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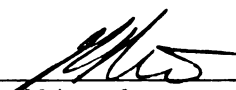
Varying Treatment Duration in a Mindfulness
Meditation Stress Reduction Program
For Chronic Pain Patients

presented by

David Sagula

has been accepted towards fulfillment
of the requirements for

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**VARYING TREATMENT DURATION IN A MINDFULNESS MEDITATION
STRESS REDUCTION PROGRAM FOR CHRONIC PAIN PATIENTS**

BY

David Sagula

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ABSTRACT

Varying Duration In a Mindfulness Meditation Stress Reduction Program for Chronic Pain Patients

By

David Sagula

An 8-week mindfulness meditation program requiring participants to practice 45 minutes per day has been demonstrated to be helpful for chronic pain sufferers. However, many people find 45 minutes too much of a time commitment. The current study involved 71 people seeking treatment for chronic pain, 53 were randomly assigned to a 20 or 45 minute per day mindfulness group, the balance comprised a comparison group. Participants completed depression, anxiety, and grieving measures, and an open-ended questionnaire. At post-test both treatment groups were lower on depression than the comparison group. No differences were found between treatment groups on the quantitative measures. When the treatment groups were combined they were found to have lower depression, state anxiety and have progress further on initial phases of grieving than the comparison group. Differences on the qualitative measure and drop-out rates favored longer meditations. Drop-outs were characterized as having higher state anxiety and being in the initial phases of grieving. Implications for screening instruments and future research incorporating qualitative data are discussed.

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Introduction

One in five adults in the state of Michigan have chronic pain, with one in ten of these admitting to contemplating suicide (Anstett, 1997). The experience of intense and prolonged physical pain is not just a physical problem demanding attention from only the current bio-medical model. The psychological and social effects of chronic pain on a person are extremely taxing. Intense physical and emotional pain can often lead to substance abuse, difficulty in relationships, and depression (Anstett, 1997). Often there are difficulties sleeping because of the intensity of the pain. Fatigue from sleep difficulties coupled with the chronic pain also often affects work performance. In addition, because the disability may not be visible, many people in the person's life may question whether the person truly is in pain or just malingering. Anstett (1997) found that over half of chronic pain sufferers are not sure if their employers believe them about their pain.

Current medical treatment falls short of what patients need. Seven out of ten people who suffer from chronic pain say that the care they receive does not relieve, or only partially relieves, the pain (Anstett, 1997). Many physicians do not know how to treat chronic pain (Anstett, 1997). Improving the life experience of people suffering from chronic pain is a current dilemma for physicians (Cassel, 1982). Current treatments include analgesics, narcotics, nerve blocks, and surgery, however, these often fall short of

providing reliable relief (Kabat-Zinn, 1985). Pain, difficulty working, difficulty in relationships, sleep disturbances, substance abuse, and trust issues within family, friend and work relationships all combine to propel the chronic pain sufferer into a psychological downward spiral. No longer is the pain just physical, but it can become life consuming. Considerable grieving can occur when hobbies, physical activities, relationships, and careers are lost. However, without proper insight, the effect of grieving may be repressed or expressed as anger with little resolution.

Currently, little can be done for most chronic pain sufferers. However, psychological treatments are being developed to assist the intense discomfort. Recently, Kabat-Zinn (1990) has developed a program using mindfulness meditation to assist people with chronic illnesses to better cope with their situations. Mindfulness is a non-judgmental awareness of one's present moment experience. It is similar to cognitive approaches (Beck & Weishaer, 1989) to therapy in that one becomes aware of self-dialogue that can be debilitating. For example, chronic pain sufferers employing cognitive or mindfulness strategies may become more aware of self-defeating thoughts such as, "this pain is killing me," "this is the worst it has ever been," "it is never going to go away," "I'd be better off dead." However, mindfulness differs from cognitive approaches in that it does not attempt to replace maladaptive cognitions with adaptive ones. Rather, mindfulness involves disengaging from forming any types of thoughts, positive or negative, and focuses the awareness into the observation of thoughts and feelings. From this perspective, the relationships between thoughts and feelings can be

seen more objectively. A person suffering from chronic pain can begin to experience how their judgments or self-dialogue about the pain often make the entire experience more agonizing. Experiencing pain mindfully enables one to eliminate the psychological agony of the physical pain. When one uses mindfulness with their pain, they no longer fight or resist the pain. Instead, they non-judgmentally experience it as part of their present moment experience. Generally, this does not take away from the extreme physical discomfort of the pain, but it does provide more energy to deal with it because they are no longer fighting or resisting the pain. This makes the life of someone with chronic pain much less stressful.

The technique of mindfulness meditation (Kabat-Zinn, 1990) consists of: (a) bringing awareness to the primary object of attention (e.g., breath, body sensation), (b) maintaining awareness from moment to moment, (c) when it is noticed that the awareness has drifted from the primary object of attention, it is brought back to this object, (d) if the pain gets very intense or a strong emotion is being experienced, this is made the object of attention, when it subsides the person returns the awareness to the object of attention, and (e) observe the process of thinking without getting caught up in the content of the thoughts. When practicing mindfulness, all thoughts and feelings have equal value, that is, they are all part of the experience in the current moment of life, and therefore they are not pursued nor rejected. In the beginning stages the practice appears to be similar to an exercise in concentration. When the mind goes into its habitual thinking patterns, one lets go of judgmental self-dialogue and continually returns to the primary object of

attention. However, with continued practice, concentration improves and the mind becomes slightly calmer. With increased development in concentration, one may begin to expand the field of awareness and non-judgmentally experience the thoughts and feelings, including pain, that arise in the present moment experience.

