quality of life. MBSR was first studied with chronic pain patients (Kabat-Zinn, 1982; Kabat-Zinn, Lipworth & Burney, 1985) and anxiety patients (Kabat-Zinn et al., 1992). Reductions in psychological distress were reported that lasted for up to four years for chronic pain patients (Kabat-Zinn, Lipworth, Burney & Sellers, 1986) and up to three years for anxiety patients (Miller, Fletcher & Kabat-Zinn, 1995).

In studies of fibromyalgia patients, women with binge eating disorder, cancer patients, and patients with heterogeneous diagnoses both in the United States and in Germany, the groups of patients who completed MBSR programs reported less psychological distress from their symptoms and improved quality of life (Kaplan, Goldenberg & Galvin-Nadeau, 1993; Kristeller & Hallett, 1999; Speca, Carlson, Goodey & Angen, 2002; Reibel, Greeson, Brainard & Rosenzweig, 2001; Majumdar, Grossman,
Dietz-Waschokowski, Kersig & Walach, 2002). Two reviews of mindfulness meditation and oncology (Smith, Richardson, Hoffman & Pilkington, 2005; Ott, Norris & Bauer-Wu, 2006) have concluded that MBSR and mindfulness meditation interventions are credible self-administered interventions to enhance the well-being of persons living with cancer.

Exploratory MBSR studies have been carried out with patients with traumatic brain injury, chronic fatigue, heart disease, menopausal hot flashes, or sexual difficulties following gynecologic cancer (Bedard et al., 2003; Surawy, Roberts & Silver, 2005; Tacon, McComb, Caldera & Randolph, 2003; Carmody, Crawford & Churchill, 2007; Brotto & Heiman, 2007). The results consistently suggest that MBSR is a good general intervention to help clinical patients cope better and experience improved quality of life, although it is noted that in many cases the numbers of research participants were small or the studies lack active control groups.

Studies of MBSR in non-clinical populations have also produced results of better coping and more positive states. Medical students taught mindfulness reported fewer psychological symptoms, better coping and increases in spiritual experiences compared to controls (Astin, 1997). In another study that compared medical students who took MBSR to a control group of students who participated in a didactic seminar on complementary medicine, the MBSR group scored significantly lower on total mood disturbance. As both groups of medical students approached their final exams, the MBSR group’s level of anxiety remained lower while the anxiety of the control group increased,
suggesting that MBSR is effective for stress management in non-clinical populations and the results endure over time (Rosenzweig, Reibert, Greeson, Brainard & Hojat, 2002).

University educated professionals with high levels of stress reported significant decreases in daily hassles, psychological distress and medical symptoms after completing an MBSR program, and these results were maintained at a three month follow-up (Williams, Kolar, Reger & Pearson, 2001). College-educated adult volunteers likewise reported significantly lower stress, increased mindfulness self-efficacy and increased positive states of mind after completing an 8-week mindfulness intervention (Chang et al., 2004).

In a randomized controlled study by Davidson et al. (2003) to test the effects of MBSR, twenty-five workers at a large company received training in MBSR compared to sixteen waitlist control subjects. Previous research had shown that individuals with higher levels of left prefrontal brain activity had more positive dispositional mood and better immune response to influenza vaccine (Rosenkranz et al., 2003). In the research by Davidson et al. (2003), both the MBSR group and the control group were stressed with antibody injections. Subsequent EEGs showed that MBSR training was associated with increased activity on the left side on the brain. Both immediately after MBSR program completion and up to four months after the program ended, antibody responses were higher in the MBSR group. In addition, individuals who showed the greatest left-side activation also had the greatest antibody response.

A meta-analysis (Baer, 2003) of twenty-one mindfulness-based interventions calculated an overall mean effect size of 0.59 (Cohen’s $d$) and an overall mean effect size
of 0.59 for post treatment follow-up studies and it was concluded that mindfulness was effective in reducing stress and improving health and well-being, and brought individuals with mild to moderate psychological distress into the normal range.

Another meta-analysis (Grossman, Niemann, Schmidt & Walach, 2004) looked at a total of twenty published and unpublished studies on mindfulness, of which six were controlled studies comparing mindfulness treatment to an active control condition to control for the non-specific effects. Those six controlled studies showed a mean effect size of almost 0.49, while four waitlist control studies showed a mean effect size of 0.58.

On the other hand, another review of fifteen published mindfulness research studies that used some type of control group (active, waitlist or no treatment control) and reported outcomes on anxiety and mood symptoms, found that the evidence for a decrease in symptoms of anxiety and depression after mindfulness-based interventions was inconclusive (Toneatto & Nguyen, 2007). Only four of the fifteen studies specifically treated mood disorders, and those four studies did not show an effect of MBSR on depression and anxiety. Of the eight studies that reported statistically significant decreases in anxiety or depression, none used an active control group to control for non-specific variables. Toneatto and Nguyen suggest future better controlled research is needed.

It is possible that therapist allegiance or researcher allegiance may be a factor in many of these studies. For example, Kabat-Zinn, obviously a strong believer in the efficacy of MBSR, conducted the meditation instruction in the Davidson antibody injection study. Davidson is a distinguished neuroscience researcher who has an interest
in the intersect of science and eastern contemplative traditions particularly Buddhism. It is known that therapists and researchers who are invested in the treatment can positively influence outcomes (Luborsky et al., 1999). There is evidence from comparative psychotherapy research that the correlation between therapist allegiance and outcome of treatment is high and can explain as much as 69% of the variance in outcomes (Luborsky et al., 2002).

Hope and positive expectancy on the part of participants are known to influence outcomes. Expectation is thought to be central to the placebo effect. It is well known that people assigned to a placebo (inactive) treatment can show positive gains. For example, placebo treatments have been shown to have effect on pain (Montgomery & Kirsch, 1997), Parkinson’s disease (Benedetti, Mayberg, Wager, Stohler & Zubieta, 2005) and unipolar depression (Mayberg et al., 2002). Delmonte (1981) found that prior positive expectancy of benefit from meditation practice is related both to the frequency of practice and to the reported benefits of such practice. Expectancy may account for the reductions observed in anxiety and increases in positive states of mind. An interesting but now old experiment by Smith (1976) found that TM meditation did not reduce anxiety in anxious college students any more than a believable meditation “PSI” (periodic somatic inactivity) which he constructed to be the antithesis of meditation but was designed to control for positive expectancy and for the ritual and/or therapeutic effects of a period of sitting down twice daily.
Mindfulness and improved emotional regulation. It has been thought that mindfulness can help one deal with emotions more effectively and flexibly. There is some evidence that suffering in emotional disorders is exacerbated by rumination, or persistent negative thinking, brooding or worrying about past events, judging one's emotions as unacceptable, and/or suppressing one's emotions (Campbell-Sills, Barlow, Brown & Hoffmann, 2006). Rumination on the causes of one's depression prolongs depressive mood (Mor and Winquist, 2002) and rumination on the causes of one's anger prolongs anger (Rusting and Nolen-Hoeksema, 1998). Suppressing emotions appears to increase sympathetic arousal associated with negative emotion and attenuates positive emotional experiences. Experiential avoidance of unpleasant thoughts, feelings or sensations has been shown to increase the frequency of their occurrence and increase distress. There is evidence that mindfulness training is associated with reduced rumination in non-clinical subjects, as well as increased emotional flexibility and increased ability to self-regulate negative affect.

An individual practicing mindfulness is aware of present moment sensations, thoughts or emotions, mentally notes them, and lets them go without employing them in cognitive activity. Often noting them involves identifying with a word or label, for example, labeling a thought as “thinking”. The inward mental labeling of negative affect may result in differential activation of the amygdala (Lieberman et al., 2007). An fMRI study tested the hypothesis that labeling affective states disrupts or dampens affective responses (Creswell, Way, Eisenberger, & Lieberman, 2007). Twenty-nine undergraduates participated in the study. The experimental manipulation (affect labeling
versus gender labeling of pictures of faces while undergoing fMRI) produced evidence that labeling negative affect was differentially associated with attenuated amygdala activation and improved neural affect regulation for participants high in trait mindfulness after neuroticism, public self-consciousness and social anxiety were controlled for.

Brown and Ryan (2003), in developing their measure of mindfulness, found that mindfulness was associated with positive states of mind, self-awareness, openness to experience, emotional intelligence, and was negatively correlated with rumination. Arch and Craske (2005) compared two groups of undergraduates, one group receiving a fifteen-minute focused breathing induction, and the other group receiving a fifteen-minute induction of unfocused worry. The breathing group had lower overall negative affect and showed decreases in intensity and negativity of their emotion reactions to disturbing picture slides.

Ortner (unpublished doctoral dissertation, 2006), using an experimental manipulation, found that after mindfulness training individuals were able to disengage from negative or unpleasant stimuli more quickly, and this resulted in reduced ratings of intensity of feelings in response to negative stimuli, as well as reduced signs of physical arousal. This effect was not seen for an equivalent group of individuals who received relaxation training. This study was methodologically robust in that the researcher did not conduct the relaxation or mindfulness training herself and was blind to group assignment of participants. On the basis of these results, Ortner speculated that improved emotional flexibility might mediate the relationship between mindfulness and enhanced psychological well-being that has been reported in many studies, speculating that the
individual who can more easily let go of unpleasant emotions will have more cognitive resources available and can therefore make better decisions for themselves which ultimately improves their psychological well-being.

Erisman, Salters-Pedneault and Roemer (2005) conducted a preliminary study on the relationship of mindfulness and emotional regulation in a large sample of about four hundred undergraduates. They used two self-report surveys of mindfulness (Mindful Attention Awareness Scale, and Self-Compassion Scale) and of emotional dysregulation (Depression, Anxiety and Stress Scales, and Difficulties in Emotional Regulation Scale). After shared variances associated with symptoms were accounted for, and when areas of overlap between mindfulness and emotional regulation were removed, mindfulness showed a significant relationship with emotional regulation overall.

Jain et al. (2007) found that mindfulness training resulted in reduced ruminative thoughts and behaviours. A three-group randomized controlled trial compared mindfulness, relaxation training and a no treatment control. Both mindfulness training and relaxation training resulted in reduced distress and improved positive mood states but only the mindfulness condition resulted in reduced ruminative thoughts and behaviours. In a study of coping with dysphoric mood (Broderick, 2005), a sad mood was induced in a sample of one hundred and seventy-seven undergraduates who were then placed in a mindfulness condition (an eight minute guided meditation focusing on self-acceptance and awareness of the breath), or a distraction, or a rumination condition. Mindfulness was associated with lowest levels of dysphoria, significantly lower than both rumination and distraction.
Nursing professionals who took a mindfulness course had significantly lower scores on the OCD subscale (negative rumination, behaviour, and cognitive inefficiency) of the SCL-90-R, compared to colleagues who took an advanced leadership seminar, where both curricula centered on stress reduction in health care environments (Bortz, Summer & Pipe, 2007). The authors speculated that decreased rumination might account for the positive results observed in so many MBSR studies.

A significant effect for an MBSR intervention on reducing ruminations scores ($p < .001$) was seen in a study with a clinical sample of twenty-three individuals, all with lifetime mood disorders (Ramel, Goldin, Carmona & McQuaid, 2004). Even though rumination scores significantly decreased, within-subject reductions in affective disturbance and dysfunctional attitudes were not significant after ruminative tendencies were covered out. Eleven of these participants were subsequently matched on age, gender, anxiety and depression (BDI) score with eleven MBSR waitlist participants. Between-group analysis showed significantly lower rumination for the MBSR treatment group. Half of this sample also met criteria for lifetime anxiety disorder and all the waitlist participants were later offered MBSR after the trial. The authors contend that the primary effect of MBSR is to change one’s relationship to one’s thoughts rather than their contents. The above results suggest that where clinical levels of sad mood or anxiety are involved, the mindful labeling of negative affect (Cresswell et al., 2007) may be insufficient to show a beneficial effect.
Mindfulness and increased empathy. Empathy is the ability to understand and respond to another’s experience. In Full Catastrophe Living, Kabat-Zinn seems to contend that mindfulness increases levels of empathy. However in four studies examining mindfulness interventions, only two studies found a qualified effect for mindfulness on empathy, a third was inconclusive and a fourth study found no effect.

Shapiro, Schwartz, and Bonner (1998) found that an MBSR program was effective with medical students not only in reducing stress and depression, but also in enhancing their potential as doctors, fostering spiritual growth, and increasing their scores on an overall empathy measure. However, a loving kindness meditation, a forgiveness meditation, and some experiential exercises designed to cultivate mindful listening skills and empathy were included in addition to mindfulness, and these may account for the increase in empathy rather than the mindfulness training. Shapiro et al. (1998) found that reduction in trait anxiety best explained increase in empathy.

Wang (unpublished doctoral dissertation, 2006) compared psychotherapists who do mindfulness meditation to those who do not. Twenty-one psychotherapists in the study who were meditators scored statistically significantly higher on a self-report measure of empathy (Balanced Emotional Empathy Scale) than the thirty-five non-meditators. There were no differences between groups of psychotherapists on measures of attention or awareness. Wang does not provide the exact gender breakdown although she attempted to make the groups equal. It is well known that women score higher on empathy than men. If there were more women in the group of psychotherapists who meditate then gender could account for the result and not mindfulness practice.
Beddoe & Murphy (2004) looked at a convenience sample of eighteen nursing students who took an MBSR course to see in part if mindfulness fostered empathy. After completing the course, the nursing students reported decreases in mean anxiety scores and improvements on subjective physical and mental health and well-being but results for empathy were inconclusive. This might be due to the fact that the students scored very high at pretest on the empathy scale (IRI: Interpersonal Reactivity Index, Davis 1983). The nursing students were 40%-50% higher than their female college student age peers (Atkins & Steitz, 2000; Davis, 1980). After completing the course, the nurses’ scores on Perspective Taking and Empathic Concern trended even higher. This may or may not suggest an effect of MBSR on empathy but a much larger group of subjects would be needed to see an effect.

Galantino, Baiime, Maguire, Szapary & Farrar (2005) looked at the effectiveness of an 8-week mindfulness meditation combined with cognitive therapy on salivary cortisol and on self-report measures or mood, burnout and empathy in a group of 84 health care professionals in hospital setting. Although there is research evidence that psychological stress can increase serum cortisol, Galantino et al. found no change in salivary cortisol between baseline and 8 weeks. There was no change in empathy scores on the IRI, although improved mood and less exhaustion was observed at the end of the program. There was no control group in this study.

The above studies do not provide conclusive evidence of an effect of increased empathy after mindfulness training.
Mindfulness and self-compassion. Some studies on MBSR and mindfulness interventions employ a measure of self-compassion. Neff (2003a), who developed the construct, describes self-compassion as consisting of three interrelated and mutually engendering components: self-kindness or offering non-judgmental understanding to the self; awareness of common humanity, in part, acknowledging that experiences of failure and pain are part of the human condition; and mindfulness, awareness with acceptance of what is. Neff thought that self-compassion was related to self-forgiveness.

A randomized trial of an eight week MBSR treatment with ten health care professionals actively working in clinical practice versus eighteen in a wait list control group, found that those in the treatment condition not only reported reduced stress but also reported increased self-compassion. The authors thought that self-compassion mediated the results for stress (Shapiro, Astin, Bishop, & Cordova, 2005).

A cohort controlled study of therapists-in-training found that therapists who took MBSR course showed significant decline in stress, negative affect, rumination, state and trait anxiety, as well as significant increase in positive affect and self compassion, compared to a control group that took an equivalent length psychological theory course (Shapiro, Brown & Biegel, 2007).

Although these results are interesting, it should be noted one-third of the definition of Neff’s construct of self-compassion is the definition of mindfulness, which makes it difficult to interpret the above results.

Summary of Mindfulness, MBSR and Efficacy Research
MBSR is a group intervention teaching mindfulness awareness of moment to moment experience within attitudes of non-judging and acceptance. Mindfulness interventions have been applied to a wide variety of clinical and non-clinical samples with, in the majority of cases, a variety of positive outcomes. The research reviewed has generally supported the position that mindfulness correlates with modest increases in positive states of mind, emotional flexibility, and decreases in stress and rumination. Research on the effect of mindfulness on empathy was inconclusive. A caveat, and a big one, is that many studies involve small numbers of participants and uncontrolled designs, largely self-report measures, and in many studies, the researchers and/or therapists who delivered the mindfulness treatment held allegiance to the treatment.

Forgiveness

In this section, other-forgiveness and self-forgiveness will be defined, popular understandings of forgiveness, models and benefits of forgiveness will be described, as well as the effect of personality factors on forgiveness. Selected forgiveness research will be reviewed.

Definition of Other-Forgiveness

The concept of forgiveness is complex and has a range of definitions. The Indo-European root of the word forgiveness means to give (ghabha), that is, to give up or give away anger and the actions associated with it, retribution and revenge (Sanderson &
Linehan, 1999). The early 18th century Anglican bishop and philosopher, Joseph Butler, in his Fifteen Sermons [1827, online: http://anglicanhistory.org/butler/rolls/index.html] defined forgiveness as the checking of revenge or forbearance. An act of harm to us causes resentment, which is natural and protects us against further injury, but Butler says that revenge (or malice or retaliation) in return increases harm, and thus is not morally justifiable (Newberry, 2001). Forgiveness, for Butler, is giving up the right to revenge and the checking of resentment or moral hatred toward the person who committed the harm. It is possible that Butler may have been taking into account what biologists call displaced aggression, that is, when an injured party takes out their feelings of anger on innocent people they encounter who had nothing to do with the harm.

Victims of a deliberate harm suffer in two ways (Murphy, 2003). They suffer the unjustified act of abuse itself (physical or verbal harm) and they also suffer from the meta-communication that "I count and you do not, and I may use you as a mere thing" (Murphy, p.77). Both types of harms are objectively observable harms. Angry thoughts and feelings and resentment fester over time in the person who has suffered the harm. John Perry, on the Forgiveness episode of his Philosophy Talk radio program (Perry, J., & Taylor, K., 2006. September 26), suggests that forgiveness takes the "me" out of it, that is, the excess aggrieved anger and resentment subside and one becomes able to see the harmful act more objectively. Removing the excess emotion may be crucial to forgiveness. This view of forgiveness may be termed more psychological and unilateral. While some think that forgiveness requires that a wrongdoer fulfill some conditions, Perry does not.
On the other hand, the philosopher Charles Griswold (2007) argues that the paradigmatic case of interpersonal forgiveness requires that the wrong-doer acknowledge having wrongfully committed an act that cause unmerited harm and suffering, feel remorse and perhaps pledge not to do the wrongful act again. Having done this, however, the harm-doer still cannot demand forgiveness from the person they hurt, because forgiveness is something that only the person who was hurt can freely grant. Griswold goes on to say, however, that if conditions have been fulfilled and the wronged person still does not forgive, then it is a psychological matter.

Some believe that in forgiveness the wronged person should come to feel benevolence toward the wrongdoer (North, 1987). North states “if we are to forgive, our resentment is to be overcome not by denying ourselves the right to that resentment, but by endeavoring to view the wrongdoers with compassion, benevolence, and love while recognizing that they have willfully abandoned their right to them”. Worthington (2005) helpfully differentiates forgiveness in the following way. If forgiveness is granted to a stranger or someone with whom one cannot interact, in such a case forgiveness eliminates negative feelings and the forgiver regains a neutral stance toward the person who hurt them. He terms this unilateral forgiveness. However, in the case where the victim knows the wrongdoer, forgiveness can entail not just the end of negative feelings but also the development of positive emotions again toward the wrongdoer.

Subkoviak et al. (1995) argue that forgiveness is a stance by one person toward another, and may not require the antecedent of remorse on the part of the offender. It is a stance the victim takes regardless of what the offender does. Subkoviak et al. go on to say
that forgiveness is not necessarily reconciliation. Reconciliation is when two people come together in a behavioural way and for which there are prior requirements acceptable to both sides. Reconciliation is not always advisable. Noll (2003) has found that victims of child abuse who gave up revenge and anger and moved on with life but who did not reconcile with their offenders were better off than those who tried to reconcile.

Enright and his colleagues have developed a psychological definition of interpersonal forgiveness based on the work of North, which involves cognitive, affective and behavioural changes within the individual with regard to the incident of harm and the wrong-doer. Their definition and the measure they developed will be used in this study. Enright and colleagues define forgiveness from the point of view of the forgiver and as “the willingness to abandon one’s right to resentment, negative judgment, and indifferent behaviour toward one who unjustly injured us, while fostering the undeserved qualities of compassion, generosity and even love toward him or her (Enright, Rique & Coyle, 2000, p.1).

**Definition of Self-Forgiveness**

If one harms another, it is still the prerogative of the harmed person to forgive. Self-forgiveness may be required where one cannot forgive oneself for something one did, or for something one should have done but did not. Self-forgiveness involves the acceptance of responsibility and pain for actions one has done or failed to do. With self-forgiveness one realizes that one has committed an offence, but is no worse than anyone else who has done so. Failure to forgive oneself for a wrongdoing is associated with
social withdrawal and loneliness (Day & Maltby, 2005) anxiety, distrust, depression and lower psychological well-being (Mauger et al., 1992) and neuroticism and internalization (Maltby, Macaskill & Day, 2001). Self-forgiveness has been described as the feeling that a debt one owes is finally paid, so that the urge to self-punish is extinguished and one feels normal again and life makes sense (Flanigan, 1996). Self-forgiveness sometimes may involve a commitment to personal change for the better for the sake of others. Enright and colleagues define self-forgiveness as “facing one’s wrongs while abandoning self-resentment and replacing this emotion with compassion, generosity and love” (Enright & The Human Development Study Group, 1996, p. 116).

**Popular Understandings**

Philosophers differentiate forgiveness from simply forgetting the harm over time, from condoning or minimizing the harm, and from excusing the wrong-doer, because each of these diminishes the moral responsibility of the wrong-doer for the act they committed (Murphy & Hampton, 1988). However, popular accounts of forgiveness do not always make these distinctions. Autobiographical narrative accounts of actual experiences of forgiveness were examined by Zechmeister and Romero (2002). A narrative is assumed to contain those incidents that the narrator views as meaningful, important and critical to the meaning of the story (Gergen & Gergen, 1988). Zechmeister and Romero found that what people meant by forgiveness was varied and often blurred with excusing or condoning, and even in narratives identified as narratives of forgiveness, subjects described experiencing some ongoing anger and negative consequences.
In a study of a European sample of over three hundred students and their parents (Mullet, Girard and Bakhski, 2004) participants agreed that forgiveness involves a forgiver, but only 23% agreed that forgiving someone meant regaining affection or sympathy toward them. One third thought that forgiveness could encourage repentance from the offender, and almost half thought that the identity of the forgiver could be broader than just the victim. Almost half thought that the forgiver could be somebody in close relationship with the victim and that the forgiven could be an unknown offender or an even abstract entity like an institution. Very few individuals thought that forgiveness was immoral and would circumvent justice.

Models of Forgiveness

There are several models of forgiveness in the psychological literature. Three important models are a stress-and-coping model, a social motivational model, and a cognitive-behavioural-affective process model. Most agree that forgiveness is a process over time.

A biopsychosocial stress-and-coping theory of forgiveness (Worthington, 2006; Worthington & Wade, 1999) runs as follows: hurts and offences are experienced as violations of varying degrees and cause an “injustice gap” which is appraised as a form of threat. The victims have strong emotional responses of anger and sometimes fear that are experienced in the body. Rumination on these negative emotions and on aspects of the hurt trigger unforgiveness. Unforgiveness is a stress reaction to the hurt. In support of this argument, Worthington (2006) cites studies showing that unforgiveness and stress are
characterized by very similar physiologic patterns of activity in the brain, hormone
system, sympathetic nervous system, cardiovascular and respiratory systems and blood
chemistry.

Increasing levels of rumination and mental states of hostility trigger increasing
levels of unforgiveness/stress which depress self-esteem and self-confidence. The hurt
person tries to cope with the suffering they are feeling, and can arrive at a decision to
forgive as a form of problem-focused coping. The rational decision to forgive (problem-
focused coping) which deals with one’s own suffering, is then followed by emotional
forgiveness (emotion-focused coping) in order to bring one’s emotions in line with one’s
decision. Worthington and Wade (1999) call this process the emotional-replacement
hypothesis, in that emotional forgiveness is generated by first juxtaposing positive
emotions of empathy, sympathy and compassion with the negative emotions one feels.
Both positive and negative emotions can exist at the same time. The positive emotions
eventually neutralize or replace all or part of the negative emotions. But while motivation
and behaviour toward the wrong-doer change, depending of the circumstances, the
negative emotions may never be completely replaced. In support of this hypothesis,
Worthington cites evidence that positive emotions and negative emotions are different
systems rather than opposite ends of the same construct, including neuroimaging studies
that show that empathy and forgivability judgments are located in the same left front
temporal region of the brain (Farrow et al., 2004, Spinella, 2004).

A social motivational model constructs forgiveness as “a suite of prosocial
motivational changes that occurs after a persons has incurred a transgression” to the
extent that the salience of the hurt is decreased (McCullough, Worthington & Rachal, 1997). This concept locating forgiveness at the level of motivation links it to other prosocial concepts such as empathy and altruism and personality factors of agreeableness and emotional stability, and sees forgiveness as a special case of empathy.

Enright and the Human Development Study Group offers two process models of forgiveness – a developmental model of how a person’s capacity for forgiveness develops from childhood to adulthood, and a model of the process of forgiving a specific hurt.

Enright bases his developmental model of forgiveness in Piaget’s age-based developmental stages and Kohlberg’s levels of moral development. Briefly there are six stages (Enright, Santos & Al-Mabuk, 1989; Enright & The Human Development Study Group, 1991). The first two stages required retribution from the wrong-doer. The lowest stage, Revengeful Forgiveness, requires punishment to a similar degree (“an eye for an eye”). Conditional Forgiveness (stage two), requires restoration to the victim of what was taken away. The middle stages involve pressure from outside the individual. In stage three, Expectational Forgiveness, forgiveness is granted because one’s peers or family expect it. At stage four, Lawful Expectational Forgiveness, forgiveness is granted because one’s religion or philosophy of life demands it. The highest stages have altruistic motivations. Stage five, Forgiveness as Social Harmony, is forgiveness to restore harmony in society and maintain peaceful relations, and stage six, or Forgiveness as Love is unconditional forgiveness arising from agape and requiring nothing in return. Enright’s definition of forgiveness seems to be set in stage five and six. However, in trials, the authors found that individuals typically reasoned at two adjacent levels, with the mean of
nine and ten year-olds close to stage two forgiveness, and the mean of fifteen and sixteen year-olds was close to stage three forgiveness. The mean of college students and adults was close to Stage 4 forgiveness, but because 40% of individuals scored below the mode for their age group, Enright termed them “soft stages”, or forgiveness styles that could be encountered at each age level. There is other evidence that forgiveness develops with maturity and the older someone is; the more likely they are to forgive. The final stage of ego development according to Erikson (1964) is coming to terms with and accepting one’s life. Subkoviak et al. (1995) found that forgiveness is likely to increase over the life span and Mullet and Girard (2000) found that the elderly are more likely to forgive regardless of circumstances.

In addition to stages of forgiveness reasoning, there are models of the process of other-forgiveness which are tied to forgiveness interventions. Enright and The Human Development Study Group (1991) explain their decision-based process of other-forgiveness as taking place in twenty steps in four distinct phases: uncovering, decision, work, and deepening. During the uncovering phase, the victim explores their pain and hurt, and anger and what it is doing to them. This leads to a decision to solve the problem (decision phase), to consider the option of forgiveness, and to commit to that option. During the work phase, the victim may see the offender in a new light and develop compassion or empathy for the offender. Finally, in the deepening phase, the victim may find some meaning in the hurtful event, possibly find a new purpose in life and experience emotional relief (adapted from Baskin & Enright, 2004).
Worthington’s model of the forgiveness process (McCullough and Worthington, 2005) is based in his stress-and-coping model of unforgiveness. It focuses on teaching how empathy works and encourages victims to put themselves in the offender’s shoes. The steps are recalling the hurt, empathy, giving the gift of forgiveness to the perpetrator, committing to forgiveness, and holding onto forgiveness. Mindfulness might have a role to play in the beginning of the forgiveness process which is described as uncovering or recalling the hurt, and becoming aware of feeling of hurt and anger and what it is doing to the individual.

Review of Relevant Research on Forgiveness

This section will survey the research on forgiveness and personality factors and the research on forgiveness and empathy, and forgiveness and rumination, areas which overlap with mindfulness.

Forgiveness and personality factors. Personality factors may affect the disposition to be forgiving. The dominant model among trait personality theorists is the five factor model or NEO (Costa & McCrea, 1992) which hypothesizes that there are five basic personality factors which create characteristic ways of handling the problems of life. These are Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness.

Individuals high on Agreeableness are generally emotionally stable, show more empathy, trust, kindness, altruism and less negative thinking (McCullough, 2001). Emotional stability (Berry, Worthington, Parrott, O’Connor & Wade, 2001) and
Agreeableness (Brose, Rye, Lutz-Zois and Ross, 2005) have been found to be positively correlated with dispositional forgiveness.

Individuals high on Neuroticism are characterized by pervasive negative affect and avoidance behaviour. Neuroticism has been found to be negatively related to forgiveness (Ashton, Jackson, Helmes & Paunonen, 1998; Walker & Gorsuch, 2002).

An examination of self-forgiveness and other-forgiveness in the NEO model using multiple measures of forgiveness (Ross, Kendal, Matters, Rye & Wrobel, 2004), found that Neuroticism was the only significant (negative) predictor of self-forgiveness at \( r = -.62 \) \((p < .001)\) accounting for almost 40% of the variance observed. High scores on the Neuroticism facets of Depression, Anxiety and Vulnerability were most indicative of failure to forgive the self. NEO Agreeableness and all of its six facets were significantly positively correlated with other-forgiveness, at \( p < .001 \), and NEO Agreeableness accounted for 29% of the variance in other-forgiveness. Self-forgiveness and other-forgiveness were found to be dichotomous and distinct dimensions with modest to non-significant zero order correlations between them and were largely orthogonal constructs. These results support Mauger et al.’s (1992) theory that lack of self-forgiveness is related to an intropunitive style, and the lack of other-forgiveness is related to an extrapunitive style (revenge seeking, holding grudges and experiencing anger). In summary, the personality factor research tends to agree that Neuroticism is a strong and reliable negative predictor of self-forgiveness, while Agreeableness has a consistent positive correlation with other-forgiveness.
Forgiveness and empathy. It has been assumed that the development of empathy plays an influential role in forgiveness (Enright & The Human Development Study Group, 1996; McCullough & Worthington, 1995; McCullough, Worthington & Rachal, 1997; Worthington, 1998, Malcolm & Greenberg, 2000). Using a forgiveness intervention, Worthington et al. (2000), found that the amount of forgiveness generated was related to the time that subjects spend empathizing with the transgressor. In some interventions the actions of the offender may be reframed, in other interventions, participants are asked to reflect on empathy and put themselves in the offenders’ shoes. Forgiveness interventions have been found effective for many types of individuals with relationship difficulties, including elderly women in a nursing home (Hebl & Enright, 1993), college students with issues of parental rejection (Al-Mabuk, Enright & Cardis, 1995), incest survivors (Al-Mabuk, Enright & Cardis, 1995; Freedman & Enright, 1996), men whose partners had abortions (Coyle & Enright, 1997) and Christian women angry with a romantic partner (Rye & Pargament, 2002).

McCullough, Worthington & Rachal (1997) view forgiveness as a motivational change facilitated by empathy which weakens a person’s motivation to avoid and/or seek revenge, and causes a person to turn to relationship-building activities instead. The authors define affective empathy as a vicarious emotion congruent with, but not necessarily identical to, the emotion of another person (Batson & Shaw, 1991) and consider it primary to forgiveness in close relationships with perspective taking, or cognitive empathy, that is the ability to understand the position of another, as an important secondary element. They expected to find high levels of empathy in persons
who reported high levels of forgiveness, and they expected to find that apology by the offender would increase empathy in the injured party. Undergraduate volunteers wrote a brief description on a hurt suffered and filled out self-report measures of empathy and forgiving, and provided information on the perceived degree of apology from the offender, and any conciliatory or avoidance behaviours toward the offender. From these accounts, McCullough et al. (1997) found that empathy was causally prior to forgiving, and they found evidence for an Apology – Empathy – Forgiving model in close relationships. Another part of the same study looked at the effectiveness of an empathy seminar designed to teach cognitive and affective empathy to injured parties. Though there were increases in empathy for the treatment group at the end of the empathy intervention, differences between groups had disappeared after six weeks.

McCullough et al. (1998) looked at relationships among variables influencing forgiveness in close relationships. What they found was that empathy mediated the apology to forgiveness relationship. In terms of attributional variables, pre-offence closeness of the wrongdoer and injured party made apology more likely largely because avoidance was not possible. The rumination-revenge pathway was found to be independent of the apology-empathy relationship. Closeness before the offense was related to the amount of rumination that occurred, which was related to the amount of revenge sought, but not to avoidance of the partner.

While women score higher on empathy than men in general, there do not appear to be gender differences in forgiveness. Konstam, Chernoff and Deveney (2001) sampled one hundred and forty-eight graduate students, twenty-six men and one hundred and
eleven women (age M = 34, SD = 12) and found that individuals who scored high on the Empathic Concern and Perspective Taking scales of the Interpersonal Reactivity Index also scored high on the Enright Forgiveness Inventory and in their ability to forgive. A positive relationship was observed between anger reduction and forgiveness, and guilt proneness was found to be positively related to total forgiveness, as guilt prone individuals tended to use more constructive strategies for managing anger, such as discussion. The authors found that women tended to increase in ability to forgive through greater guilt proneness, reduction in anger and through feelings of detachment. Women tended to think that they must forgive to heal relationships. Men did not think forgiveness was very important to relationships, and the older a man was, the more prone to shame he was, and the less likely to forgive. However, the small sample of only twenty-six men in this study leaves the latter outcome open to challenge.

In a sample of 324 British undergraduates (Macaskill, Maltby & Day, 2002) emotional empathy and other-forgiveness were significantly correlated for men but not for women. Empathy and self-forgiveness were not significantly correlated for either men or women. Finally, Toussaint and Webb (2005) found although women had higher empathy scores, forgiveness did not differ by gender, although empathy was associated with forgiveness for men but not for women suggesting that men experience the forgiveness process differently from women.

 Forgiveness and rumination. Rumination is considered to be a poor coping strategy and a poor method of emotional regulation. Repeatedly rehearsing bad memories and dwelling of the implications tend to reinforce avoidance or revenge seeking.
Rumination is associated with higher negative affectivity and with reduced life satisfaction, and increased posttraumatic stress symptoms and depression (Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Parker & Larson, 1994).

In a study of American undergraduates, increases in rumination after an interpersonal transgression were found to be associated with decreases in forgiveness, mediated by anger towards the transgressor, and moreover the increases in rumination came before reductions in forgiveness, rather than the other way around (McCullough, Bono & Root, 2007). Similarly, a study with a sample of students in Mumbai, India found that lower levels of forgiveness predicted increased rumination and stress (Suchday, Friedberg & Almeida, 2006).

A study of one hundred and eighty-three first-year undergraduates (Ysseldyk, Matheson and Anisman, 2006) questioned if all types of rumination had negative effects. It was hypothesized that ruminative brooding (dwelling on negative thoughts and emotions) would be associated with depressive affect and poorer psychological and health outcomes, while ruminative reflection (cognitive pondering akin to problem-solving) would be associated with dispositional forgiveness and greater life satisfaction. Analysis found, however, that ruminative reflection did not have beneficial effects and all types of rumination were related to depressive affect. People in the study who were high in the disposition to forgive were less likely to engage in ruminative brooding and this was important in accounting for their lower level of depressive affect and greater life satisfaction.
The above findings suggest that reduction in rumination can help with the forgiveness process, but in all the studies the youth and the limited nature of the sample limit the generalizability of the findings.