Kabat-Zinn's (1990) mindfulness meditation program is 8 weeks long and requires participants to attend weekly meetings and practice at home for 45 minutes per day. During the weekly meetings, mindfulness meditation instructions are given and practiced. In addition, personal questions and problems in the person's practice are explored.

The research supporting the mindfulness program for reductions in anxiety has been quite strong. Kabat-Zinn et al. (1992) found significant reductions in depression and anxiety for people with anxiety disorders who completed the program. In addition, those who reported panic attacks prior to the program reported a significant reduction in panic attacks after its completion. The results were maintained at a three month and three year follow-up (Miller, Fletcher, & Kabat-Zinn, 1995). In addition, the number and severity of panic attacks was significantly lower at three year follow-up when compared to pre-treatment levels. Investigating the degree the participants were maintaining the meditation practice, 10 of the 18 original participants maintained a formal mindfulness practice by meditating at least three times per week for at least 15 minutes per sitting.

In an effort to investigate the effectiveness of a mindfulness meditation based stress reduction program in a bilingual inner-city health care setting, Roth and Creaser (1997) compared pre- and post-test data on 79 patients who completed the eight week

program over a two year period. The results indicated significant reductions in anxiety and significant increases in self-esteem. This study indicated that mindfulness meditation can be effectively integrated into a bilingual innercity population.

These studies indicate that not only was meditation effective in reducing anxiety and depression on psychological inventories, but that participants rated the meditation practice as important to them. In addition, the results were maintained over an extended period of time. Moreover, participants continued with their meditation practice three years after the conclusion of the program. This is a good indication that participants were experiencing benefits from this practice.

Kabat-Zinn (1982) has extended this research with mindfulness to include people with chronic pain. The results indicated that 65% of the patients reported a reduction of at least 33% on a pain rating index and 50% showed at least a 50% reduction. There was also a significant reduction in the number of reported medical symptoms and total mood disturbance.

In a related study, Kabat-Zinn, Lipworth, and Burney (1984) compared mindfulness meditation with traditional treatment protocols. Comparisons of pre- and post-test measures for participants in the treatment group indicated significant reductions in anxiety and depression as well as reductions in present moment pain, negative body image, inhibition of activity by pain, and pain-related drug utilization. In addition, treatment group participants activity levels and self-esteem increased. The results of the chronic pain patients receiving traditional treatments demonstrated no significant

improvement on any of the indices measured. It is important to point out that participants were not randomly assigned to treatment or control groups. In a 15 month follow-up, improvements on all measures except present moment pain were maintained. More than half of the participants reported that they still were meditating regularly.

Kabat-Zinn, Lipworth, Burney and Sellers (1987) extended the Kabat-Zinn et al. (1984) study over a four year period. By the end of the fourth year, 225 chronic pain patients who completed the mindfulness meditation program were included in the study. The results indicated that there was no reduction in mean post-intervention levels on all but one of the measures of reported pain and medical symptoms from the Kabat-Zinn et al. (1987) study. Thirty to 55% of the participants rated their pain as greatly improved since taking the meditation program.

From these results it seems apparent that the mindfulness meditation program outlined by Kabat-Zinn (1990) is an effective treatment for anxiety and depression and can be effectively utilized by chronic pain patients. However, one major difficulty in implementing this program into a health care setting is the commitment required by participants. The Kabat-Zinn (1990) program requires that participants practice 45 minutes per day. Many people are not able to make this significant time commitment, and therefore are not able to participate in the program. Other studies employing meditation have found significant reductions in anxiety and depression when participants meditate 20 minutes per day (Carrington, et al. (1980). This opens the question of how significant is 45 minutes per day to the outcomes that have been found. If a person

practices a shorter duration, e.g., 20 minutes per day, what benefits, if any, would they forfeit. Therefore, the purpose of this study will be to determine the effect of varying the treatment duration in an 8 week mindfulness meditation program on measures of depression, anxiety, and grieving.

Chapter II

Review of the Literature

Pain has been defined as "a sensation in which a person experiences discomfort, distress, or suffering due to provocation of sensory nerves...." (Thomas, 1981, p.1026). However, when pain is pathological and chronic, with no benefit to the person, the result is severe emotional, physical, and economic stresses to the person and his or her family. People suffering with chronic pain often are confronted with questions from themselves and others that add to the stress of the disease (Stanton & Dutes, 1996). Questions often confronted by those diagnosed with chronic pain include: "is the pain real or imagined?," "does a cure exist?," or will one ever exist?," "what will happen next?" People who once were productive, contributing to their community, and providing for their families often are quickly stripped of these opportunities. People in this situation have difficulty in close personal relationships because others may find it difficult being with someone who is often experiencing extreme and chronic pain. Those who have underlying genetic and environmental predispositions to personality disorders may incur even greater losses when diagnosed with chronic pain (Weisberg & Keefe, 1997).

Weisberg and Keefe (1997) propose that the diathesis-stress model may be applicable to those suffering from chronic pain and exhibiting personality disorders, because coping methods that may have been adaptive or marginally adaptive prior to the onset of chronic pain become ineffectual or maladaptive after the disability and result in a

personality disorder. Weisberg and Keefe (1997) estimate that as many as half of those suffering from chronic pain may have diagnosable personality disorders. With such intense suffering, the need for research and interventions that might help those with chronic pain manage their daily stressors is readily apparent. Kabat-Zinn (1982) has developed a Stress Reduction and Relaxation Program (SR&RP) that employs a self-regulatory technique called mindfulness to aid those suffering from chronic pain.