Research on Both Mindfulness and Forgiveness

To my knowledge, there are only two studies that consider both mindfulness and forgiveness, that of Kyrimis and that of Humphrey, both of which are unpublished doctoral dissertations. Kyrimis’s (unpublished doctoral dissertation, 2006) study was intended to confirm the previous work which had theorized that awareness and acceptance of experience, including acceptance of emotion, might be a mechanism by which mindfulness produces its effects (Bishop et al., 2004). It is known that suppression of emotions is associated with greater thought intrusions and greater anxiety, but that the acceptance of emotions has generally positive effects. Kyrimis hypothesized that the transition from the awareness of emotion to acceptance of emotion in mindfulness was facilitated by increases in self-compassion and increases in forgiveness and decreases in self-judging thoughts.

In her study, one hundred and forty-two volunteers, with varying degrees of mindfulness experience from an established group of mindfulness meditators in the community, filled out a number of self-report measures. Mindfulness was operationalized as length of experience of meditation. Forgiveness was defined as the reframing one’s thoughts, emotions or behaviours toward the wrong-doer, the act of harm, or the sequelae of the act of harm, from negative to neutral or better, used the
Heartland Forgiveness Scale (Thompson et al., 2005). Self-compassion was measured by the Self Compassion Scale (Neff, 2003b). According to Neff, self-compassion includes self-forgiveness, so Kyrimis attempted to remove questions that overlapped with other measures. Emotional awareness was measured by the Toronto Alexithymia Scale (TAS: Bagby et al., 1994). Emotional acceptance was operationalized as low scores for fear of emotion on the Affect Control Scale (ACS: Williams, Chambless & Ahrens, 1997) and high scores for emotional approach coping strategies on the Emotional Processing Scale (EPS: Stanton, Kirk, Cameron & Danoff-Burg, 2000).

Kyrimis found partial support for her thesis, in that meditation experience of five years or more was associated with highest levels of emotional acceptance and self-compassion and lowest levels of self-judgment. Length of meditation experience, however, was not associated with emotional awareness. Results were mixed regarding moderators of emotional acceptance. Fear of emotion on the Affective Control Scale did not have a significant relationship with length of mindfulness practice. However, higher scores on emotional coping strategies on the EPS were significantly related to length of meditation experience. Finally length of meditation experience was not associated with self-forgiveness. In this study forgiveness, self-compassion and self-judgment did not moderate a relationship between emotional awareness and length of mindfulness practice (as no such relationship was observed). Forgiveness, self-compassion and self-judgment initially seemed to partially moderate between emotional acceptance and length of mindfulness practice, but when age and social affiliation variables (strength of connection to the meditation community, and friendships and social support in the meditation
community) were controlled for, the relationships between forgiveness, self-compassion and self-judgment and emotional acceptance disappeared. Measures of self-compassion and forgiveness may have overlapped, but neither was related to emotional acceptance.

A difficulty with this study is that length of association with the mindfulness community was used as a proxy for mindfulness skillfulness, implying that the longer one has been nominally doing mindfulness the better one is at it. This may not be the case. People belong to groups for a variety of social affiliative reasons and people have different motivations and natural aptitudes as well.

The second study, also an unpublished doctoral dissertation, was a study of a mindfulness stress management intervention with forgiveness as a specific goal (Humphrey, unpublished doctoral dissertation, 1999). Twenty women (ages from 22 to 63, M = 45) participated in an eight-week intervention, whose primary goal was to facilitate forgiveness of a deep hurt, and whose secondary goal was to reduce stress and anxiety. The participants were recruited at an obstetrical/gynecological medical practice. On a preliminary survey they reported a painful forgiveness issue and higher than average levels of anxiety. Nine individuals were randomly assigned to an intervention group and eleven individuals to a waitlist condition. The intervention included the practice of forgiveness meditations, visualization, relaxation techniques, mindfulness, and loving kindness meditations, as well as didactic material on stress and forgiveness, all of which were developed by the author of the thesis. Audiotapes by the author plus accompanying workbooks were the main component of the intervention. The author made weekly telephone calls to the participants who kept a record of their practice time.
(only seven of the nine experimental group participants submitted practice records). Some individuals reported practicing more than required. Measures of anxiety, forgiveness and depression were completed pre and post intervention. The intervention group had a significantly higher forgiveness profile, less state and trait anxiety and less depression than the waitlist condition as evaluated by t-tests on change scores. However experimenter effect or therapist allegiance may have played a role along with demand characteristics arising from the weekly telephone calls. As well the small size of the groups limits the generalizability of the results.

**Overall Summary**

Mindfulness meditation is the most prevalent type of meditation in therapeutic use at this time and significant numbers of individuals are participating in mindfulness groups in North America. The essence of mindfulness and MBSR is the non-judgmental awareness of present moment experience with an attitude of acceptance. Many studies have been reviewed here which report decreases in stress, rumination and psychological distress and increases in positive mood and well-being in groups who practiced mindfulness.

Other-forgiveness means giving up revenge and retaliation and anger and in some cases developing undeserved feelings of benevolence toward the individual who committed a hurtful act. Forgiveness can allow the injured person to move on with their life, but it does not necessarily always involve reconciliation with the offender. Self-forgiveness involves facing one’s wrongs and replacing self-hatred and self-resentment with self-
reconciliation. There are personal and relationship benefits from forgiveness and physical and mental health benefits from forgiveness. Increases in empathy and reductions in rumination facilitate the process of other-forgiveness.

It is not known whether mindfulness can facilitate the process of forgiveness, but mindfulness has a role to play in the first part of the forgiveness process which is uncovering or becoming aware of feelings of hurt and anger and what they are doing to the individual who has suffered a harm. There is some suggestion that after mindfulness interventions, participants increase in ratings of empathy, and decrease in levels of rumination, and some individuals have reported instances of forgiveness as a result of mindfulness practice.

Forgiveness is an issue in the context of hurt, pain, anger and suffering. Therapists attempt to help individuals with difficult interpersonal relationships and/or unresolved self-blame. Accumulating research suggests that when appropriate forgiveness is achieved, it is therapeutic and healing for an individual. If mindfulness can help facilitate forgiveness where appropriate, then this is potentially valuable knowledge for therapists to have. Mindfulness groups could be legitimately recommended as an adjunct to individual therapy or mindfulness could be incorporated into the therapy itself.

The Hypotheses of the Current Study

This study compares a group of community dwelling adults who completed an MBSR program with a group of adults on a waitlist for the MBSR program and a control
group of students. Measures of state and trait anxiety, mindfulness, empathy, other-forgiveness and self-forgiveness were used.

There were three main hypotheses of interest. It was hypothesized that the MBSR group would experience greater increases than the control groups in each of three domains: other-forgiveness, self-forgiveness and empathy.

Hypothesis 1: Comparing the MBSR treatment group and the control groups, it was expected that pre to post change would reveal an increase in other-forgiveness significantly greater for the treatment group than for the control groups, controlling for scores at outset and for degree of hurt reported. (H1).

Hypothesis 2: With the personality factors of Neuroticism held even, comparing the MBSR treatment group and the control groups, it was expected that there would be a pre to post decrease on a (reverse-scored) measure of self-forgiveness, significantly greater for the treatment group than for the control groups, controlling for scores at outset (H2).

Hypothesis 3: Comparing the treatment group and the control groups, the pre to post change would reveal an increase in empathy, specifically in perspective taking and empathic concern, significantly greater for the MBSR treatment group than for the control groups, controlling for scores at outset (H3).
In addition, the following hypotheses were included to confirm if findings from the current research are consistent with outcomes of previous MBSR research in which significant decreases in anxiety and increases in mindfulness were found.

Hypothesis 4: Comparing the MBSR treatment group and the control groups, it was expected that the pre to post change would reveal a decrease in trait anxiety and in state anxiety significantly greater for the treatment group than for the control groups, controlling for scores at outset (H4).

Hypothesis 5: Comparing the MBSR treatment group and the control groups, it was expected that pre to post change would reveal an increase in mindfulness significantly greater for the treatment group than for the control groups, controlling for scores at outset (H5).

Finally, two hypotheses were included to see if time spent in mindfulness meditation correlated significantly with outcomes on the dependent variables. Length of experience of mindfulness has been used by some researchers as a proxy for skillfulness in mindfulness, which may not be the case, and it might be important information for researchers in the field to be wary of operationalizing skill as length of time of practice.
Hypothesis 6: It was expected that among the MBSR treatment group there would be a positive correlation between total minutes of home practice and greater other-forgiveness, greater mindfulness, and greater empathy (H6).

Hypothesis 7: It was expected that among the MBSR treatment group there would be a negative correlation between total minutes of home practice and decreased state anxiety and decreased trait anxiety, and a decreased score on a (reverse-scored) measure of self-forgiveness (since a lower score means more self-forgiveness) (H7).
Chapter Two

Method

Participants

The participants in this study were a total of one hundred and fourteen adults (see Table 1 for demographic data). For the MBSR condition, sixty individuals were recruited from three different MBSR programs existing in the community (thirty-seven participants came from one program, sixteen participants came from a second program, and seven participants came from a third program). The MBSR participants ranged in age from 22 to 68 years old (M = 42.9, SD = 10.7). For the waitlist condition, twenty-four individuals were recruited from a waitlist at the first MBSR site. This waitlist group ranged in age from 23 to 66 years old (M = 45.6, SD = 12.8). An additional comparison group consisted of thirty student volunteers (seventeen graduate students and thirteen undergraduates, some of whom were completing their second undergraduate degree). The student group ranged in age from 21 to 41 years old (M = 29; SD = 5.9). All subjects had not practiced mindfulness meditation previously.
Table 1
Demographic Characteristics of MBSR Treatment, Waitlist and Control Groups

<table>
<thead>
<tr>
<th></th>
<th>MBSR Group (N=60)</th>
<th>Waitlist (N=24)</th>
<th>Student Control (N=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (M, SD)</td>
<td>42.98 (10.76)</td>
<td>45.58 (12.85)</td>
<td>29.03 (5.93)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (21%)</td>
<td>13 (22%)</td>
<td>7 (29%)</td>
<td>4 (13%)</td>
</tr>
<tr>
<td>Female (79%)</td>
<td>47 (78%)</td>
<td>17 (71%)</td>
<td>26 (87%)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single or Equivalent</td>
<td>24 (40%)</td>
<td>10 (42%)</td>
<td>21 (70%)</td>
</tr>
<tr>
<td>Not Single (52%)</td>
<td>36 (60%)</td>
<td>14 (58%)</td>
<td>9 (30%)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School or College</td>
<td>6 (10%)</td>
<td>3 (12.5%)</td>
<td>3 (10%)</td>
</tr>
<tr>
<td>College (11%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University or (89%)</td>
<td>54 (90%)</td>
<td>21 (87.5%)</td>
<td>27 (90%)</td>
</tr>
<tr>
<td>Grad / Prof Degree</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian (82%)</td>
<td>54 (90%)</td>
<td>23 (96%)</td>
<td>17 (57%)</td>
</tr>
<tr>
<td>Asian (11%)</td>
<td>4 (7%)</td>
<td>1 (4%)</td>
<td>7 (23%)</td>
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<tr>
<td>Other (7%)</td>
<td>2 (3%)</td>
<td>0</td>
<td>6 (20%)</td>
</tr>
<tr>
<td>Importance of Religion</td>
<td>3.47 (1.30)</td>
<td>3.58 (1.25)</td>
<td>3.27 (1.29)</td>
</tr>
<tr>
<td>(M, SD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of Stress (M, SD)</td>
<td>7.08 (1.69)</td>
<td>6.79 (1.43)</td>
<td>7.40 (1.38)</td>
</tr>
<tr>
<td>Area of Most Stress</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Finances (10%)</td>
<td>7 (12%)</td>
<td>0</td>
<td>4 (13%)</td>
</tr>
<tr>
<td>Health (15%)</td>
<td>11 (18%)</td>
<td>5 (21%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Career (38%)</td>
<td>16 (27%)</td>
<td>7 (29%)</td>
<td>15 (50%)</td>
</tr>
<tr>
<td>Family (18%)</td>
<td>9 (15%)</td>
<td>7 (29%)</td>
<td>4 (13%)</td>
</tr>
<tr>
<td>Other (25%)</td>
<td>17 (28%)</td>
<td>5 (21%)</td>
<td>6 (20%)</td>
</tr>
<tr>
<td>In Therapy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (37%)</td>
<td>22 (37%)</td>
<td>14 (58%)</td>
<td>6 (20%)</td>
</tr>
<tr>
<td>No (71%)</td>
<td>37 (62%)</td>
<td>10 (42%)</td>
<td>24 (80%)</td>
</tr>
</tbody>
</table>

Notes: Importance of Religion, 5-point Likert Scale, 1 = Extremely Important, 5 = Not Important At All; Level of Stress, 10-point Likert Scale, 1 = No Stress; 10 = Maximum Stress.
Measures

1. Demographic Data Sheet - Appendix C

A demographic data sheet developed by the author gathered data on age, gender, marital status, education level, ethnicity, importance of religion to the person, a self-report rating of stress on a scale of 1 to 10, an area of most stress (optional), and asked if the person was currently working with a counsellor or psychotherapist.


The EFI is a self-report measure of offence-specific interpersonal forgiveness consisting of sixty items in six subscales (ten items in each scale). Before responding to the measure, respondents are asked to vividly recall a recent experience of a deep and unfair hurt, and then to report on the degree of hurt they experienced on a 5-point scale from “No Hurt” to “A Great Deal of Hurt”, and how unfairly they were treated on a scale from “Not at All” to “A Great Deal”. The offender is identified in terms of proximity (whether child, spouse, relative, employer, friend of same gender, friend of opposite gender or other), and identified as either living or deceased. Respondents identify how long ago the hurt occurred, and then write a brief account of the hurtful experience.

In its administration, the EFI is titled the “Attitude Scale” to avoid priming by the word “forgiveness”. The word forgiveness is only used in a final question printed alone on the back page of the measure. This question is a one-item independent measure for construct validity. It asks, “To what extent have you forgiven the person you rated on the Attitude Scale?” with responses on a 5-point Likert scale from (1) Not at All to (5)
Complete Forgiveness. This single question has been shown to be highly correlated with the total EFI score (Subkoviak et al., 1995).

The six subscales of the EFI measure positive affect, positive cognitions and positive behaviours toward the offender, and the absence of negative affect, negative cognition and negative behaviours toward the offender. The latter three scales are reverse-scored. Items are rated on a 6-point Likert scale from (1) Strongly Disagree, to (6) Strongly Agree. Subscale scores can range from ten to sixty, and total EFI scores can range from 60 to 360. The manual states that greater changes are typically observed on the scales of positive and negative cognitions than on the scales of affect and behaviour. As recommended by the manual, the total EFI score was used in the analysis. Higher scores on the overall EFI mean more interpersonal forgiveness.

In addition to the six subscales, five questions assess what is called pseudo-forgiveness, that is, either denying, condoning or justifying the hurt suffered, using a 6-point scale from (1) Strongly Disagree, to (6) Strongly Agree. Possible scores range from 5 to 30, with higher scores suggesting pseudo-forgiveness. Protocols with a pseudo-forgiveness score of twenty or more are invalid.

The EFI has been shown to have good internal consistency (above .90 on all subscales) and good test-retest reliability (.67 to .91) (Subkoviak et al., 1995). It appears to be a good indicator of offence-specific other-forgiveness. The EFI was developed for use with young adolescents, young adults and adults and requires grade five level of reading and comprehension ability.
Normative data for Total EFI scores are reported in the manual for college students (age $M= 21$, $SD= 3.75$) and adults (age $M = 49$, $SD = 7.69$). The median score for female college students is 264 (range: 78-360) and for female adults the median score is 276-277 (range 76-360). The median score for male college students is 274-275 (range 70-357) and for adult males, the median score encompasses 250-253 (range 60-360).

3. Forgiveness of Self Questionnaire (FOS: Mauger et al., 1992) - Appendix E.

The Forgiveness of Self (FOS) scale is a trait measure of self-forgiveness that assesses self-forgiveness across a number of instances and situations. The FOS consists of fifteen items with five possible responses ranging from (1) Strongly Disagree, to (5) Strongly Agree, and possible scores range from 15 to 75. A low score on the FOS indicates lower guilt and more self-forgiveness; a higher score means less self-forgiveness.

The FOS was one of two scales developed by Mauger et al. (1992) to measure forgiveness attitudes as part of a large inventory to sample behaviours related to personality disorders. Mauger et al. designed the FOS items focus on feelings of guilt over past acts, seeing oneself as sinful, and holding negative attitudes towards the self, for example, “I often feel like I have failed to live the right kind of life.”

The scale originally scored items as true or false. It was tested on a sample of 237 outpatient counseling center clients. It had good psychometric properties with a coefficient alpha of .82 and a test-retest reliability of .67. The FOS is related to scales measuring negative self-image, self-control deficit and motivation deficit scales. The
Forgiveness of Self scale correlates with the MMPI indicating that problems forgiving self are related to higher levels of pathology.

4. **Interpersonal Reactivity Index** (IRI: Davis, 1980, 1983) - Appendix F.

The IRI is a multidimensional measure of dispositional empathy for adults consisting of four subscales. Perspective Taking (PT) measures the tendency to take another's point of view in everyday life; Empathic Concern (EC) measures the tendency to sympathize with and feel compassion for other people undergoing negative experiences. Fantasy (FS) is the tendency to imaginatively experience the feelings and actions of characters in films or novels, and Personal Distress (PD) measures the tendency to experience distress and discomfort when witnessing other people's negative and difficult experiences. Each subscale is comprised of seven statements that are scored on a Likert scale from (0) Statement Does Not Describe Me Well, to (4) Statement Describes Me Very Well. Some items are reverse scored. The maximum subscale score is 28, and lower scores mean less self-reported empathy in that subscale area. In this study, Empathic Concern and Perspective Taking, variables thought to be important for forgiveness, are the main empathy variables of interest, but data on the other IRI subscales of Fantasy and Personal Distress are provided as well.

Davis (1980) found that the IRI had an internal alpha coefficient ranging from .70 to .78 and test-retest reliability from .61 to .81 over a two month period. He subsequently established the convergent, discriminant and construct validity for the four subscales (Davis, 1983). Davis found a gender difference with females scoring statistically significantly higher than males on each of the four dimensions of empathy.
A recent verification of the psychometric properties of the IRI (Atkins & Steitz, 1999) found that the factor structure is still intact and each of the components of empathy has a high degree of internal consistency. The four factor structure, however, accounts for only 50% of the variance in empathy. Atkins and Steitz (1999) found that females scored slightly lower on PT than in the 1980 sample, and the difference between males and females on PT in their sample did not reach statistical significance. Atkins and Steitz (1999) report the following updated mean scores: Perspective Taking - males, M = 16.23 (SD = 4.43), females, M = 17.01 (SD = 4.15); Empathic Concern - males, M = 19.74 (SD = 4.37); females, M = 22.28 (SD = 3.61); Personal Distress - males, M = 10.42 (SD = 5.11), females, M = 12.22 (SD = 4.78); and Fantasy - males, M = 16.41 (SD = 5.86), females, M = 18.85 (SD = 5.56).

5. The State-Trait Anxiety Inventory, Form X (STAI: Spielberger, Gorsuch & Lushene, 1970) - Appendix G.

This instrument consists of two scales that measure state, or present moment transient anxiety, and trait, or relatively stable level of baseline anxiety proneness. There are twenty self-report items in each scale. Items are scored on a 4-point Likert scale from (1) Not at All, to (4) Very Much So. The range of raw scores is 20 to 80 for each scale. Some items are reverse-scored. Higher total scores correlate with more anxious symptoms while lower total scores indicate low anxiety.

The manual reports very similar means for male and female college students: trait anxiety, undergraduate males, M = 37.68 (SD = 9.69); undergraduate women, M = 38.25 (SD = 9.14); state anxiety, undergraduate males, M = 36.35 (SD = 9.67); undergraduate
females, $M = 35.13$ (SD = 9.25). Means for general medical patients are somewhat higher: trait anxiety: $M = 41.91$ (SD = 12.70); state anxiety: $M = 42.35$ (SD = 13.79).

Correlations between the state anxiety and trait anxiety scales range from .44 to .55 for female undergraduate students, and from .51 to .67 for male undergraduate students. Test-retest reliability ranges from .73 to .86 for trait anxiety, and from .16 to .54 for state anxiety (Spielberger et al., 1983). The level of reliability for state anxiety is low because of the influence of transient situational factors. In terms of validity, the STAI trait anxiety scale correlates with the IPAT Anxiety Scale at .75, the Taylor Manifest Anxiety Scale at .80, and the Zuckerman Affect Adjective Checklist at .52.

A communication with Dr. Spielberger verified that Form X is equally good as the more current Form Y for research purposes and raw scores analysis was appropriate. Form X of the STAI was used in the current study and raw scores were used in the analysis.


The MAAS was developed to measure dispositional mindfulness. Mindfulness was defined as an open and receptive attention to and awareness of present moment experiences. Brown and Ryan theorize that mindfulness plays an important role in self-regulation and emotional experience and is inherently a state which can be cultivated with practice over time. The MAAS consists of fifteen items that are scored on a 6-point Likert scale from (1) Almost Always, to (6) Almost Never. A mean score of the fifteen items is calculated and thus values can range from 1 to 6, with higher scores reflecting
more mindfulness. To prevent bias in its administration, the word “mindfulness” was not used and the measure was identified as the “Everyday Experiences Questionnaire”.

The MAAS has been shown to have good psychometric properties and to be a reliable and valid instrument for use with the general adult population. Good convergent, discriminant and criterion validity were demonstrated in initial validation studies. The MAAS is positively correlated with openness to experience and with a number of measures of well-being and positive affect, and negatively correlated with measures of depression and anxiety and NEO Neuroticism (Brown & Ryan, 2003).

In a recent study (Brown & Kasser, 2005) with a mainstream American non-clinical sample of adults (age M = 44, SD = 13.23), the mean MAAS score was 4.22 (SD = 0.63). In a Canadian study with a clinical cancer population matched with community dwelling adults, the mean score on the MAAS was 4.08 (SD = 0.74) for cancer patients and 4.45 (SD = 0.7) for community dwelling adults (Carlson & Brown, 2005).

7. The NEO PI-R Form S (NEO: Costa & McCrae, 1992) - Appendix I.

The NEO is a self-administered personality inventory suitable for individuals who are seventeen years of age or older. The NEO-PI-R produces a personality profile on five domains: Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness, with each domain made up of six facet scales. It uses a 5-point Likert scale format from Strongly Disagree, Disagree, Neutral, Agree to Strongly Agree on 240 items. It has been validated against other personality inventories and has good psychometric properties with good internal consistency (coefficients from .86 to .95 for domain scales) and stability (coefficients range from .51 to .83 in three, six and seven
year studies of the original NEO-PI factors). The NEO is a standard instrument widely used in research. Hand scoring procedures outlined in the manual were followed obtaining separate T-scores for male and female respondents. The domains of interest for this study are Neuroticism and Agreeableness.

8. Home Practice Log - Appendix J.

This is a chart developed by the researcher for individuals in MBSR courses to use to track their daily home practice in minutes. There were three columns entitled Body Scan, Mindfulness, Yoga, and rows for the days of the week. Participants entered their daily homework practice in minutes in the appropriate sections. One score for total minutes of practice was computed.

Procedure

Participants for the MBSR condition were recruited from three existing programs in the community. This researcher was a facilitator for a course at one program. A poster advertising her research was posted at the MBSR program office seeking volunteers unfamiliar with mindfulness meditation. The researcher visited a number of MBSR courses at their initial sessions with the permission of the instructors to announce and explain the research. Interested volunteers naïve to mindfulness meditation took questionnaire packages with an information letter and consent form (Appendix A) to fill out at home and return by mail prior to the second class. The questionnaire package consisted of the following measures: a demographic data sheet, the NEO PI-R Self Report form, the State Trait Anxiety Inventory (STAI), the Mindful Attention Awareness
(MAAS) Scale, the Interpersonal Reactivity Index (IRI), the Enright Forgiveness Inventory (EFI) and the Forgiveness of Self (FOS) questionnaire. In addition a Home Practice Log was supplied to the MBSR participants to track their home practice during the program.

Time 2 packages were supplied to research participants at the final class of their MBSR program to complete at home and return by mail. Time 2 packages consisted of: the same scales as Time 1: the STAI, the MAAS, the IRI, the EFI and the FOS. The demographic sheet and the NEO were only completed at Time 1. MBSR participants also returned the Home Practice Log sheet with the completed Time 2 measures. From thirty-three MBSR courses that were canvassed, a total of one hundred and seventeen volunteers were recruited. Of those, only sixty-seven individuals completed both sets of questionnaires, and of those seven sets had missing data and were removed leaving a total of sixty complete sets of questionnaires.

Initially an equal comparison group of waitlist participants were to come from one MBSR site. However very few individuals remained on the waitlist for the length of time required by the study. MBSR waitlist volunteers contacted the researcher and completed the consent form and the Time 1 package either when they met the researcher or at home and returned the package by mail. They were then sent the Time 2 package by mail eight to nine weeks later and asked to complete and mail in. Twenty-six complete sets were obtained from MBSR waitlist volunteers, but two sets were eliminated for missing data leaving twenty-four complete waitlist protocols. Ten individuals who completed the initial set of questionnaires did not complete the second set.
An additional sample of thirty university students unfamiliar with mindfulness meditation was recruited by announcements and/or by posters (Appendix B). The researcher visited a number of classes at two universities with the permission of the instructors to explain the study and ask for volunteers unfamiliar with mindfulness meditation. Student volunteers took questionnaire packages with consent forms from the researcher and completed them at home and returned them by mail. Those students who completed the Time 1 questionnaires were provided with Time 2 questionnaires after eight to nine weeks had passed with instructions to complete the forms and return them by mail. All participants’ names were entered in a lottery for a prize of $100.
Chapter Three
Results

Statistical analysis of the data was carried out using the Statistical Package for the Social Sciences (SPSS) for Windows Grad Pack 13.0. Forgiveness variables were analyzed using the GLM Univariate analysis of covariance (ANCOVA) procedure. ANCOVA is used to statistically equate groups and increase power by reducing error variance. Post MBSR/ Time 2 scores on the EFI, FOS, and IRI, MAAS and STAI were the dependent variables, with covariates controlling for pre-test scores and other factors as appropriate to directly to determine differences between groups.

Data were screened for correct entry and for missing data points. Out of a data set of one hundred and fourteen persons, two participants missed the second FOS measure entirely and one individual did not indicate whether he/she was in therapy. These subjects with missing data were excluded pairwise or listwise from statistical analysis where relevant. Individuals in the MBSR group were asked to keep track of their home practice of mindfulness exercises during the program. Of sixty individuals, eleven did not return their Home Practice logs. At the beginning of data collection due to a typing error, thirty-two IRI protocols (of the total 114) in this data set were handed out with one item from subscale Emphatic Concern (EC) and one item from subscale Perspective Taking (PT) omitted. The median score for the individual on the EC and PT scale was used for the EC and PT missing items.

EFI protocols were screened for pseudoforgiveness. The EFI manual states that if a total score of twenty or more is obtained on the five questions querying pseudo-
forgiveness, that EFI protocol should be not be used. No score was found to be above fifteen on these five questions on the EFI at outset.

As it was not possible to obtain a large enough MBSR waitlist group, a student group was recruited with the intention of collapsing it together with the MBSR waitlist to create a comparison group of equal size to the MBSR treatment group. However the student group was significantly different in age (M = 29.03, SD = 5.93, range 21 to 41) from the MBSR treatment group (M = 42.98, SD = 10.76, range 22 to 68) and the waitlist group (M = 45.58, SD = 12.85, range 23 to 66), \( F(2, 111) = 23.27, p < .01 \). In addition, far fewer individuals proportionally in the student group were in partner relationships and the student group was more racially diverse than the MBSR treatment group and the MBSR waitlist group (see Table 1, p. 49). Because of these differences, the MBSR waitlist group and student group were not collapsed together, leaving three groups unequal in size (MBSR group, \( n = 60 \); MBSR waitlist group, \( n = 24 \); and student group, \( n = 30 \)). Data were analyzed with GLM Univariate with Type III sum of squares, and reporting the Estimated Marginal Means (the unweighted means are not biased towards the cells with the largest \( ns \)) and comparing simple main effects (which uses the estimated marginal means) and correcting the confidence interval by the Sidak adjustment and using alpha of .01 for significance testing. Descriptive statistics were computed and found to meet general assumptions for the statistical test employed (see Appendix K).

Means for outcome variables were calculated in SPSS and are reported in Table 5, (p. 68). The three groups did not differ on personal importance of religion, or level of
stress reported. Raw score means on the STAI indicated that all groups were experiencing elevated levels of state and trait anxiety. When compared with percentile ranks for undergraduates (the closest comparison group) the raw score mean for the MBSR group fell approximately at the 85\textsuperscript{th} percentile for state anxiety and approximately at the 92\textsuperscript{nd} percentile for trait anxiety. For the MBSR waitlist group, their mean state anxiety score was at the 64\textsuperscript{th}–70\textsuperscript{th} percentile, and mean trait anxiety score at the 81\textsuperscript{st}–84\textsuperscript{th} percentile. For the student group, their mean state anxiety score was at the 79\textsuperscript{th}–83\textsuperscript{rd} percentile, and mean trait anxiety score at the 81\textsuperscript{st}–84\textsuperscript{th} percentile.

The MBSR treatment group, the MBSR waitlist group and student group were examined for equivalence at outset on the above outcome variables (Table 2). Levene’s tests for homogeneity of error variance were not significant, and one-way ANOVA procedures were used. At outset, a significant difference between the three groups was observed on mindfulness, \(F(2, 111) = 4.315^*, p = .016\). Post hoc comparisons using the Sidak adjustment found that the mindfulness mean for the student group (\(M = 3.81, SD = .71\)) was significantly higher \((p = .013)\) than the mean for the MBSR treatment group (\(M = 3.27, SD = .87\)), but not for the MBSR waitlist group (\(M = 3.45, SD = .75\)) \((p = .155, ns)\). Another significant difference between groups at outset was found on the IRI subscale of fantasy, \(F(2, 111) = 6.175^{**}, p = .003\). Post hoc comparisons using the Sidak adjustment found that the fantasy mean for the MBSR waitlist group (\(M = 13.71, SD = 4.44\)) was significantly lower \((p = .002)\) than the student group (\(M = 18.5, SD = 5.48\)) but not than the MBSR treatment group (\(M = 16.57, SD = 4.93\)) \((p = .06)\).
Table 2
One-Way Analysis of Variance for Differences between MBSR group, Waitlist group and Student group on Outcome Variables at Outset

<table>
<thead>
<tr>
<th>Variable</th>
<th>ANOVA F (2,111)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Anxiety (STAI) Time 1</td>
<td>1.623</td>
<td>.20</td>
</tr>
<tr>
<td>Trait Anxiety (STAI) Time 1</td>
<td>2.540</td>
<td>.08</td>
</tr>
<tr>
<td>Mindfulness (MAAS) Time 1</td>
<td>4.315*</td>
<td>.02*</td>
</tr>
<tr>
<td>Perspective Taking (PT) Time 1</td>
<td>.512</td>
<td>.60</td>
</tr>
<tr>
<td>Empathic Concern (EC) Time 1</td>
<td>2.786</td>
<td>.07</td>
</tr>
<tr>
<td>Fantasy (FS) Time 1</td>
<td>6.175</td>
<td>.003**</td>
</tr>
<tr>
<td>Personal Distress (PD) Time 1</td>
<td>.216</td>
<td>.81</td>
</tr>
<tr>
<td>Other-forgiveness (EFI) Time 1</td>
<td>1.819</td>
<td>.17</td>
</tr>
<tr>
<td>Self-forgiveness (FOS) Time 1</td>
<td>1.930</td>
<td>.15</td>
</tr>
</tbody>
</table>

* p < .05,  ** p < .01

The Enright Forgiveness Inventory (EFI) has 6 subscales: positive affect, negative affect, positive cognition, negative cognition, positive behaviour and negative behaviours towards the offender. At outset, the three groups were not significantly different on EFI Total Score. At an alpha level of .05, the groups were different at outset on only one subscale, EFI Negative Affect, $F(2,111) = 3.395$, $p = .037$. Follow-up tests were conducted to reveal pairwise differences using the Sidak correction for multiple comparison, revealing that the MBSR group endorsed significantly less absence of negative affect (i.e. more negative affect) toward offenders ($M = 32.13$) than the MBSR waitlist group ($M = 40.33$, $p = .031$) but not than the student group ($M = 34.90$).
Table 3

Means (M) and Standard Deviations (SD) and One-way Analysis of Variance on Variables speculated to influence Forgiveness at Outset

<table>
<thead>
<tr>
<th>Variable and Source</th>
<th>Mean (SD)</th>
<th>F (2,111)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of Religion</td>
<td></td>
<td>.432</td>
<td>.65 ns</td>
</tr>
<tr>
<td>MBSR</td>
<td>3.47 (1.30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waitlist</td>
<td>3.58 (1.25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>3.27 (1.28)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEO Neuroticism</td>
<td></td>
<td>2.358</td>
<td>.10 ns</td>
</tr>
<tr>
<td>MBSR</td>
<td>63.48 (10.39)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waitlist</td>
<td>57.92 (10.69)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>61.13 (11.45)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEO Agreeableness</td>
<td></td>
<td>.360</td>
<td>.70 ns</td>
</tr>
<tr>
<td>MBSR</td>
<td>48.22 (12.86)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waitlist</td>
<td>48.04 (12.06)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>46.00 (10.18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEO Openness</td>
<td></td>
<td>2.896</td>
<td>.06 ns</td>
</tr>
<tr>
<td>MBSR</td>
<td>59.30 (9.70)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waitlist</td>
<td>53.83 (8.67)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>57.73 (9.35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of Hurt (EFI)</td>
<td></td>
<td>3.291</td>
<td>.04*</td>
</tr>
<tr>
<td>MBSR</td>
<td>4.42 (0.73)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waitlist</td>
<td>3.92 (0.93)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>4.27 (0.82)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Importance of Religion is a 5-point Likert scale with (1) = Extremely Important and (5) = Not Important at All. Degree of Hurt refers to the incident recounted in the Enright Forgiveness Inventory. It is rated on a 5-point Likert scale from (1) = No Hurt to (5) = Great Deal of Hurt. NEO Neuroticism, NEO Agreeableness and NEO Openness mean scores are T-scores.

Groups were also examined for significant differences at outset on Importance of Religion, the NEO personality factors of Neuroticism and Agreeableness, and the severity of the hurtful experience (Degree of Hurt), factors which have been reported in the literature to influence forgiveness (Table 3). Tests for homogeneity of variance were not significant and ANOVAs for group differences on Importance of Religion, NEO
Neuroticism, NEO Agreeableness and NEO Openness were not significant at an alpha level of .05.

Degree of Hurt, with respect to the specific incident reported on the EFI, was significantly different between groups, $F(2, 111) = 3.291, p = .041$. Post hoc comparisons among the group means, at an alpha level of .05, found that the MBSR Treatment group was significantly higher on Degree of Hurt than the MBSR waitlist group ($p = .035$), but not compared to the student group ($p = .792, ns$).

An assumption of ANCOVA is that covariates must be uncorrelated with other independent variables (the groups) and they must be correlated with the dependent variables, in this case, FOS (self-forgiveness) and Total EFI (other-forgiveness). NEO Agreeableness was in the average range for all groups and not strongly correlated with other-forgiveness, $r(112) = .188, ns$, at a corrected significance level of .01 (see Table 4). When Agreeableness was subsequently tested in GLM Univariate ANCOVA, it accounted for almost none of the variance and was deemed of little use as a covariate in this study.

NEO Openness was in the elevated range for both the MBSR treatment group and for the student group, while the MBSR waitlist group mean fell at the upper limit of the average range. In validation studies of the MAAS, NEO Openness was found to be significantly positively correlated ($p < .01$) with mindfulness (Brown and Ryan, 2003). However in this study, NEO Openness was not significantly correlated with mindfulness, nor with self-forgiveness or other-forgiveness (see Table 4), although NEO Openness was significantly correlated with three of the four subscales of the IRI, namely
perspective taking \((r = .3^{***})\), empathic concern \((r = .189^{*})\) and fantasy \((r = .27^{**})\).

When NEO Openness was tested in GLM Univariate ANCOVAs for perspective taking, empathic concern, and fantasy, NEO Openness accounted for almost none of the variance and was deemed of little use as a covariate in this study.