Mindfulness Meditation

Defining meditation is not an easy task. Shapiro (1984) has commented on the difficulty of attempting to capture into a single definition the variety of approaches or techniques (i.e., Zen, Yoga, Sufi Dancing, Contemplative Prayer, Vipassana, Tai Chi, etc.,) that could be considered meditation . Often times, meditation practices are divided into two categories, concentrative techniques or mindfulness (Delmonte, 1989; Urbanowski & Miller, 1997). In addition, it is not unusual for a practitioner to switch, or combine the two types of techniques. Shapiro (1984) defines the concentrative techniques as "a family of techniques which have in common a conscious attempt to focus attention in a nonanalytical way and an attempt not to dwell on discursive, ruminating thought" (p. 6).

Mindfulness can be defined as a non-judgmental awareness of one's present moment experience. There is not necessarily an attempt to focus the attention on any one object, as in the concentrative techniques. To experience this type of awareness, the focus of attention must shift from the continual stream of judgmental self-talk to the

unfolding present moment experience while remaining reflexive. "In this way, relationships among one's behavior, physiological functioning, and cognition can become apparent. We can therefore, envisage most forms of meditation as beginning with simple concentration ... and ending in mindfulness meditation... " (Delomonte, 1989, p. 45).

From this perspective the present moment is able to be experienced without heavy prejudices. Kabat-Zinn (1990) has described this present moment awareness as consisting of an attitude with the qualities of non-judgment, patience, non-striving, trust, letting go, non-attachment, and beginner's mind.

Pain and Mindfulness

From a mindfulness perspective pain is viewed as a sensation occurring in the present moment. In and of itself, the present moment is not judged as good or bad, rather the feelings and thoughts within it simply exists, and therefore, are simply experienced. If a response can be made to relieve the pain then this response is made, if not, the sensations of pain are experienced without engagement of a judgmental self-dialogue about the nature, severity, or duration of the pain. When one realizes they are engaged in judgmental self-dialogue, this is acknowledged, and the awareness is brought back to the present moment experience. Returning and staying in the present moment is often aided by focusing part of the awareness on some type of body sensation. Often the breath or some area of the body is chosen, other times, the sensations of pain themselves may be the object of the awareness. In approaching pain in this manner much of the self-created suffering (e.g., this pain is never going to end, this is the worst it has ever been, etc.) that

accompanies pain is often eliminated (Kabat-Zinn et al., 1992). When practicing mindfulness with pain, the pain is relaxed into, rather than tensed around and fought. In this way considerably less time is spent in a "fight or flight" mode avoiding many of the physiological and psychological debilitating effects of stress.

The realization of how quickly the mind slips into judgmental self dialog becomes readily apparent when one attempts to live mindfully. Moreover, if an attempt is made to be mindful during emotion laden events (e.g., pain), one has even more difficulty because the mind shifts more quickly and strongly into habitual cognitive generalizations regarding the current experience. Therefore, integrating mindfulness into daily life, requires time to practice it with as few distractions as possible. In this way, one is experienced with this approach and can integrate it when feeling emotional or physical pain.

The Practice of Mindfulness

The technique of mindfulness meditation (Kabat-Zinn, 1990) consists of: (a) bringing awareness to the primary object of attention (e.g., breath, body sensation), (b) maintaining awareness of the primary object of attention from moment to moment, (c) when it is noticed that the awareness has drifted from the primary object of attention, it is brought back to this object, (d) if the pain gets very intense or a strong emotion is being experienced this is made the object of attention, when it subsides return to the primary object of attention, and (e) observe the process of thinking without getting caught up in the content of the thoughts. When practicing mindfulness, all thoughts and feelings have

equal value, that is, they are all part of the experience in the current moment of life, and therefore they are not pursued nor rejected. In the beginning stages of meditation, generally, a concentrative form of mindfulness is practiced by keeping the awareness closely focused on the primary object (e.g., breath). However, with increased development in concentration, the field of awareness can be expanded to incorporate more of the current experience. Using an analogy comparing the awareness to a zoom lens might be helpful. In the beginning stages of meditation the awareness "zooms" in on the primary object of attention, however, after concentration is developed the awareness can be broadened like a wide angle lens.

Psychological Underpinnings of Mindfulness

Mindfulness has surprisingly strong historical roots within psychology, albeit, not under the heading of mindfulness, but through the awarenesses and attention that mindfulness fosters. Hothersall (1995) estimates that about 10 percent of Wundt's research in Leipzig concerned attention. Wundt defined attention as "the state which accompanies the clear grasp of any psychical context and is characterized by a special feeling" (Hothersall, 1995; p. 129). Those who were trained at Leipzig under Wundt were trained in what Wundt called "introspection." Once sufficiently trained in introspection, experimenters could distinguish between sensations and ideas in the field of attention and those in the focus of attention. Because Wundt trained the first American psychologists, it is not surprising to find that they also had interests in what today is termed mindfulness. Titchener felt so strongly about introspection that he defined it as

the central method of psychology (Hothersall, 1995).

William James also commented on the value of a technique like mindfulness meditation. According to James (1950, p. 424), "The faculty of voluntarily bringing back a wandering attention over and over again is the very root of judgment, character, and will. No one is *compos sui* if he has it not. An education which should improve this faculty would be the education *par excellence*"(p.424).