NEO Neuroticism was in the elevated range for all groups. The literature reviewed suggests that the NEO Neuroticism is the greatest predictor of self-forgiveness. A strong positive correlation, \(r (112) = .735, p < .001\), was observed in this sample. The correlation is positive because the measure of self-forgiveness (FOS) is reverse-scored and a high score means less self-forgiveness. NEO Neuroticism correlated significantly with the FOS and therefore Neuroticism was used as a covariate in the self-forgiveness analysis.

Religion was not generally endorsed as important to the participants in the three groups. Importance of Religion was not significantly correlated with self-forgiveness or other-forgiveness and was therefore not used as a covariate.

Erikson hypothesized that older age is correlated with forgiveness. The groups (see Table 1) were significantly different on age \((p = .041)\) with the mean of the student group being from 12 to 15 years younger than the MBSR waitlist or the MBSR Treatment group. However age was not correlated significantly with forgiveness variables at outset. When the covariate age was tested, homogeneity of slope was not present and age therefore was not used as a covariate. Degree of Hurt was used as a covariate in ANCOVA for the other-forgiveness analysis.
It should be noted that some 50 participants who had completed the pre-MBSR program measures were lost to follow-up. Almost 40 of these individuals completed the MBSR program but decided not to complete the second set of questionnaires. Chi-square analysis revealed that the lost to follow-up individuals were not significantly different from the MBSR completers on demographic variables of age, sex, marital status, and education. Demographically there were a few more non-Caucasians in the lost to follow-up group. One-way ANOVA results showed that the means of the lost to follow-up group were not significantly different from the MBSR program completers on level of stress reported, or on any variable at outset except for self-forgiveness, where the lost to follow-up group reported themselves as having significantly less self-forgiveness.
<table>
<thead>
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<tbody>
<tr>
<td>1. NEO Neuroticism</td>
<td>---</td>
<td>.054</td>
<td>-.232*</td>
<td></td>
<td>-.185*</td>
<td>.424***</td>
<td>.685***</td>
<td>-.471***</td>
<td>-.267**</td>
<td>-.054</td>
<td>.275**</td>
<td>.439***</td>
<td>-.277**</td>
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<tr>
<td>2. NEO Openness</td>
<td>---</td>
<td>.164</td>
<td>.042</td>
<td>-.087</td>
<td>-.003</td>
<td>.079</td>
<td>.300***</td>
<td>.189*</td>
<td>.270**</td>
<td>-.056</td>
<td>-.027</td>
<td>-.084</td>
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<td>3. NEO Agreeableness</td>
<td>---</td>
<td>.342***</td>
<td>-.066</td>
<td>-.061</td>
<td>.164</td>
<td>.441***</td>
<td>.473***</td>
<td>-.108</td>
<td>-.054</td>
<td>.188*</td>
<td>-.082</td>
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<td>4. Age</td>
<td>---</td>
<td>-.020</td>
<td>-.119</td>
<td>-.052</td>
<td>.109</td>
<td>.153</td>
<td>-.252**</td>
<td>-.224*</td>
<td>-.061</td>
<td>-.129</td>
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<tr>
<td>5. State Anx.</td>
<td>---</td>
<td>.664***</td>
<td>-.340***</td>
<td>-.137</td>
<td>.020</td>
<td>.186*</td>
<td>.270**</td>
<td>-.046</td>
<td>.373***</td>
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<tr>
<td>6. Trait Anx</td>
<td>---</td>
<td>-.567***</td>
<td>-.068</td>
<td>.014</td>
<td>.243**</td>
<td>.340***</td>
<td>-.200*</td>
<td>.657***</td>
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<tr>
<td>7. MAAS</td>
<td>---</td>
<td>.181</td>
<td>.095</td>
<td>-.172</td>
<td>-.271**</td>
<td>-.138</td>
<td>-.537**</td>
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<tr>
<td>8. PT (IRI)</td>
<td>---</td>
<td>.390***</td>
<td>.126</td>
<td>.211*</td>
<td>.131</td>
<td>-.127</td>
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<td>9. EC (IRI)</td>
<td>---</td>
<td>.079</td>
<td>-.026</td>
<td>.052</td>
<td>.022</td>
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<tr>
<td>10. FS (IRI)</td>
<td>---</td>
<td>.237*</td>
<td>.039</td>
<td>.159</td>
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<tr>
<td>11. PD (IRI)</td>
<td>---</td>
<td>.115</td>
<td>.364***</td>
<td></td>
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<td>12. EFI</td>
<td>---</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>.095</td>
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<td>13. FOS</td>
<td>---</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

Notes: * p<.05, ** p<.01, *** p<.001, two-tailed; Bivariate analysis.
Table 5
Pre MBSR / Time 1 and Post MBSR / Time 2 Unadjusted Means, Standard Deviations for Outcome Variables and Analysis of Covariance (ANCOVA) as a function of Group

<table>
<thead>
<tr>
<th></th>
<th>Pre-MBSR / Time 1</th>
<th>Post-MBSR / Time 2</th>
<th>ANCOVA F</th>
<th>np2</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>STAI - State Anxiety</td>
<td></td>
<td></td>
<td>F (2,110) = 1.976***</td>
<td>.18</td>
</tr>
<tr>
<td>MBSR</td>
<td>46.72 (10.37)</td>
<td>35.63 (9.75)</td>
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</tr>
<tr>
<td>Clinic WL</td>
<td>41.88 (11.25)</td>
<td>42.83 (11.32)</td>
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<td></td>
</tr>
<tr>
<td>Student</td>
<td>45.57 (12.49)</td>
<td>41.77 (13.05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAI - Trait Anxiety</td>
<td></td>
<td></td>
<td>F (2,110) = 19.30***</td>
<td>.26</td>
</tr>
<tr>
<td>MBSR</td>
<td>50.85 (9.19)</td>
<td>40.17 (9.25)</td>
<td></td>
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</tr>
<tr>
<td>Clinic WL</td>
<td>46.96 (9.34)</td>
<td>45.83 (9.02)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>46.67 (10.55)</td>
<td>46.23 (12.26)</td>
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</tr>
<tr>
<td>MAAS - Mindfulness</td>
<td></td>
<td></td>
<td>F (2,110) = 20.155 ***</td>
<td>.27</td>
</tr>
<tr>
<td>MBSR</td>
<td>3.27 (.87)</td>
<td>4.09 (.72)</td>
<td></td>
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</tr>
<tr>
<td>Clinic WL</td>
<td>3.37 (.84)</td>
<td>3.41 (.91)</td>
<td></td>
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</tr>
<tr>
<td>Student</td>
<td>3.81 (.71)</td>
<td>3.84 (.81)</td>
<td></td>
<td></td>
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<tr>
<td>IRI - Perspective Taking</td>
<td></td>
<td></td>
<td>F (2,110) = .242, ns</td>
<td>.004</td>
</tr>
<tr>
<td>MBSR</td>
<td>17.40 (4.67)</td>
<td>18.13 (4.26)</td>
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<tr>
<td>Clinic WL</td>
<td>16.88 (4.93)</td>
<td>17.96 (5.11)</td>
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<tr>
<td>Student</td>
<td>18.17 (4.83)</td>
<td>19.17 (4.93)</td>
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<tr>
<td>IRI - Empathic Concern</td>
<td></td>
<td></td>
<td>F (2,110) = 3.046, ns</td>
<td>.05</td>
</tr>
<tr>
<td>MBSR</td>
<td>21.87 (3.78)</td>
<td>21.35 (3.92)</td>
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<tr>
<td>Clinic WL</td>
<td>19.96 (4.66)</td>
<td>20.08 (3.81)</td>
<td></td>
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<tr>
<td>Student</td>
<td>22.47 (4.06)</td>
<td>23.17 (3.29)</td>
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<tr>
<td>IRI - Fantasy</td>
<td></td>
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<td>F (2,110) = .880, ns</td>
<td>.02</td>
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<tr>
<td>MBSR</td>
<td>16.57 (4.93)</td>
<td>16.03 (5.13)</td>
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<td>Clinic WL</td>
<td>13.71 (4.44)</td>
<td>13.83 (5.41)</td>
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<tr>
<td>Student</td>
<td>18.50 (5.48)</td>
<td>18.67 (5.79)</td>
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<tr>
<td>IRI - Personal Distress</td>
<td></td>
<td></td>
<td>F (2,111) = 1.261, ns</td>
<td></td>
</tr>
<tr>
<td>MBSR</td>
<td>12.03 (5.08)</td>
<td>10.48 (4.64)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinic WL</td>
<td>11.83 (5.68)</td>
<td>10.79 (6.66)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>12.67 (4.66)</td>
<td>10.27 (4.05)</td>
<td></td>
<td></td>
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<tr>
<td>EFI - Other-forgiveness</td>
<td></td>
<td></td>
<td>F (2,109) = 7.219 ***</td>
<td>.12</td>
</tr>
<tr>
<td>MBSR</td>
<td>216.60 (71.02)</td>
<td>248.82 (70.52)</td>
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<td></td>
</tr>
<tr>
<td>Clinic WL</td>
<td>245.83 (72.24)</td>
<td>254.67 (64.99)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>237.17 (66.97)</td>
<td>246.33 (65.26)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOS- Forgiveness of Self</td>
<td></td>
<td></td>
<td>F (2,109) = 30.265 ***</td>
<td>.36</td>
</tr>
<tr>
<td>MBSR</td>
<td>44.90 (11.45)</td>
<td>34.08 (10.10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinic WL</td>
<td>38.83 (11.99)</td>
<td>40.79 (10.98)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>41.77 (10.87)</td>
<td>41.41 (10.84)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** p < .001

Notes: IRI-Personal Distress did not meet homogeneity-of-slopes assumption, therefore ANCOVA was not used. A difference score was calculated (Personal Distress Time 1 – Personal Distress Time 2) and One-Way ANOVA was used to compare groups.
Hypotheses Results

Outcomes of reductions in stress and increases in mindfulness are widely reported in the MBSR research literature. To verify that the present study replicates these past results, hypotheses examined mean differences between groups on state anxiety, trait anxiety and on mindfulness. For homogeneity of variance and homogeneity of slope testing, alpha of .05 was used. For ANOVA or ANCOVA testing, alpha was set at .01 to take into consideration the unequal group sizes and the number of ANCOVAs. Measures of effect size have been included for more information (see Table 5, p. 68).

State Anxiety: The obtained results supported the hypothesis (H4) for a decrease in state anxiety for the MBSR treatment group. Levene’s Test of the homogeneity of error variance was not significant F (2,111) =1.530, ns. A preliminary test of the homogeneity-of-slopes assumption indicated that the relationship between the covariate (Time 1 scores) and the dependent variable (State Anxiety Time 2) did not differ significantly as a function of the groups (interaction was not significant, \( F (2, 108) = .879, \text{ns}, \partial \eta^2 = .016 \). Results of the ANCOVA showed that there was a significant effect for group on State Anxiety, \( F (2, 110) = 11.976, p < .001, \partial \eta^2 = .179 \). However the effect of Time 1 scores (covariate), also significant, accounted for more of the variance, \( F (1, 110) = 52.604, p < .001, \partial \eta^2 = .324 \).

The group means for state anxiety at Time 2 adjusted for initial differences were ordered as follows: the MBSR group mean was lowest (M = 34.89) followed by the
student group (M = 41.67) and then MBSR waitlist group (M = 44.81). Follow-up tests were conducted to evaluate pairwise differences among these covariate adjusted means using the Sidak adjustment. The MBSR group mean for state anxiety was significantly lower at Time 2 than the waitlist group mean (p < .001) and also significantly lower than the student group mean (p = .004). The difference between the waitlist group mean and the student group mean on state anxiety was not significant, p = .513.

Trait Anxiety: The obtained results supported the hypothesis (H4) for a decrease in trait anxiety for the MBSR treatment group. Levene’s Test of the homogeneity of error variance was not significant F (2,111) = .392, ns. A preliminary test of the homogeneity-of-slopes assumption indicated that the relationship between the covariate (Time 1 score) and the dependent variable (Trait Anxiety Time 2 score) did not differ significantly as a function of the groups (interaction was not significant, F (2, 108) = 1.689, ns, partial eta squared = .030.

Results of the ANCOVA showed that the effect of group on trait anxiety was significant, F (2, 110) = 19.303, p < .001, partial eta squared = .260. However the effect of Time 1 scores (covariate), also significant, accounted for more of the variance, F (1, 110) = 96.476, p < .001, partial eta squared = .467.

The group means for trait anxiety at Time 2 adjusted for initial differences were ordered as follows: the MBSR group mean was lowest (M = 38.79) followed by the waitlist group (M = 47.25) and then the student group (M = 47.86). Follow-up comparisons were conducted to evaluate pairwise differences among these covariate
adjusted means using the Sidak adjustment. The MBSR group mean for trait anxiety was significantly lower at Time 2 than both the waitlist group mean (p < .001) and the student group mean (p < .001). The difference between the waitlist group mean and the student group mean on trait anxiety was not significant, p = .936.

Mindfulness: the obtained results supported the hypothesis (H5) for an increase in mindfulness for the MBSR group. Levene’s Test of homogeneity of error variances was not significant $F(2, 111) = .836$, ns. A preliminary test of the homogeneity-of-slopes assumption indicated that the relationship between the covariate (Time 1 score) and the dependent variable (mindfulness Time 2 score) did not differ significantly as a function of the groups (interaction was not significant, $F(2, 108) = 2.860$, ns, partial eta squared = .050.

Results of the ANCOVA showed that the effect of group on mindfulness was significant, $F(2, 110) = 20.155$, p < .001, partial eta squared = .268. However the effect of Time 1 scores (covariate), also significant, accounted for more of the variance, $F(1, 110) = 108.751$, p < .001, partial eta squared = .497.

The group means for mindfulness at Time 2 adjusted for initial differences were ordered as follows: the MBSR group mean was highest (M = 4.20) followed by the student group mean (M = 3.59) and then the waitlist group mean (M= 3.46). Follow-up comparisons were conducted to evaluate pairwise differences among covariate adjusted means using Sidak adjustment. The MBSR group mean was significantly higher at Time 2 than the student group mean (p < .001) and the waitlist group mean (p <.001). The
difference between the waitlist group mean and the student group mean for mindfulness was not significant, \( p = .796 \).

We now move to the main hypotheses of this study concerning other-forgiveness (H1), self-forgiveness (H2) and empathy (H3).

**H1:** Comparing the MBSR treatment group and the control groups, it was expected that the pre to post change would reveal a significantly greater increase in other-forgiveness for the MBSR treatment group in comparison to the control groups, controlling for scores at outset and for degree of hurt.

**Other-forgiveness:** ANCOVA was carried out with the dependent variable being EFI Total Time 2 scores. The covariates used for other-forgiveness ANCOVA analysis are Degree of Hurt Reported and EFI Total Time 1 scores. NEO Agreeableness was not used in this analysis as a covariate as it was not significantly correlated with the dependent variable, other-forgiveness, and the homogeneity-of-slope assumption was violated.

The obtained results supported the hypothesis (H1) for an increase in other-forgiveness for the MBSR group. Levene’s Test of the homogeneity of error variance was not significant, \( F (2,111) = 2.296, \) ns. A preliminary test of the homogeneity-of-slopes assumption indicated that the relationship between the covariates, Degree of Hurt and other-forgiveness Time 1 scores and the dependent variable did not differ significantly as a function of the groups (interactions were not significant: EFI Time 1 x group, \( F (2, 102) = .999, p = .372, \) partial eta squared = .019; Degree of Hurt x group, \( F (2, 102) = .504, p =.504, p \)
Results of the ANCOVA showed that the effect of group on other-forgiveness was significant, $F(2, 109) = 7.219, p = .001$, partial eta squared = .117. However the covariate EFI Time 1, also significant at $p < .001$, accounted for more of the variance, partial eta squared .804.

The group means for total EFI (other-forgiveness) scores at Time 2 adjusted for initial differences were ordered as follows: the MBSR group mean was highest ($M = 259.96$) followed by the student group mean ($M = 238.5$) and then the waitlist group mean ($M = 236.6$). Follow-up comparisons were conducted to evaluate pairwise differences among these covariate adjusted means using the Sidak adjustment using an alpha level of .01. The MBSR group mean was significantly higher at Time 2 than the MBSR waitlist group ($p = .008$). The MBSR group mean was significantly higher than the student group mean ($p = .007$). The mean difference between the waitlist group and the student group was not significant ($p = .994$).

Some additional analyses of other-forgiveness outcomes were carried out. A final stand alone question of the EFI is a check of construct validity which asks: “To what extent have you forgiven the person you rated on the [measure]”, with responses on a 5-point Likert scale from (1) Not at All to (5) Complete Forgiveness. When the three groups were compared at Time 2 controlling for their EFI scores at outset, the difference between groups was not significant, ANCOVA $F(2, 77) = .933, p = .398$, ns.
Unfortunately there were many missing data points because the question was printed on a back page and many responders missed it completely.

Difference scores were calculated between scores at outset and at Time 2 on the six subscales of the EFI. At alpha of .01 and using a one-way ANOVA procedure that met the assumption of homogeneity of variances, there were significant differences observed between the three groups on Negative Affect, $F(2,111) = 11.67$, $p < .001$, Positive Cognition, $F(2,111) = 8.284$, $p < .001$; and Negative Cognition, $F(2,111) = 4.765$, $p = .01$.

The group means for EFI Negative Affect difference scores were ordered as follows: the MBSR group mean was highest ($M = 9.55$) followed by the student group mean ($M = 2.23$) and the waitlist group mean ($M = .79$). Follow-up comparisons for Negative Affect difference scores at alpha level of .01, found that the mean of the MBSR group was significantly higher, (less negative affect was felt toward offenders by the MBSR group at outcome) than the waitlist group, ($p < .001$) and significantly higher than the student group ($p = .001$).

The group means for EFI Positive Cognition were ordered as follows: the MBSR group mean was highest ($M = 4.8$) followed by the waitlist group mean ($M = 1.79$) and the student group mean ($M = -.2$). Follow-up comparison for Positive Cognition at alpha of .01 found that the mean of the MBSR group was significantly higher (more positive cognitions) than the student group ($p < .001$).

The group means for EFI Negative Cognition were ordered as follows: the MBSR group mean was highest ($M = 3.98$) followed by both the student group mean ($M = .5$)
and the waitlist group mean (M = .5). Follow-up comparisons for Negative Cognitions difference scores at an alpha level of .01 found that the differences between the MBSR group and the other groups approached significance (p = .032).