Current psychotherapy theories are also consistent with some aspects of mindfulness meditation. The cognitive perspective (Beck & Weishaar, 1989) illuminates some of the therapeutic value of this practice. Kabat-Zinn (1992) has commented on the similarity of cognitive-behavioral approaches and mindfulness meditation in that they "share an emphasis on noting sensations and thoughts without viewing them as catastrophic and the use of stress-inducing situations as cues to engage in new behaviors"(p. 941). The emphasis of personal responsibility for practicing meditation shares similarities with homework often given in cognitive and cognitive-behavioral treatments. However, mindfulness meditation differs in several important ways.

In mindfulness meditation, thoughts are not judged as positive, negative, or inaccurate as in cognitive approaches. "Rather, the emphasis is on identifying thoughts as 'just' thoughts and acknowledging the potential inaccuracy and limits of all thought, not just thoughts that produce anxiety" (Kabat-Zinn, 1992, p. 941). Another difference is meditation is practiced as a daily discipline irrespective of the state of anxiety currently being experienced. Mindfulness is not a coping skill used just when one feels anxiety or

depression, rather it is an attitude that is established through a formal practice period so that the entire scope of all experiences in one's life may be entered into mindfully.

From a psychoanalytic/psychodynamic perspective, Freud (1930) was not kind to meditative experiences. When a friend described the feelings that often accompany meditation to Freud he labeled them as "oceanic." Although Freud admitted to never experiencing this feeling himself he dismissed it as a feeling of infantile helplessness which he connected to religious feeling. Other psychoanalysts have remained consistent with Freud's initial judgment and often view meditation as a form of regression (Delmonte, 1990). Delmonte (1987) has commented that although there is a regression, it is in service of personal growth. During mindfulness meditation, the continual self-dialogue is nonjudgmentally observed, as it is in free association by the analyst (Speeth (1982). Therefore, defenses such as intellectualization and rationalization are inhibited. Consequently, this nonjudgmental awareness allows unconscious repressed material into consciousness where it can be experienced and integrated into the personality. This aspect of meditation, often termed "unstressing," is one of the primary features of meditation that separates it from relaxation. In relaxation, the goal is to create the relaxation response (Benson, Beary, & Carol 1974) and the corresponding peaceful, pleasant feelings. In mindfulness meditation, the goal is to experience the present moment as it is without judging the contents based on prior expectations of what one wants to experience (Kabat-Zinn, 1990). Although this present moment attitude is often pleasant and relaxing, at times it can be very stressful because previously repressed

material is now allowed to move from the unconscious to conscious without cognitive manipulations. Relaxation involves following a procedure that changes the internal feeling state to one that is specifically “relaxing” or not engaging the fight or flight response. Mindfulness is a change in attitude, that may or may not, be relaxing.

Therefore, rather than creating peaceful feelings as in relaxation, the goal in mindfulness meditation is to be at peace with what is happening in the present moment. Urbanowski and Miller (1996) have commented on the potential volatility of these repressed emotions and cautions that "the therapist must draw upon his or her in-depth experience with meditation as well as the psychotherapeutic diagnostic formulation to skillfully decide when, what meditative techniques, and what frequency of practice will be appropriate for a particular client" (p. 34).

Mindfulness and Grieving

The grieving process is reengaged as one nonjudgmentally allows past loss issues into consciousness. In this way, the grieving process can be intimately related to the undertaking of a serious mindfulness meditation practice. Levine (1994) has commented that, when a person begins a meditation practice, one of the first issues they will experience is unresolved grief. Grieving can be defined as an emotional and psychological reaction to a loss (Clayton, 1990). Recently, Schneider (1984) has developed a model of grieving based on a review of the literature and his own clinical experience working with loss. This model is comprehensive in that it includes four phases (coping, awareness, healing, and growth) with each explored on five dimensions

(behavioral, cognitive, emotional, physical, and spiritual). The coping phase has two forms: holding on (fight) or letting go (flight). Holding on is an attempt by the individual to overcome the loss. For example a person holding on might attempt to keep busy (behavioral), get angry (emotional), and believe that the loss is reversible (spiritual). Letting go involves responses that attempt to avoid the grief. For example by drinking (behavioral), doomsday thinking (cognitive), and pessimism, (spiritual), a person may attempt to avoid the grief. The next phase of grieving, awareness, is characterized by beginning to more fully recognize what is lost.

Awareness begins when the coping behaviors of holding on or letting go no longer ward off the reality of the loss, or when one engages in a therapeutic endeavors such as psychotherapy or mindfulness meditation that increase awareness. During this phase there is exhaustion (physical), longing (emotional), and emptiness (spiritual). The next phase of grieving involves perspective and integration, or what remains after the loss. Perspective begins when the loss no longer feels like a crushing burden, yet the grief is still clearly present. The person is able to relax (physical), experience pleasure (emotional) and, find meaning (spiritual). Integration begins when the person can put aside their preoccupation with the loss. Integration is recognized when there is a renewed sense of passion (physical), new relationships (emotional), and forgiveness (spiritual). The final stage of grieving is growth. This consists of reformulating and transforming the loss. In reformulation the person is self-confident (cognitive), spontaneous (behavioral) and more unconditionally loving (spiritual). Finally, in the transforming stage the five

dimensions merge or blur with less distinction. The person has a greater sense of balance, wholeness, and wisdom. They also see the interconnectedness of people and things more clearly. Therefore, when engaging in mindfulness meditation the purpose is not to attempt to change feelings. Rather, the purpose is to become more aware of the feelings that are there. Through this increased awareness, unresolved grief issues can be integrated more completely into the personality.

Physiological effects of Meditation

The initial research with respect to the physiological changes brought about from meditation were primarily focused on the Transcendental Meditation (TM) technique and the physiological changes that this practice induced. These studies noted that TM practitioners demonstrated reduced heart rates, decreased oxygen consumption, decreased blood pressure, increased skin resistance, and increased alpha level brain activity (Shapiro, 1980). This research with respect to changes in physiology and meditation has now gone through two phases (Shapiro, 1984). The first phase consisted of a group of studies that indicated that meditation may create unique physiological changes in the body (Wallace, 1970; Wallace, Benson, & Wilson, 1971).

However, a second round of methodologically more sophisticated studies found that the physiological changes accompanying meditation were not unique to meditation (Benson, 1977; Cauthen & Prymak, 1977; Walrath & Hamilton, 1975). In reviews of the literature, Shapiro (1984), Holmes (1984), and Delmonte (1984) all concluded that meditation did not create unique physiological changes when compared to other self-

control (relaxation) techniques or just "resting." However, Jevning and O'Halloran (cited in Shapiro & Walsh, 1984) claim that there may be unique effects brought about by meditation which have not been reflected in the current literature due to a lack of sophistication in research instruments. Some of these unique effects may be the psychological healings that take place when a meditation practice is engaged. Healing may result when one begins to experience insight into past traumatic experiences. Therefore, to fully investigate the psychological efficacy of meditation more complex outcomes than physiological measures should be examined.

Some of the strongest early work linking meditation and relaxation was done by Benson (1974) who proposed a model entitled the "Relaxation Response" which states that all relaxation techniques produce a single "relaxation response." This response is characterized by a decrease in sympathetic nervous system activity elicited by the "fight or flight" response. He characterized the technique for eliciting the "Relaxation Response," a highly concentrative format, as consisting of four elements: (a) a mental device consisting of a word or phrase repeated, or a fixed gaze at an object (the purpose of this is to shift from rational externally oriented thinking), (b) a passive attitude, (c) relaxed muscles, and (d) a quiet environment.

Davidson and Schwartz (1976) have suggested that not only does relaxation involve a general reduction in physiological activity, but also that a second pattern of more specific changes are superimposed upon the "relaxation response" which are dependent on the type of relaxation technique employed. More specifically, they propose

that anxiety can be broken down into two components: cognitive anxiety and somatic anxiety. Moreover, they suggest that the optimal treatment for cognitive anxiety would be a cognitive technique such as meditation, while somatically oriented approaches such as physical exercise, or yoga would be optimal for somatic anxiety. In a study comparing the effects of meditation versus exercise, Schwartz, Davidson and Goleman (1978) found partial support for their theory in that those who exercised reported less somatic and more cognitive anxiety, however, those who meditated experienced no significant differences between the two modes of anxiety. Two limitations in this study were lack of randomized assignment to treatment groups and no control group.

Support for Davidson and Shwartz's (1976) model has not been universal. In a recent study investigating the relationship between cognitive and somatic anxiety, Kabat-Zinn, Chapman, and Salmon (1997) compared anxiety type and relaxation technique preference in 135 medical patients referred for a mindfulness based stress reduction program. The program employed a body scan meditation, a sitting meditation, and Hatha yoga. Of the 135 patients, 20 demonstrated high somatic/low cognitive anxiety, and 9 demonstrated high cognitive/low somatic anxiety. The results indicated that the high cognitive/low somatic group demonstrated a significant preference for the most somatic technique (hatha yoga) and disliked the most cognitive technique (seated meditation), while the high somatic/low cognitive group preferred the most cognitive and disliked the most somatic technique. The body scan was rated intermediate by both groups. Therefore, an inverse relationship from what was predicted by Davidson and Shwartz's

(1976) model was found.

Kabat-Zinn et al. (1997) also found that the subjects who did not fit into the high/low anxiety categories (i.e., those who had high or low levels of both cognitive or somatic anxiety) also had preferences for relaxation techniques that did not fit Davidson and Schwartz's (1976) theory, nor was their preference dependent on the overall level of anxiety. Finally, the authors did find that regardless of the type of anxiety presented, the mindfulness meditation program significantly reduced overall levels of anxiety. Therefore, it appears that the dichotomy of cognitive vs. somatic anxiety may be more complex than Davidson and Schwartz (1976) allow.

Mindfulness Meditation and Anxiety and Depression

In an effort to determine the effectiveness of an 8-week mindfulness meditation program Kabat-Zinn et al. (1992) measured pre-test, post-test and 3 - month follow up levels of anxiety and depression with 22 participants diagnosed with an anxiety disorder. Thirteen patients reported at least one panic attack in the week preceding treatment. The results indicated significant reductions in anxiety and depression between the pre-test and post-test measures. In addition, the post-levels of anxiety and depression were maintained at 3 month follow-up. The number of panic attacks also decreased significantly with only five of the original 13 participants who experienced panic attacks in the week preceding treatment reporting a panic attack in the week preceding posttreatment. At three month follow-up, three of the 13 original patients reported a panic attack in the previous week. One of the limitations of this study was the size of the

sample and that it did not employ a control group.