Overall, the MBSR group had significantly decreased in negative affect and increased in positive cognitions toward individuals who hurt them after the MBSR program compared to before MBSR.

To see if this significant effect for other-forgiveness for the MBSR treatment was related to being in psychotherapy during the MBSR program, an ANCOVA was carried out on the MBSR participants with the grouping factor being “In Therapy / Not in Therapy” as this data had been collected at outset. There were 22 individuals working with a therapist and 37 who were not (and one missing data point). The difference in outcome estimated marginal means for other-forgiveness between the individuals in therapy (M = 252.88) and those not in therapy (M = 249.12) was small and the result was not significant, $F(1, 55) = .207, p = .651$. Being in therapy or not did not make a difference to outcome on other-forgiveness.

As data had been collected from MBSR groups taught by 3 different individuals (group sizes: 37, 17 and 7) an ANCOVA (which fulfilled the homogeneity of error variance and the homogeneity-of-slope assumptions) compared the three MBSR taught groups on other-forgiveness. No difference was observed between groups and the result was not significant, $F(2, 55) = .817, p = .447$, suggesting that the teacher did not make any difference to outcomes.
In addition to other-forgiveness, an increase in self-forgiveness was predicted for the MBSR group.

**H2:** Comparing the MBSR treatment group and the control groups, it was hypothesized that the pre to post change would reveal a significantly greater increase in self-forgiveness for the MBSR treatment group in comparison to the control groups, controlling for scores at outset and controlling for NEO Neuroticism.

**Self Forgiveness:** the obtained results supported the hypothesis (H2). Levene's Test of homogeneity of error variance was not significant, $F(2,109) = .354, \text{ns}.$ A preliminary test of the homogeneity-of-slopes assumption indicated that the relationship between covariates (NEO Neuroticism and FOS Time 1 scores), and the dependent variable did not differ significantly as a function of the groups (interactions were not significant: NEO Neuroticism x group $F(2, 100) = .816, p = .445$, partial eta squared = .016; FOS1 x group $F(2, 100) = .668, p = .515$, partial eta squared = .013; and FOS1 x NEO Neuroticism x group $F(3, 100) = .412, p = .745$, partial eta squared = .012).

Results of the ANCOVA showed that the effect of group on Forgiveness of Self was significant, $F(2, 107) = 30.265, p < .001$, partial eta squared = .361. The covariate FOS Time 1, also significant at $p < .001$, accounted for slightly less of the overall variability, partial eta squared = .307, while the covariate NEO Neuroticism was not significant and accounted for little of the variability, partial eta squared = .036.

The group means for total Forgiveness of Self at Time 2 adjusted for initial differences were ordered as follows: the MBSR group mean was lowest (M = 32.69) followed by the student group (M = 42.21) and the waitlist group (M = 43.25). Follow-up
comparisons using covariate adjusted means and the Sidak adjustment found that the MBSR group mean was significantly lower (i.e., more self-forgiveness) at Time 2 than the waitlist group ($p < .001$) and the student group ($p < .001$). The mean difference between the waitlist group and the student group was not significant ($p = .92$). The hypothesis was supported.

To see if this significant effect for self-forgiveness for the MBSR treatment was related to working with an external therapist while in the MBSR program, an ANCOVA was carried for MBSR individuals with the grouping factor being “In Therapy / Not in Therapy” as this data had been collected at outset. There were 22 individuals in the MBSR group who working with a therapist and 36 who were not (one data point missing from Therapy, and two data points missing from FOS2). The difference on outcome estimated marginal means for FOS2 between the individuals in therapy ($M = 35$) and those who were not ($M = 33.5$) was small. The ANCOVA (which fulfilled homogeneity of variance and homogeneity-of-slope assumptions) was not significant, $F(1, 54) = .141, p = .708$. Being in therapy or not did not make a difference to the outcome on self-forgiveness.

As data had been collected from MBSR groups taught by three different teachers (n = 37, n = 17 and n = 7) an ANCOVA (which fulfilled homogeneity of error variance and homogeneity-of-slope assumptions) tested the three MBSR groups on self-forgiveness. The result was not significant, $F(2, 54) = .203, p = .817$, suggesting that the teacher did not make a difference to outcomes on self-forgiveness.
Next, along with increases in forgiveness, this research hypothesized that empathy (perspective taking and empathic concern) would increase for the MBSR group.

H3: Comparing the MBSR treatment group and the control groups, it was hypothesized that the pre to post change would reveal a significantly greater increase in empathy, specifically in perspective taking and empathic concern, for the MBSR treatment group in comparison to the control groups, controlling for scores at outset.

Separate GLM Univariate ANCOVAs were run comparing groups on Perspective Taking and Empathic Concern at Time 2, controlling for the Time 1 scores.

**Perspective Taking:** The hypothesis (H3) was not supported. Levene’s Test of homogeneity of error variance was not significant $F(2,111) = .703$, ns. A preliminary test of the homogeneity-of-slopes assumption indicated that the relationship between the covariate (Perspective Taking Time 1 score) and the dependent variable (Perspective Taking Time 2 score) did not differ significantly as a function of the independent groups (interaction was not significant, $F(2, 108) = 1.884$, ns, partial eta squared = .034. Results of the ANCOVA showed that the effect of group on Perspective Taking was not significant, $F(2, 110) = .242$, $p=.785$, partial eta squared = .004. There was no difference between groups on outcome scores for Perspective Taking.

**Empathic Concern:** The hypothesis (H3) was not supported. Levene’s Test of homogeneity of error variance was not significant, $F(2,111) = 1.744$, ns. A preliminary test of homogeneity-of-slopes assumption indicated that the relationship between the covariate (Empathic Concern Time 1 score) and the dependent variable (Empathic
Concern Time 2 score) did not differ significantly as a function of the groups (interaction was not significant, $F(2, 108) = .362, p = .697$, partial eta squared = .007. Results of the ANCOVA showed that the effect of group on Empathic Concern was not significant, $F(2, 110) = 3.046, p = .052$, partial eta squared = .052. There was no difference between groups on outcome scores for Empathic Concern.

**Fantasy & Personal Distress:** No significant differences were observed between groups on outcome scores for the IRI subtests of Fantasy and Personal Distress. For Fantasy, Levene's test was not significant and a preliminary test of the homogeneity-of-slopes assumption indicated that the relationship between the covariate (Fantasy Time 1 score) and the dependent variable (Fantasy Time 2 score) did not differ significantly as a function of the groups (interaction was not significant, $F(2, 108) = .525, p = .593$, partial eta squared = .01. Results of the ANCOVA showed that the effect of group on Fantasy was not significant, $F(2, 110) = .88, p = .42$, partial eta squared = .016.

For Personal Distress, Levene's test was not significant, but a preliminary test of the homogeneity-of-slopes assumption indicated that the relationship between the covariate (Personal Distress Time 1 score) and the dependent variable (Personal Distress Time 2 score) differed significantly as a function of the groups, $F(2, 108) = 4.513, p = .013$. Therefore ANCOVA was not used. Difference scores were calculated (PD Time 1 minus PD Time 2) and ANOVA was used to compare group difference score means. The result was not significant, $F(2, 111) = 1.261, p = .288$. 
The final two hypotheses were correlational hypotheses.

H6: Among the treatment group there would be a positive correlation between total minutes of home practice and greater other-forgiveness, greater mindfulness, and greater perspective taking and empathic concern.

H7: Among the treatment group there would be a negative correlation between total minutes of home practice and decreased trait anxiety, between total minutes of home practice and decreased state anxiety and between total minutes of home practice and decreased score on the Forgiveness of Self scale (i.e. more self-forgiveness).

Home practice logs were collected from individual in the MBSR condition to attempt to determine if time spent in mindfulness practices was related to outcome variables. Only 49 out of 60 Home Practice logs were returned. The mean home practice reported was 38 minutes per day and the range was from 10 minutes a day to 72 minutes a day.

Difference scores between Time 1 and Time 2 were calculated for the variables of state anxiety, trait anxiety, mindfulness, perspective taking, empathic concern, other-forgiveness, and self-forgiveness. Pearson correlation coefficients were computed between the variable difference scores and Home Practice in Minutes. Not a single significant correlation was observed between any dependent variable and Home Practice. The best correlation (two tailed) between other-forgiveness difference score and Home Practice was $r = .064, p = .66, \text{ ns}$. 
For comparison, partial correlations were run for Home Practice in Minutes and each dependent variable while controlling for the Time 1 score on that dependent variable. Not a single partial correlation was significant. The best correlation between other-forgiveness and Home Practice was $r = .069$, $p = .64$, ns. Therefore the results did not support the correlational hypotheses (H6 and H7).
Chapter Four

Discussion

The current study investigated possible correlations between mindfulness training in MBSR and forgiveness, both self-forgiveness and other-forgiveness. It was assumed that mindfulness would lead to increases in empathy which would be correlated with increases in self-forgiveness and other-forgiveness. In addition, MBSR training was expected to result in decreases in state and trait anxiety, and increases in mindfulness.

Consistent with past studies, the MBSR treatment group showed significant decreases in state and trait anxiety and a significant increase in mindfulness, in comparison to control groups. This suggests that mindfulness was acquired by the individuals in the treatment group through the MBSR program as is generally claimed, and that the MBSR program appears to be successful at reducing stress and anxiety.

The prediction that MBSR training would lead to an increase in empathy, however, was not supported. Scores on the Perspective Taking and Empathic Concern scales of the Interpersonal Reactivity Index were in the normal range for all three groups at outset, and there was no significant changes observed from Time 1 to Time 2 for any group. It appears from this study that for individuals whose empathy was in the normal range to begin with, the MBSR treatment has no effect on levels of either cognitive or affective empathy. In addition there were no significant changes observed from Time 1 to Time 2 on the other IRI scales of Fantasy and Personal Distress.

Kristeller and Johnson (2003) have suggested that mindfulness practice initially is self-focused, but when outward-directed meditations are added, then the combination of
the two becomes an effective means to cultivate empathy and the universal capacities for love and connectedness, which Kristeller and Johnson connect conceptually with empathy in their model. This suggests that the practice of the simple basic technique of mindfulness per se (i.e., attention to and awareness of present-moment experience) has little to do with empathy. Since the curriculum of the MBSR program gives almost no time to the self-transcendent loving kindness meditation, and most of the eight weeks is spent in the practice of self-focused mindfulness, perhaps it is no surprise to find no changes on empathy scores were observed in the current study. The mindfulness studies that have reported increases in empathy usually include a self-transcendent meditation in their curriculum, which may account for their result. For example, the Shapiro, Schwartz and Bonner’s (1998) study which found an effect for empathy, specifically used a forgiveness meditation in the protocol.

It may be that the culture of MBSR might indirectly encourage the development of empathy over time, but by a mechanism different from the simple technique of practising present-moment mindfulness. The inspiring tenor of Kabat-Zinn’s book, Full Catastrophe Living, the occasional evocative poems and stories, and the emphasis on foundational attitudes of acceptance, welcoming and beginner’s mind, are examples of the culture that saturates the program.

The current study, like most studies of mindfulness that have used the IRI as a measure of empathy, found no significant increase in empathy (Galantino et al., 2005; Beddoe & Murphy, 2004). It is possible that a different measure of empathy might be more sensitive. Nor does the null result for empathy in the current study rule out the
possibility that more time might be required than the approximate ten-week time span of this study to develop empathy through mindfulness practice.

Considering the first of the two main hypothesis of this study, the observed greater self-forgiveness in the MBSR group might be the result of reduced rumination and better emotional regulation that the findings from other studies suggest that mindfulness may produce. However it would be difficult to detect whether rumination was a factor because the measure of self-forgiveness used in this study does not collect information about particular incidents about which rumination could have occurred.

Another possibility is that time spent in solitary mindfulness may have allowed individuals in the MBSR group to realize that they were excessively harsh on themselves thus leading to self-forgiveness. The practice of mindfulness requires that one be aware without judgment of the contents of one's thoughts, both positive and negative. In a non-mindful state, a self-blaming person might be using a perceptual filter to ignore positive aspects about themselves, whereas in a mindful state, the positive thoughts would not be subject to filtering.

Yet another possibility is that the change in self-forgiveness may have come when an MBSR participant sees that others in the group have been in situations where self-forgiveness would have been more difficult, thus leading them to understand that they were being harsher on themselves than necessary.

Still another possibility is that being well treated and being positively regarded by other participants in the MBSR group, especially if such relationships were absent in their
lives, may have led some MBSR participants to increased self-esteem and self-forgiveness.

Given all these possibilities, the increases in self-forgiveness might have arisen from a combination of the above factors and not just from the mindfulness practice per se. The relationship between MBSR training and self-forgiveness is not clear and further explorations, perhaps using a combined qualitative/quantitative research design could explore the sources of the change.

The second main hypothesis concerned other-forgiveness. There was an increase in other-forgiveness for the MBSR group but the effect was small (partial eta squared .117). The measure used in the current study was an offence-specific measure, the Enright Forgiveness Inventory, which asks the individual to think of a particular incident in which the respondent was deeply hurt, and then rate how she feels towards the offender (positive and negative affect), how she thinks of the offender (positive and negative cognition), and how she would behave toward the offender (positive and negative behaviour). The six subscale scores are totalled for a total forgiveness score with higher score meaning more forgiveness. According to the EFI manual (Enright, Rique & Coyle, 2000), change typically occurs in the following way. The greatest changes typically occur in how one thinks of the offender, and decreases in negative cognition and increases in positive cognitions are observed. Next in magnitude are changes in behaviour, with some decreases in negative behaviours and some increases in positive behaviours. The least change typically occurs in the affective domain, with
usually only small decreases of negative feelings and even smaller increases of positive feelings being observed (from EFI manual, p. 9).

An examination of the six subscales showed significant increase in positive and decrease in negative cognitions in the MBSR group at program completion. However an unexpected result was that the MBSR group also showed a significant decrease in negative affect toward the offenders. There was no change on the behaviour scale.

It is possible that the significant decrease in negative affect toward offenders is the result of the basic mindfulness technique of mental awareness of inner phenomena and letting them go. The research of Creswell et al., (2007) and Lieberman et al., (2007) suggests that the inward mental labelling of negative affect seem to result in less negative reactivity in the amygdala system, which may lead to less rumination and to increases in forgiveness.

It is known that situational aspects of interpersonal offences affect other-forgiveness. For example, particularly in close relationships, the presence of an apology can spark an increase in empathy which leads to forgiveness. An unknown in the present study is to what extent, if any, the MBSR participants had encountered any apology, expression of remorse, or compensation from their offenders. It is possible that in some cases individuals in the MBSR group had yet to encounter the individual who hurt them since they began their mindfulness training. It is possible that the MBSR-trained individuals, primed by more positive cognitions and less negative affect, might make efforts to restore relationships should they encounter their people who hurt them, provided that they felt safe to do so. MBSR participants would have to be sampled some
time after their program ended to see if this is the case. In some cases, however, even through negative affect and rumination and revenge feelings may have lessened, it might be appropriate to withhold forgiveness behaviour for self-protection, such as in the case of childhood sexual abuse victims.

Changes in the MBSR group on self-forgiveness and other-forgiveness occurred whether or not individuals were in therapy. Data for therapy participation was collected only at outset. It is possible that unknown to the researcher, more individuals may have embarked on therapy during the MBSR program, and this could have influenced the results.

Finally, although it was expected that time spent in mindfulness home practice during the MBSR program would correlate with changes on outcome variables, no correlation was observed between home practice and any outcome variable. The mean practice reported was 38 minutes per day and the range was from 10 minutes a day to 72 minutes a day. It is always possible that the time reported may not be accurate. Secondly, individuals may not be practising mindfulness correctly. Instead they may be using the time to daydream or solve the day’s problems. Other possibilities are that the quality of the time spent in mindfulness is more important than the duration. It may be that the minimum of 10 minutes a day may be enough and quantity past a certain point is of lesser value. As yet there is no measure of mindfulness quality. This lack of correlation also suggests that the benefits could come from attending the weekly MBSR meetings and practising with the group and from other non-specific aspects of the program.
Finally, it is still possible that practice and outcomes may correlate but it might take longer than eight to ten weeks to see the correlation.

In conclusion, this exploration of mindfulness training as exemplified by MBSR has found positive correlations between mindfulness and self-forgiveness and other-forgiveness. This is useful knowledge for counsellors and mental health professionals who work with individuals who have difficult interpersonal relationships and issues of self-blame. This exploratory study suggests that it might be helpful to therapists to include mindfulness instruction within therapy, or to consider recommending MBSR or other group mindfulness interventions as adjuncts to therapy.

Limitations

A major limitation of this study was the correlational design. However this study was exploratory and the design issue is therefore addressed as a direction for future research in the following section.

Sample size may have been a limitation. Initially two groups were planned each with 45-50 individuals (an MBSR condition to be compared to an MBSR waitlist condition). That sample size was an estimate based on past meta analyses data of the effect size of MBSR on stress (0.49 to 0.59) and a power of .90. However when it became obvious that the pool of individuals eligible for the MBSR waitlist condition was small, it was necessary to recruit a third group of students. The final group numbers were uneven, with 60 in the MBSR condition, 24 in the MBSR waitlist condition and 30 in the student group. Care was taken in the analysis to use a method that did not bias results.
toward the largest cells. Even with these numbers, significant results were obtained in the hypothesized direction for other-forgiveness and self-forgiveness, although partial eta squares were small to moderate. It is unknown whether the effect size would have been larger with more even numbers.

Another limitation was the use of a convenience sample. Volunteers were recruited from existing MBSR courses, from those on a waitlist for MBSR courses, and from two local universities. The three groups did not significantly differ on level of stress reported; however it is possible that individuals who self-selected themselves for the MBSR program and waitlist may have been individuals who would be most likely to benefit from a mindfulness intervention. Individuals who were attracted to the MBSR program may have been not only temperamentally suited to mindfulness training but also in the active stage of lifestyle change and thus more motivated to practice mindfulness. This may limit the generalizability of the results.

A third limitation is that the participants knew what group they were in. There could have been a bias for appearing good (social desirability effect) with regard to forgiveness and self-forgiveness in the MBSR treatment group. It would have been helpful to include a social desirability control and measures of anger and rumination to better track the component changes in forgiveness.