Miller, Fletcher, and Kabat-Zinn (1995) found that the improvements demonstrated on the posttreatment measures of anxiety and depression were maintained in a three year follow-up study of the Kabat-Zinn et al. (1992). In addition, the number and severity of panic attacks also were significantly lower at three year follow-up when compared to pre-treatment levels. Investigating the degree the participants were maintaining the meditation practice, 10 of the 18 original participants maintained a formal mindfulness practice meditating at least three times per week for at least 15 minutes per sitting. In addition, 16 of the original 18 participants reported practicing an informal technique of mindfulness, "Awareness of Breathing in Daily Life." In addition, participants rated the importance of the program in their life on a ten point scale, with 1 representing "of no importance" and 10 representing "very important." Twelve rated the program as a 7 or greater with five of these rating it a 10. Therefore, this study demonstrated long-term effectiveness, both objectively and subjectively, of a mindfulness meditation program. In an effort to investigate the effectiveness of a mindfulness meditation based stress reduction program in a bilingual inner-city health care setting, Roth and Creaser (1997) compared pre and post-intervention data on 79 patients who completed the eight week program over a two year period. Participants completed an anxiety inventory, a measure of self-esteem, and the SCL-90-R (Derogotis, 1977), a 90 item inventory which includes subscales for depression, anxiety and phobic anxiety, and overall general functioning (GSI). The results indicated significant reductions on the

SCL-90-R, and the anxiety inventory while demonstrating significant increases on measures of self-esteem. This study indicated that mindfulness meditation can be effectively integrated into a bi-lingual inner-city population. Some of the changes that the authors recommended integrating with a minority population include: holding the program at a agency or health center that is utilized and treated by the population in question, offering transportation, child care, reminder phone calls, and having an instructor fluent in the languages of the population being instructed. Similarly, meditation tapes for home practice should be made available in the participants native language. In addition, tape players may need to be supplied for participants to use at home if necessary. A major limitation of this study is that it did not employ a control group. Therefore, it is not clear if the outcomes are the result of the 8 week mindfulness intervention or 8 weeks of other unknown factors.

These studies indicate that not only was meditation effective in reducing anxiety and depression on psychological inventories, but that participants rated the meditation practice as important to them. In addition, the results were maintained over an extended period of time. Moreover, the majority of participants continued with their meditation practice three years after the conclusion of the program. This is a good indication that they were experiencing some type of benefit from this practice. In order to determine potential benefits of using mindfulness meditation in helping people suffering with chronic pain, studies that focused on this population will now be reviewed.

Mindfulness and Chronic Pain

Kabat-Zinn (1982) investigated the effectiveness of a 10 week mindfulness meditation program in the treatment of chronic pain in an effort to employ the nonjudgmental awareness of mindfulness meditation with a population who experiences extreme physical discomfort. Fifty-one participants who were referred to the program took part in the study. The classes of pain reported consisted of low back, upper back and shoulder pain, cervical pain, and headaches. The average number of years participants reported with their pain problem was 8.4. Pre and post measures consisted of pain indices, a medical symptom check list, and a measure of overall mood disturbance. The results indicated that 65% of the patients reported a reduction of at least 33% on a pain rating index and 50% showed at least a 50% reduction. There was also a significant reduction in the number of reported medical symptoms and total mood disturbance. Two of the limitations of this study include the lack of a control group, and the reliance on self-reported data.

In a follow-up study Kabat-Zinn, Lipworth, and Burney (1984) included a comparison group. Pain patients participating in a 10 week mindfulness meditation program were compared with a group of pain patients following traditional treatment protocols (nerve blocks, physical therapy, analgesics, antidepressants). The results indicated significant reductions in anxiety and depression as well as reductions in present moment pain, negative body image, and inhibition of activity by pain for the treatment group. In addition, pain-related drug utilization decreased and activity levels and self-

esteem increased for the treatment group. The results of the chronic pain patients receiving traditional treatments demonstrated no significant improvement on any of the indices measured. It is important to point out that participants were not randomly assigned to treatment or control groups. In the 15 month follow-up, improvements on all measures except present moment pain were maintained. With respect to continued practice of meditation, 53% reported that they were still meditating regularly, 29% were meditating sporadically, and 13 % reported not meditating at all. Five percent did not respond to the question. Gender comparisons indicated that twice as many women than men took the program. With respect to symptomatology, men had "consistently" higher levels of psychological disturbance, however, there were no differences on the outcome measures.

Kabat-Zinn, Lipworth, Burney and Sellers (1987) extended the Kabat-Zinn et al. (1984) study over a four year period. By the end of the fourth year, 225 chronic pain patients who completed the mindfulness meditation program were included in the study. The post treatment follow-up times ranged from 2.5 - 48 months. The results indicated that there was no deterioration in mean post-intervention levels on all but one of the measures of reported pain and medical symptoms. Thirty to 55% of the participants rated their pain as greatly improved and 60 to 72 % reported at least moderate improvement in their pain since taking the meditation program. With respect to adherence to the meditation practice, 30 % reported being regular meditators (at least 3 times per week), 20% reported being sporadic meditators and 20% were marginal meditators (once per

week). The authors concluded that the mindfulness meditation program can have long-term benefit for chronic pain patients.

From these results it is apparent that the mindfulness meditation program outlined by Kabat-Zinn (1990) is an effective treatment in helping chronic pain patients cope with many of the stressors brought about by their condition. However, one major difficulty in implementing this program into a health care setting is the commitment required by participants. The Kabat-Zinn (1990) program requires that participants practice 45 minutes per day as well as attend weekly meetings. This is more than twice as long as most other meditation techniques (Benson, 1974). Many people are not able to make this significant time commitment, and therefore are not able to participate in the program. This opens the question of how significant is 45 minutes per day to the outcomes that have been found. Kabat-Zinn (1997) has commented that the importance of the 45 minutes is to allow participants ample time to develop "tolerance to aversive states." By practicing longer, participants will get a "more mature understanding of pain." Moreover, practicing for 45 minutes will enable participants to move beyond experiencing just the "relaxation response" (Benson, 1974) and practice mindfulness with "aversive states beyond relaxation." Studies that investigate the relationship between the length of time meditating and outcome will now be reviewed.

Frequency and Duration of Practice

Carrington et al. (1980) investigated the effect of meditation in a working population of 154 telephone company employees self-selected for a meditation-relaxation

training program. The participants received a brief description of three meditation techniques and selected which one they would prefer, although, they were informed that their actual group would be selected by chance. The participants completed a personality inventory and a symptom inventory prior to assignment in one of the three treatment groups or control group. The three treatment groups consisted of two concentrative meditative techniques and a progressive muscle relaxation group. Participants learned the techniques in their homes through instructional tapes and written material, and were instructed to practice 15 to 20 minutes twice per day.

Participants were divided into three groups to assess the results of the effect of frequency of practice: (1) frequent practicers (practiced an average of 5.6 – 7.5 times per week), (2) occasional practicers, and (3) stopped practicers. The results indicated that there were no significant differences between frequent and occasional practicers on degree of symptom improvement. Therefore, frequent and occasional practicers were collapsed into one group, as were controls and those who stopped practicing. The results indicated that, after 22 weeks, participants who practiced the two meditation techniques were significantly lower than the progressive muscle relaxation group and the control group on measures of depression and anxiety. Although there were no significant differences in symptom reduction between those who practiced more than those who practiced occasionally, a chi square analysis indicated that frequent practitioners reported that they experienced more beneficial effects, were more satisfied, had improved social relationships, and that the practice was more valuable to them than those who practiced

occasionally. Therefore, although frequency did not affect self-report measures of symptom reduction, it appeared to be related to perceived benefits, and related to the degree of enthusiasm demonstrated to the technique. It is interesting to note that, when comparing the amount actually practiced, progressive muscle relaxation was practiced the least. In addition, there were no significant associations between demographic factors and frequency of practice.

Although frequency of practice did not predict symptom improvement, the researchers point out that it still maybe an important factor. For example, there may be individual differences that require some participants to practice more to achieve the same benefit as those who practice occasionally. In addition, this study only lasted 5.5 months. Therefore, because many consider meditation a life long practice (Kabat-Zinn, 1994), these results give no indication of the effects of frequent meditation over long periods of time. This is especially noteworthy because most participants reported using the technique for strategic purposes, or as needed, and not for general well being. Finally, the researchers point out that it is not known whether "frequency of practice was a cause or an effect of the perceived benefits of the techniques"(p. 229). They suggest that "to investigate this question it would be necessary to design a study in which frequency of practice was systematically varied" (p.229).

Smith, Compton and West (1995) included frequency of practice as one of the variables in a study of the effects of adding meditation to Fordyce's (1977) Personal Happiness Enhancement Program (PHEP). With a population of 36 undergraduate

volunteers, they found that adding meditation to the PHEP program demonstrated significant reductions on the Beck Depression Inventory (Beck, 1987) and the State-Trait Anxiety Inventory (Spielberger et al., 1970) over both the PHEP group alone and the control group. The groups met for twelve 90 minute sessions over a period of 6 weeks. The researchers split the group into two subgroups: one for those who practiced three or more times per week and the other for those who practiced less than three times per week. This division was made based on previous research by Delmonte (1984) which stated that practicing under three times per week results in little benefit. The results indicated no difference on any of the measures between the low meditation group and the PHEP only group. Therefore, these two groups were combined and compared to the high meditation subgroup. The results of this analysis indicated significant differences between the high meditation subgroup and both the control group and the combined low meditation subgroup and the PHEP only group. With the exception of state anxiety, significant differences on all dependent measures were found between the combined low meditation group and PHEP only group and the control group. Therefore, including meditation in the PHEP may improve its effectiveness. However, consistent with Delomonte's findings (1984), the current results suggest that meditation must be practiced at least three times per week.

Astin (1997) investigated frequency of practice as one of the variables in his study of a 8 week mindfulness meditation program with 28 undergraduate student volunteers. Participants were randomly assigned to a control or treatment group. Participants met

once a week throughout the program and were instructed to practice 45 minutes per day 5 times a week. The pre and post measures was the SCL -90-R (Derogatis, 1977).

Participants completed inventories examining both sense of control and spiritual experiences, in addition to maintaining daily diaries to monitor frequency of practice. A final review of meditation logs indicated participants practiced meditation an average of 30 minutes per day 3.5 days per week. The results indicated that there was no relationship between the amount practiced and degree change on the SCL-90-R GSI.

Comparing those who completed the eight week meditation course with controls indicated significant reductions on the overall SCL - 90-R, GSI, and on the subscales of depression, anxiety, obsessive-compulsive disorder, somatization, interpersonal sensitivity, psychoticism and paranoid ideation. In addition, those who completed the program demonstrated a significantly greater change on the two subscales of the sense of control inventory consisting of acceptance and a measure of self as source of control. Those in the treatment group also demonstrated significantly higher scores on a measure of spiritual experiences compared to controls.

Peters, Benson, and Douglas (1977) included frequency of practice as one of the variables they investigated in studying the effect of a daily meditation practice with a working population. The volunteers for the study were divided into three groups: (a) a meditation group, (b) a group that was instructed to sit quietly, and (c) a group receiving no instructions. An effort was made to match the meditation group and relaxation group for expectation effects. The results indicated that the meditation group demonstrated

significant improvements compared to the control group on four of the five measures used: a symptom index, illness index, performance index, and sociability satisfaction index. There were no significant differences on a happiness-unhappiness index. The resting group was not significantly different from the meditation group or the control group. There were no significant correlations between practice rate and change on any of the five indices. However, there were some within group variations between amount of practice and change on the symptoms index. In the meditation group those who practiced six to eight times per week demonstrated the largest decreases on the symptoms index, however no additional benefits were demonstrated for more practice than this. On the performance index, those who practiced at least three to five times per week demonstrated as much change as those who practiced more, while on the sociability-satisfaction index, "substantial" changes were associated with nine or more practice periods per week. The other indexes showed no relationship with practice rate as was the case for all five measures in the resting group.