Finally, because participants knew what group they were in, it is possible that the effect of expectation (placebo effect) for those in the MBSR group may have accounted for the improvements in stress and mindfulness in this research. This limitation is also a limitation of the vast bulk of mindfulness research done by other researchers as well.
Future Research

The present study was an exploratory correlational study with results that suggest a moderate effect for the MBSR intervention on self-forgiveness and a small effect for other-forgiveness. The present study did not have an active control condition that would compare MBSR with a program that would be as similar as possible to MBSR except that it would not teach mindfulness. It would be important for future research to have an active control condition in order to determine if the technique of mindfulness per se, that is, attention and awareness to the experience of the moment, caused the increases in self-forgiveness and other-forgiveness that were observed in the present study, because it is possible that some components of the overall MBSR program, as discussed above, were responsible for the observed increases in forgiveness and not the practice of mindfulness itself. Also, in a blind trial, randomly assigned individuals would not know if they were getting the active mindfulness treatment or a placebo treatment. This would help to remove the confounding of the effect of expectation.

Ideally, it would take future studies using both self-report, physiological measures and other types of third-party collaborative measures, in an active control design, with random assignment of participants to groups, to provide convincing evidence of an increase in forgiveness through mindfulness. However, it would be very challenging and expensive to develop an 8-week active control condition that would not only be plausible to participants, but also ethical to deliver to individuals with elevated stress, since participants would have to believe that they were getting therapeutic mindfulness training, although they would not be. Future correlational studies might be more practical
and feasible. In that case, it would be useful to employ a mixed qualitative/quantitative design. Interviews with participants might yield more fine-grained information about how the process of self-forgiveness takes place. If, as has been suggested, forgiveness takes place via the replacement of negative emotions by positive emotions, this could be studied within the context of mindfulness, as individuals might be more aware of their fluctuating internal emotional states and be able to report on them. In addition, future research could establish if increased self-forgiveness after MBSR training such as was observed in this study was enduring over time. Finally, it would be useful to research the role of MBSR and mindfulness training as adjuncts to existing psychotherapies. This is already being done pairing mindfulness with CBT, and it might be useful to pair mindfulness with other approaches.
References


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*Psychosomatic Medicine, 65, 564-570.*


*JSAS Catalog of Selected Documents in Psychology, 10, 85.*


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Satipatthana Samyutta, 47.10. Bhikkhunupassaa Sutta, translated by Andrew Olendzki. Retrieved September 2007 from
http://www.accesstoinsight.org/tipitaka/sn/sn47/sn47.010.olen.html


Effects of mindfulness-based stress reduction on the mental health of therapists in training. Training and Education in Professional Psychology, 1, 105-115.


Appendix A

Information Letter

Consent Form for MBSR Participants

Consent Form for Students
INFORMATION LETTER

MINDFULNESS-BASED STRESS REDUCTION (MBSR)
AND ATTITUDE CHANGE

AN INVITATION
You are invited to participate in a research study that explores attitude change as a possible effect of MBSR (mindfulness) training. There is some research to show that mindfulness has influence on perspective taking and empathy. The researcher, Linda Klevnick, is a doctoral student in the Department of Adult Education and Counselling Psychology at OISE/University of Toronto and working under the supervision of Dr. Jeanne Watson, C. Psych. This study is part of the requirements for obtaining a doctoral degree in counselling psychology. The main goal of this study is to see if mindfulness training has any effect on attitudes toward past events.

BACKGROUND
If you decide that you want to be part of this study you are consenting to:

- keep track of your daily home practice of MBSR during the 8 weeks of the program on a form that will be provided to you,
- fill out two sets of questionnaires, one set at our initial meeting and a second set of questionnaires at the completion of your MBSR program, or 8 weeks later. The first set takes about 75 minutes to complete and the second set will take about 40 minutes to complete.

CONFIDENTIALITY
All information gathered in this study will be held confidential and your confidentiality will be protected at all times. Only three exceptional circumstances would require me to break this agreement. In the very unlikely event that you tell me that you are going to hurt someone or yourself, I would be legally required to report it. Likewise, if you tell me that you are aware of a child being abused or neglected or in danger of being hurt OR if you tell me that you were, or are being, sexually abused by a registered health care professional, I would be required to report this information.

Your participation in the research is completely voluntary. This means that you are free to withdraw your consent and to discontinue participation at any time, and withdrawal will not affect your participation in the MBSR course. If you withdraw from this study, any information collected about you will be destroyed and not used in the study.

Your name will not appear on any of the questionnaires, which will be identified by a code number only, and which will be safely stored by the researcher in a locked cabinet. Consent forms will be filed separately from the questionnaires in locked storage. Only my supervisor, Dr. J. Watson, and I will have access to the questionnaires. The data from
the questionnaires will be analyzed and reported as group data only. Electronic storage of data for statistical analysis will be by code number only and will be password protected to safeguard confidentiality. In addition to a thesis, the information in this study may appear in future publications and public presentations. Any information that can identify you will be disguised in any future written report or presentation.

RISKS/DRAWBACKS
You will be devoting some of your time to this study. The time involved is approximately 75 minutes for initial set of questionnaires and 40 minutes for the second set of questionnaires, and about 2 minutes per day to log your home practice (if applicable).

Some of the research questionnaires will ask you to call to mind a recent experience of a deep and unfair hurt. This could cause you some distress, as it may be painful to think about such incidents. You are therefore reminded that:

- You can omit any questions that you may find upsetting and you don’t want to answer
- You are free to discontinue the research at any point,
- If you wish to talk to a counselor (other than your own physician, therapist or EAP) about any emotional issues that may possibly arise, the researcher will provide you with a list of counselling resources in the community.

BENEFITS
There are no direct benefits to you for participation, but this study will contribute to scientific knowledge about the effects and benefits of mindfulness training. All volunteers will be entered in a draw for a cash prize of $100 so there is a chance that you may win the prize. Withdrawal will not affect your chance to win the cash lottery prize.

CONSENT
If you would like to participate in this research, please complete the attached consent form. You will receive an additional copy of the consent form for your records. You can receive written information about the results of this study by completing the Summary Results form attached to the consent form.

QUESTIONS
If you have any questions about this study, please contact me, Linda Klevnick at linda.klevnick@utoronto.ca or my supervisor, Dr. Jeanne Watson at Jeanne.watson@utoronto.ca

Thank you,

Linda Klevnick, M. Ed.
Doctoral Candidate, Counselling Psychology, OISE/UT
CONSENT FORM
Mindfulness Study

I understand that I will be participating in a research study examining the effects of mindfulness practice on attitudes to past events. I have read the Information Letter describing the purpose and procedure of this study and have had the opportunity to ask questions about the study.

I understand that my participation will involve filling out two questionnaire packages, approximately 8 weeks apart, and this will take about 75 minutes for the first set and 40 minutes for the second set. I will also log my daily mindfulness homework practice, if applicable. I will receive no reimbursement for my participation, but my name will be entered in a draw for one cash prize of $100, and the draw will take place when the data collection phase of the study is over.

I understand that any information provided by me will remain confidential and that I am able to withdraw from the study at any time by indicating this to the researcher and withdrawal from the study will in no way affects my participation in the MBSR course. I understand that the information in this study may appear in future publications and public presentations. The questionnaires will not contain my name and any information that can identify me will be disguised in any future written report.

I understand that my participation in this study will provide no direct benefit to me. Some of the questionnaires will ask about my attitude to past negative events and it is possible that I may find it upsetting. I understand that my participation in this study is completely voluntary and I may decline to answer any questions, and I may withdraw from the study at any time without negative consequences to me. If I wish to discuss my feelings with a counselor, the researcher will provide me with a list of counseling resources that are available in the community. If I decide to withdraw, I understand that any data collected on me will not be used.

I understand that I will retain a copy of this consent form for myself. I understand that if I have questions about this study I can contact the researcher, Linda Klevnick (416-921-3995) or her supervisor, Dr. Jeanne Watson (416-923-6641, ext. 2555). I understand that I may receive written information about the results of this study by completing the attached form.

Declaration of Informed Consent

I have read the above information and agree to participate in questionnaire portion of the study.

Name (print): __________________________________________

Signature: __________________________________________

Date: _______________ Witness: ________________________
I understand that I will be participating in a research study examining the effects of a mindfulness stress intervention on attitudes to past events. I have read the Information Letter describing the purpose and procedure of this study and have had the opportunity to ask questions about the study.

I understand that I will not receive the mindfulness stress intervention. I understand that my participation will involve filling out two questionnaire packages, approximately 8 weeks apart, and this will take about 60-75 minutes for the first set and 30-40 minutes for the second set. I will receive no reimbursement for my participation, but my name will be entered in a draw for one cash prize of $100, and the draw will take place when the data collection phase of the study is over.

I understand that any information provided by me will remain confidential and that I am able to withdraw from the study at any time by indicating this to the researcher. I understand that in addition to a thesis, the information in this study may appear in future publications and public presentations. The questionnaires will not contain my name and any information that can identify me will be disguised in any future written report or presentation.

I understand that my participation in this study will provide no direct benefit to me. Some of the questionnaires will ask about my attitude to past negative events and it is possible that I may find it upsetting. I understand that my participation in this study is completely voluntary and I may decline to answer any questions, and I may withdraw from the study at any time without negative consequences to me. If I wish to discuss my feelings with a counselor, the researcher will provide me with a list of counseling resources that are available in the community. If I decide to withdraw, I understand that any data collected on me will not be used.

I understand that I will retain a copy of this consent form for myself. I understand that if I have questions about this study I can contact the researcher, Linda Klevnick (416-921-3995) or her supervisor, Dr. Jeanne Watson (416-923-6641, ext. 2555). I understand that I may receive written information about the results of this study by completing the attached form.

Declaration of Informed Consent

I have read the above information and agree to participate in the study.

Name (print): 

Signature: 

Date: 
Witness:
Appendix B

Poster to Recruit MBSR Participants

& Poster to Recruit Students
MINDFULNESS STUDY

Research participants are needed for a study examining the effects of mindfulness practice on attitudes to past experiences. The purpose of the study is to further our understanding of the wider effects of mindfulness practice.

Participants are seeking participation from men and women over 18 years of age who:

- Have no previous experience of mindfulness meditation or Mindfulness Based Stress Reduction (MBSR) but are intending to take the course
- Are available for a meeting of approximately 1 hour and 15 minutes to sign a consent form and fill out a set of questionnaires
- Are willing to complete a second set of questionnaires 8 weeks later
- Are willing to keep a log of their daily home practice of mindfulness during the MBSR course (2 minutes per day)

The investigator, Linda Klevnick, is a doctoral student in the Department of Adult Education and Counselling Psychology at the Ontario Institute for Studies in Education at the University of Toronto, and working under the supervision of Dr. Jeanne Watson, C. Psych. Participants will complete one set of anonymous confidential questionnaires at a convenient place and time for the participant. A second set of questionnaires will be filled out eight weeks later. Participants will not be paid, however all participants’ names will be placed in a draw for a chance to win one prize of $100 in cash. The draw will take place when data collection is complete and the winner will be notified.

For more information or to participate, please contact:
Linda at
Research Participants Wanted

Individuals are needed to be part of a study examining a stress intervention and its impact on attitudes to past experiences. A participant will not receive the stress intervention but simply be asked to complete two sets of questionnaires, eight weeks apart.

I am seeking volunteers from men and women over 18 years of age who:

- Feel that they are in a stressful period in their lives
- Have no experience of mindfulness meditation or of Mindfulness Based Stress Reduction (MBSR)

The investigator, Linda Klevnick, is a doctoral student in the Department of Adult Education and Counselling Psychology at the Ontario Institute for Studies in Education at the University of Toronto, and working under the supervision of Dr. Jeanne Watson, C. Psych. Participants will complete one set of anonymous confidential questionnaires at a convenient place and time for the participant. A second set of questionnaires will be filled out eight weeks later and returned by mail. Participants will not be paid, however all participants’ names will be placed in a draw for a chance to win one prize of $100 in cash. The draw will take place when data collection is complete and the winner will be notified.

For more information or to participate, please contact:

Linda at
Appendix C – Demographic Information
Demographic Data

Please mark the choice the best fits you. Supply additional detail only where indicated. Do NOT put your name on this form.

1) Age: __________

2) Sex: M____ F____

3) Marital Status:
   Single___ Married___ Common Law___ Divorced___ Widowed___ Separated___

4) Highest Level of Education Attained:
   Elementary School____ High School _____
   Community College____ University (undergraduate) ____
   University Post Graduate or Professional Degree____

5) Ethnicity: Caucasian____ Black_______ First Nations_______
   Hispanic____ Asian_______ Other________________________

6) In my life, religion is: (circle the number that fits your situation)
   Extremely Important 1 2 3 4
   Not Important At All 5

7) On a scale of 1 to 10, my current level of stress is:
   No Stress At all Moderate Maximum
   1 2 3 4 5 6 7 8 9 10

8) My most significant area of stress is:
   Finances/Money____ Health____ Career____ Family or Relationship____
   Other (specify if you wish) _________________________________________

9) Are you working with a psychotherapist at this time?  Y   N

THANK YOU. Please continue.
Appendix D – Enright Forgiveness Inventory
Enright Forgiveness Inventory

(Robert D. Enright, © 2000, 2004, International Forgiveness Institute. All rights reserved. 5 sample items reproduced with permission of the publisher, Mindgarden, Inc.)

The EFI consists of 6 subscales: positive and negative affect, positive and negative behaviour, and positive and negative cognition. The respondent is asked to rate, on a six point Likert scale, an individual who has deeply and unjustly hurt the respondent.

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<tbody>
<tr>
<td>1</td>
<td>Strongly</td>
<td>Disagree</td>
<td>Slightly</td>
<td>Disagree</td>
<td>Slightly</td>
<td>Agree</td>
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(5 items from the Affective Scale)

I feel _______ toward him/her.

1. warm
2. negative
3. kindness
4. happy
5. hostile

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Appendix E – Forgiveness of Self Questionnaire
(FOS)
FOS Questionnaire


Please respond to the following statements by circling ONE of the following:
1 = Strongly Disagree
2 = Mostly Disagree
3 = Not Sure
4 = Most Agree
5 = Strongly Agree

<table>
<thead>
<tr>
<th>Statement</th>
<th>Code</th>
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<tbody>
<tr>
<td>1. I feel guilty because I don’t do what I should for my loved ones.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>2. I often feel that no matter what I do now I will never make up for the mistakes I have made in the past.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>3. I regret the things I do more often than other people seem to regret things they do.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>4. A lot of times I have feelings of guilt or regret for the things I have done.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>5. I often feel like I have failed to live the right kind of life.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>6. I often get in trouble for not being careful to follow the rules.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>7. I frequently put myself down for failing to work as hard as I should.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>8. I find it hard to forgive myself for some things that I have done.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>9. I frequently apologize for myself.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>10. I am often angry at myself for the stupid things I do.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>11. If I hear a sermon, I usually think about things that I have done wrong.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>12. I brood or think a lot about all the troubles I have.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>13. I rarely feel as though I have done something wrong or sinful.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>14. I don’t think of myself as an evil person.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>15. It is easy for me to admit that I am wrong.</td>
<td>1 2 3 4 5</td>
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</tbody>
</table>
Appendix F – Interpersonal Reactivity Index (IRI)
The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate letter on the scale at the top of the page: A, B, C, D, or E. When you have decided on your answer, check the letter column next to the item number.

**IRI Scale**

(© Mark H. Davis, 1980, 1983. Used with permission)

**READ EACH ITEM CAREFULLY BEFORE RESPONDING.**

*Answer as honestly as you can. Thank you.*

<table>
<thead>
<tr>
<th>Statements</th>
<th>Ratings</th>
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<tbody>
<tr>
<td></td>
<td>Statement describes me:</td>
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<tr>
<td></td>
<td>Not Well</td>
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<td></td>
<td>A</td>
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1. I daydream and fantasize, with some regularity, about things that might happen to me.

2. I often have tender, concerned feelings for people less fortunate than me.

3. I sometimes find it difficult to see things from the "other guy's point of view.

4. Sometimes I don't feel very sorry for other people when they are having problems.

5. I really get involved with the feelings of the characters in a novel.

6. In emergency situations, I feel apprehensive and ill-at-ease.

7. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it.

8. I try to look at everybody's side of a disagreement before I make a decision.

9. When I see someone being taken advantage of, I feel kind of protective towards them.
<p>| | | | | | |</p>
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<tr>
<td><strong>10.</strong></td>
<td>I sometimes feel helpless when I am in the middle of a very emotional situation.</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
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<tr>
<td><strong>11.</strong></td>
<td>I sometimes try to understand my friends better by imagining how things look from their perspective.</td>
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<tr>
<td><strong>12.</strong></td>
<td>Becoming extremely involved in a good book or movie is somewhat rate for me.</td>
<td></td>
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<td><strong>13.</strong></td>
<td>When I see someone get hurt, I tend to remain calm.</td>
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<tr>
<td><strong>14.</strong></td>
<td>Other people’s misfortunes do not usually disturb me a great deal.</td>
<td></td>
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<td><strong>15.</strong></td>
<td>If I’m sure I’m right about something, I don’t waste much time listening to other people’s arguments.</td>
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<td><strong>16.</strong></td>
<td>After seeing a play or movie, I have felt as thought I were one of the characters.</td>
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<td><strong>17.</strong></td>
<td>Being in a tense emotional situation scares me.</td>
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<td><strong>18.</strong></td>
<td>When I see someone being treated unfairly, I sometimes don’t feel very much pity for them.</td>
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<td><strong>19.</strong></td>
<td>I am usually pretty effective in dealing with emergencies.</td>
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<td><strong>20.</strong></td>
<td>I am often quite touched by things that I see happen.</td>
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<td><strong>21.</strong></td>
<td>I believe that there are two sides to every question and try to look at them both.</td>
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<td><strong>22.</strong></td>
<td>I would describe myself as a pretty soft-hearted person.</td>
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<td><strong>23.</strong></td>
<td>When I watch a good movie, I can very easily put myself in the place of a leading character.</td>
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<td><strong>24.</strong></td>
<td>I tend to lose control during emergencies.</td>
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<tr>
<td>25. When I’m upset at someone, I usually try to “put myself in his/her shoes” for a while.</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
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<tr>
<td>26. When I am reading an interesting story of novel, I imagine how I would feel if the events in the story were happening to me.</td>
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<td>27. When I see someone who badly needs help in an emergency, I go to pieces.</td>
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<td>28. Before criticizing somebody, I try to imagine how I would feel if I were in their place.</td>
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Appendix G – State Trait Anxiety Inventory - Form X
State Trait Anxiety Inventory - Form X

(© 1968, 1977 by Charles D. Spielberger. All rights reserved. 5 items reproduced with permission of the publisher, Mindgarden, Inc.)

The State Anxiety scale consists of twenty statements that evaluate how respondents feel “right now, at this moment.”

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<tr>
<td>Not At All</td>
<td>Somewhat</td>
<td>Moderately So</td>
<td>Very Much So</td>
<td></td>
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</tbody>
</table>

A. I feel at ease. 1 2 3 4
B. I feel upset. 1 2 3 4
C. I am relaxed. 1 2 3 4

The Trait Anxiety scale consists of twenty statements that assess how respondents feel “generally”.

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<tr>
<td>Not At All</td>
<td>Somewhat</td>
<td>Moderately So</td>
<td>Very Much So</td>
<td></td>
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</tbody>
</table>

A. I am a steady person. 1 2 3 4
B. I lack self-confidence. 1 2 3 4
Appendix H – Mindful Attention Awareness Scale
Everyday Experience Scale

(MAAS, Brown & Ryan, 2003. Used with permission)

Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience.

1 = Almost Always
2 = Very Frequently
3 = Somewhat Frequently
4 = Somewhat Infrequently
5 = Very Infrequently
6 = Almost Never

1. I could be experiencing some emotion and not be conscious of it until some later time. 1 2 3 4 5 6
2. I break or spill things because of carelessness, not paying attention or thinking of something else. 1 2 3 4 5 6
3. I find it difficult to stay focused on what’s happening in the present. 1 2 3 4 5 6
4. I tend to walk quickly to get where I’m going without paying attention to what I experience along the way. 1 2 3 4 5 6
5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention. 1 2 3 4 5 6
6. I forget a person’s name almost as soon as I’ve been told it for the first time. 1 2 3 4 5 6
7. It seems I am running on “automatic” without much awareness of what I’m doing. 1 2 3 4 5 6
8. I rush through activities without being really attentive to them. 1 2 3 4 5 6
9. I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there. 1 2 3 4 5 6
10. I do jobs or tasks automatically, without being aware of what I’m doing.  

11. I find myself listening to someone with one ear, doing something else at the same time.  

12. I drive places on “automatic pilot” and then wonder why I went there.  

13. I find myself preoccupied with the future and the past.  


15. I snack without being aware that I am eating.
Appendix I – NEO PI-R
NEO-PI-R

The NEO-PI-R consists of 240 statements. The subject is asked to read each item and circle the answer that best corresponds to his/her agreement or disagreement.

The 3 sample items below are reproduced by special permission of the Publisher, Psychological Assessment Resources, Inc., 16204 North Florida Avenue, Lutz, Florida 33549, from the NEO Personality Inventory-Revised by Paul T. Costa Jr., PhD and Robert R. McCrae, PhD, Copyright 1978, 1985, 1991, 1992 by Psychological Assessment Resources, Inc. (PAR). Further reproduction is prohibited without permission of PAR.

<table>
<thead>
<tr>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
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</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neutral</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

I rarely experience strong emotion.  
SD D N A SA

I try to be courteous to everyone I meet.  
SD D N A SA

Sometimes I’m not as dependable or reliable as I should be.  
SD D N A SA
Appendix J – Home Practice Log
**MBSR Home Practice Record**  

Please record the number of minutes spend in each activity.  
Put zero (0) on days with no practice. Please be assured that your response is anonymous. Your accurate response will help to improve our knowledge about what is most helpful about the program.

<table>
<thead>
<tr>
<th>Week One</th>
<th>Body Scan</th>
<th>Yoga</th>
<th>Meditation</th>
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<tbody>
<tr>
<td>Wednesday (class)</td>
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### Week Nine

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Thank you
Appendix K – Assumptions for Statistical Tests
Data screening and ANCOVA assumptions

Although random assignment is an assumption of ANCOVA, ANCOVA can be used with quasi-experimental data, for example in much contemporary nursing research where participants for ethical reasons or for reasons of time and expense cannot be randomly assigned. Random assignment in the current study was not possible as participants were drawn from a convenience sample of individuals enrolling in existing MBSR programs in the community. In both the MBSR and MBSR waitlist groups, individuals self-selected themselves to participate in a mindfulness stress intervention, and time of initial contact determined whether they went into a treatment group or a waitlist group. Individuals in the student control group were a convenience sample of individuals who may not necessarily have shared that interest. In quasi-experimental design natural groups can differ with respect to covariate means.

Regarding independence of observations: each individual’s scores (pre-MBSR and post-MBSR or Time 1 and Time 2) are independent of the scores of other individuals. All potential covariates were measured before the intervention or waiting period took place using the standardized measures, which have adequate reliability statistics (reported in the Measures section).

Outliers

The data were examined for outliers by examining box plots and by converting scores for each variable by group to z scores. Any z score of $> +/- 3$ was treated as an outlier. Only one such outlier was found: a score in Home Practice in Minutes (z score + 5.44) was replaced by a value one unit greater than the last case that fit the distribution.
Several data points had z scores of between +/- 2.58 and +/- 3. Each was examined and evaluated. These were not the result of error but rather they were the scores of individuals who endorsed high anxiety, elevated neuroticism and low mindfulness as might be expected in a sample of persons seeking an intervention for stress or on a waitlist for that intervention. Nevertheless statistical analyses were run both including and excluding those data points and the F test results had almost identical p values. Therefore these scores were left in the analysis. Because it was an exploratory study it was considered important to work with the data as collected. In some cases these elevated scores slightly affected the normality of their distributions.

Normality of Distribution

Distributions were examined for skewness and kurtosis. According to Tabachnik and Fidell (2001, 4th edition p.74) when the skewness statistic is divided by the standard error of skewness, the result is a z score that should be evaluated at a conservative alpha for a small to moderate sample size (under 100). All z scores over an absolute value of 2 are reported below and none were significant at an alpha of .01 (i.e., z score >= +/-2.58). Only state anxiety Time 1 for the MBSR waitlist group exceeded a skewness statistic of +1. A square root procedure was applied to the variable and then one-way ANOVAs were run and results were compared to results of a one-way ANOVA using untransformed distribution. Results were very similar. Therefore these slight departures from normality were determined not to be substantive enough to affect ANCOVA procedure, which is robust to violations of normality if sample size is moderate and
homogeneity of regression slope is not violated. In all cases kurtosis was in the acceptable range of fluctuation for that statistic.

Table 6
Summary of Skewness z scores > +/-2 at Time 1 & Time 2

<table>
<thead>
<tr>
<th>Variable and Source</th>
<th>z score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroticism MBSR group</td>
<td>$z = -2.32$, ns</td>
</tr>
<tr>
<td>Mindfulness1 MBSR group</td>
<td>$z = +2.43$, ns</td>
</tr>
<tr>
<td>State Anxiety1 Waitlist</td>
<td>$z = +2.56$, ns</td>
</tr>
<tr>
<td>State Anxiety2 MBSR group</td>
<td>$z = +2.30$, ns</td>
</tr>
<tr>
<td>State Anxiety2 Waitlist</td>
<td>$z = +1.93$, ns</td>
</tr>
<tr>
<td>State Anxiety2 Student group</td>
<td>$z = +2.18$, ns</td>
</tr>
<tr>
<td>FOS2 MBSR group</td>
<td>$z = +2.08$, ns</td>
</tr>
</tbody>
</table>

alpha = .01
**Linearity**

ANCOVA models the output variable as an additive linear combination of the input variables and constants. The relationship between the pretest and posttest scores is linear.

**Homogeneity of Variances**

Levene's Test was used to test of homogeneity of variances. The only variable that did not meet homogeneity of variance across groups was age and it was not used as a covariate.

**Homogeneity of Regression Slope**

ANCOVA assumes homogeneity of regression slopes. This assumption was tested in a custom model GLM Univariate looking for significant interactions. When no significant interactions were found, ANCOVA was run on the data in a full factorial model.

Significance was set at the .01 level for the ANCOVA to convincingly deal with the unequal group sizes and minor non-normality of distribution. Pairwise comparisons were tested with an alpha set at .01 using the Sidak correction.
Appendix L
ANCOVA Tables
Table 7
State Anxiety Total Time 2 Covariate adjusted means

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Std Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBSR group</td>
<td>34.890</td>
<td>1.180</td>
</tr>
<tr>
<td>Waitlist group</td>
<td>44.814</td>
<td>1.879</td>
</tr>
<tr>
<td>Student group</td>
<td>41.670</td>
<td>1.663</td>
</tr>
</tbody>
</table>

*Notes:* Covariate evaluated at the following value: State Anxiety Time 1 = 45.39

Table 8
Analysis of Covariance for State Anxiety Time 2 Score as a Function of Group with State Anxiety Time 1 Score as Covariate

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Partial eta squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Anxiety Time 1 (covariate)</td>
<td>1</td>
<td>43.63.731</td>
<td>52.604***</td>
<td>.324</td>
</tr>
<tr>
<td>Group</td>
<td>2</td>
<td>993.422</td>
<td>11.976***</td>
<td>.179</td>
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<tr>
<td>Error</td>
<td>110</td>
<td>82.954</td>
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</tbody>
</table>

***p <.001.
Table 9
Trait Anxiety Total Time 2 Covariate adjusted means

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Std Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBSR group</td>
<td>38.789</td>
<td>.964</td>
</tr>
<tr>
<td>Waitlist group</td>
<td>47.248</td>
<td>1.515</td>
</tr>
<tr>
<td>Student group</td>
<td>47.858</td>
<td>1.359</td>
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</table>

Notes: Covariate evaluated at the following value: Trait Anxiety Time 1 = 48.93

Table 10
Analysis of Covariance for Trait Anxiety Time 2 Score as a Function of Group with Trait Anxiety Time 1 score as Covariate.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
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<th>F</th>
<th>Partial eta squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trait Anxiety Time 1 (covariate)</td>
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<td>5269.197</td>
<td>96.476***</td>
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<td>1054.258</td>
<td>19.303***</td>
<td>.260</td>
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<tr>
<td>Error</td>
<td>110</td>
<td>54.617</td>
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</table>

*** p < .001.
## Table 11
Mindfulness Total Time 2 Covariate adjusted means

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Std Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBSR group</td>
<td>4.202</td>
<td>.073</td>
</tr>
<tr>
<td>Waitlist group</td>
<td>3.457</td>
<td>.115</td>
</tr>
<tr>
<td>Student group</td>
<td>3.586</td>
<td>.105</td>
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</table>

*Note: Covariate evaluated at the following value: Mindfulness Time 1 = 3.4354*

## Table 12
Analysis of Covariance for Mindfulness Time 2 Score as a Function of Group with Mindfulness Time 1 Score as Covariate

<table>
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<tr>
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<th>F</th>
<th>Partial eta squared</th>
</tr>
</thead>
<tbody>
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<td>Mindfulness Time 1 (covariate)</td>
<td>1</td>
<td>34.226</td>
<td>108.751***</td>
<td>.497</td>
</tr>
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<td>Group</td>
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<td>6.343</td>
<td>20.155***</td>
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<td>.315</td>
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***p < .001.
### Table 13
EFI 2 (Other-forgiveness) Total Time 2 Covariate adjusted means

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Std Error</th>
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<tr>
<td>MBSR group</td>
<td>259.959</td>
<td>3.972</td>
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<tr>
<td>Waitlist group</td>
<td>236.604</td>
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<tr>
<td>Student group</td>
<td>238.499</td>
<td>5.541</td>
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Notes: Covariates are evaluated at the following values: Degree of Hurt = 4.27; EFI Time 1 = 228.17

### Table 14
Analysis of Covariance for Other-forgiveness Total Time 2 Score as a Function of Group with Other-forgiveness Time 1 Score and Degree of Hurt as Covariates

<table>
<thead>
<tr>
<th>Source</th>
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<td>EFI Time 1 (covariate)</td>
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<td>447.878***</td>
<td>.804</td>
</tr>
<tr>
<td>EFI Degree of Hurt (covariate)</td>
<td>1</td>
<td>4372.903</td>
<td>4.769</td>
<td>.042</td>
</tr>
<tr>
<td>Group</td>
<td>2</td>
<td>6619.350</td>
<td>7.219***</td>
<td>.117</td>
</tr>
<tr>
<td>Error</td>
<td>109</td>
<td>916.919</td>
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</table>

*** p < .001.
Table 15
FOS 2 (Forgiveness of Self) Covariate adjusted group means and standard deviations.

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Std Error</th>
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</thead>
<tbody>
<tr>
<td>MBSR group</td>
<td>32.690</td>
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<td>Waitlist group</td>
<td>43.252</td>
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</tr>
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<td>Student group</td>
<td>42.214</td>
<td>1.239</td>
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</table>

Notes: Covariates are evaluated at the following values: NEO Neuroticism = 61.59; FOS Time 1 = 42.96

Table 16
Analysis of Covariance for Forgiveness of Self Time 2 as a Function of Group with Forgiveness of Self Time 1 score and NEO Neuroticism score as Covariates.

<table>
<thead>
<tr>
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<th>Partial eta squared</th>
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<tr>
<td>NEO Neuroticism (covariate)</td>
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<tr>
<td>FOS Time1 (covariate)</td>
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<td>2109.432</td>
<td>47.512***</td>
<td>.307</td>
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<tr>
<td>Group</td>
<td>2</td>
<td>1343.698</td>
<td>30.265***</td>
<td>.361</td>
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<tr>
<td>Error</td>
<td>107</td>
<td>44.398</td>
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<td></td>
</tr>
</tbody>
</table>

*** p <.001.
Table 17
Perspective Taking (IRI) Total Time 2 Covariate adjusted means

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Std Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBSR group</td>
<td>18.20</td>
<td>.392</td>
</tr>
<tr>
<td>Waitlist group</td>
<td>18.41</td>
<td>.622</td>
</tr>
<tr>
<td>Student group</td>
<td>18.67</td>
<td>.556</td>
</tr>
</tbody>
</table>

Notes: Covariate evaluated at the following value: Perspective Taking = 17.49

Table 18
Analysis of Covariance for Perspective Taking (IRI) Time 2 Score as a Function of Group with Perspective Taking Time 1 as Covariate

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Partial eta squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perspective Taking Time 1 (covariate)</td>
<td>1</td>
<td>1357.651</td>
<td>146.931***</td>
<td>.572</td>
</tr>
<tr>
<td>Group</td>
<td>2</td>
<td>2.237</td>
<td>.242</td>
<td>.004</td>
</tr>
<tr>
<td>Error</td>
<td>110</td>
<td>9.240</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** p <.001.
Table 19
Empathic Concern (IRI) Time 2 Covariate adjusted means

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Std Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBSR group</td>
<td>21.194</td>
<td>.353</td>
</tr>
<tr>
<td>Waitlist group</td>
<td>21.149</td>
<td>.568</td>
</tr>
<tr>
<td>Student group</td>
<td>22.626</td>
<td>.502</td>
</tr>
</tbody>
</table>

Notes: Covariate evaluated at the following value: Empathic Concern Time 1 = 21.62

Table 20
Analysis of Covariance for Empathic Concern (IRI) Time 2 Score as a Function of Group with Empathic Concern Time 1 Score as Covariate

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Partial eta squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empathic Concern Time 1 (covariate)</td>
<td>1</td>
<td>747.156</td>
<td>100.168***</td>
<td>.477</td>
</tr>
<tr>
<td>Group</td>
<td>2</td>
<td>22.719</td>
<td>3.046</td>
<td>.052</td>
</tr>
<tr>
<td>Error</td>
<td>110</td>
<td>7.459</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** p < .001.
Table 21
Fantasy Time 2 Covariate adjusted means

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Std Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBSR group</td>
<td>15.956</td>
<td>.439</td>
</tr>
<tr>
<td>Waitlist group</td>
<td>16.144</td>
<td>.717</td>
</tr>
<tr>
<td>Student group</td>
<td>16.974</td>
<td>.635</td>
</tr>
</tbody>
</table>

Notes: Covariate evaluated at the following value: Fantasy Time 1 = 16.47

Table 22
Analysis of Covariance for Fantasy Time 2 Score as a Function of Group with Fantasy Time 1 Score as Covariate

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Partial eta squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fantasy Time 1 (covariate)</td>
<td>1</td>
<td>1927.018</td>
<td>166.525***</td>
<td>.602</td>
</tr>
<tr>
<td>Group</td>
<td>2</td>
<td>10.187</td>
<td>.880ns</td>
<td>.016</td>
</tr>
<tr>
<td>Error</td>
<td>110</td>
<td>7.459</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** p < .001.
Table 23
Unadjusted Means and Standard Deviations for Personal Distress at Time 1 and Time 2, and Personal Distress Difference Score (PD1 minus PD2) Means and Standard Deviations by Group

<table>
<thead>
<tr>
<th>Group</th>
<th>Unadjusted Mean (SD) Time 1</th>
<th>Unadjusted Mean (SD) Time 2</th>
<th>PD Difference Score (PD1 – PD) Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBSR group</td>
<td>12.03 (5.08)</td>
<td>10.48 (4.64)</td>
<td>1.55 (3.51)</td>
</tr>
<tr>
<td>Waitlist group</td>
<td>11.83 (5.68)</td>
<td>10.79 (6.66)</td>
<td>1.04 (2.88)</td>
</tr>
<tr>
<td>Student group</td>
<td>12.67 (4.66)</td>
<td>10.27 (4.05)</td>
<td>2.40 (2.90)</td>
</tr>
</tbody>
</table>

Table 24
One-Way Analysis of Variance for Effect of Group on Personal Distress (IRI) Difference Score

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>13.163</td>
<td>1.261</td>
<td>.288 ns</td>
</tr>
<tr>
<td>Within Groups</td>
<td>111</td>
<td>10.442</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>113</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: PD did not meet homogeneity-of-slopes assumption, therefore ANCOVA was not used. A difference score was calculated (PD1-PD2) and ANOVA was used.