Beauchamp-Turner and Levinson (1992) investigated the effects of frequency in the practice of meditation on stress, illness, depression, anxiety, hostility and affect. One hundred and thirty four participants were surveyed on three assessment inventories to determine stress levels, health status, and frequency of meditation. Frequency of practice was divided into two categories, those who reported practicing frequently and those who "never," "rarely," or "occasionally" practiced. The results indicated that those who practice frequently reported significantly fewer stressors and illness symptoms. More

specifically, frequent meditators reported lower levels of anxiety, hostility, depression, and dysphoria, as well as, high levels of positive affect and sensation seeking. However, frequent meditation was not related to a reduction in the correlation between stress and illness, but it was related to a correlation between stress and dysphoria and illness and dysphoria. A significant limitation of this study was that it employed survey data, and that the type of meditation participants were practicing was not identified, nor was the length of time participants had been meditating prior to the study controlled.

Zuroff and Schwartz (1978) randomly assigned 60 volunteer participants to receive training in TM, a muscle relaxation training program, or a no treatment control. Training in TM consisted of two group lectures of one hour, one hour of individual instruction on the technique, and three additional one hour group meetings. The training in the muscle relaxation group was designed to duplicate the TM group design as much as possible. The results indicated no relationship between frequency of practice and reductions in anxiety. However, the treatment group did demonstrate significant reductions on state anxiety compared to the muscle relaxation group and the control group. With respect to a behavioral measure of anxiety, locus of control and drug use, there were no treatment effects. The authors concluded that TM may reduce trait anxiety but was of little value in affecting general personality changes.

Delmonte (1981) investigated frequency of practice as it relates to expectation and meditation. Ninety four prospective meditators volunteered for the study and completed questionnaires on their perceived-self and their expectations of TM: before receiving

instructions on TM, after instructions, and 7 months later on follow-up. The results indicated that those who took up meditation were older, had initially a more negatively perceived self and had higher expectations of meditation. At post-test a positive perceived self and higher expectations at all three testing periods were positively related to frequency of practice. In addition, at the 7 month follow-up, frequency of practice itself was related to improved perceived self and increased expectation scores. In addition, the expectations of those who were older were more resistant to change by the introductory talk on TM. The author concludes that those who took up meditation report significantly more problems, whereas those who meditate most frequently have the fewest problems.

Deberry, Davis, and Reinhard (1989) compared a meditation-relaxation program with a cognitive/behavioral program and a control group on measures of anxiety and depression in a geriatric population. Fourteen male and 18 female volunteers ranging in age from 65 to 75 years were randomly assigned to a meditation-relaxation program, a cognitive/behavioral treatment, or a control group. Participants completed depression and anxiety measures and then were given a tape with instructions based on their respective program and instructed to listen to the tape once per night. The groups also met twice per week. Ten weeks after the distribution of the tapes the participants were again given the depression and anxiety inventories. The results indicated a main effect for treatment and time. There were no significant gender differences. Post hoc analysis revealed a significant reduction in state anxiety for only the meditation-relaxation group. There

were no significant treatment effects for trait anxiety or depression. However, there were significant reductions on depression, and state and trait anxiety on all measures with respect to practice time. The authors recommended meditation-relaxation as a "safe, quick method for reducing state anxiety, or as a ancillary treatment within more traditional models of psychotherapy" (p. 245). One of the limitations of the study was the time limited nature of the cognitive-behavioral treatment. The experimenters felt that "the nature of the time limited involvement clearly evoked a resistance in treatment" (p.244). The authors recommended that future research should be focused on determining what the ideal treatment durations are to achieve clinical or experimental results.

Summary

Combining the results of the above studies does not illuminate the importance of meditating 45 minutes per day because no study compared amount of time practiced each day. All of the studies that used a technique other than mindfulness meditation assigned meditation periods between 15 - 20 minutes in duration. With respect to number of sessions per week, Carrington et al. (1980) and Smith et al. (1995) found no difference between frequent and occasional practitioners. However, Carrington et al. (1980) found that frequent practitioners reported significantly more satisfaction with their meditation practice than occasional meditators. Deberry et al. (1989) and Peters et al. (1977) did find differences with respect to amount practiced and outcome, with less than three times per week producing little change. Delmonte (1981) not only noted a relationship between

frequency of practice and outcome, but also in the demographics between those who took up the practice, and those who meditate most frequently. Therefore, there does seem to be some link between amount practiced and outcome. It is important to point out that all of the studies did find significant positive differences both quantitatively and qualitatively on symptom measures between treatment groups and control groups and/or between pre and post measures. However, currently, no study has investigated the effect of meditating for a longer or shorter duration. For example, Kabat-Zinn's (1990) program has proven very effective in clinical settings especially for chronic pain sufferers. However, all mindfulness research using an 8 week model has followed his format of 45 minutes per day. Due to a number of factors, many people cannot commit to 45 minutes per day, and therefore, are not able to take this program. Therefore, this study will investigate the differences between a 45 minute and a 20 minute mindfulness meditation group following a format similar to the Kabat-Zinn (1990) and a comparison group. The outcomes that will be of interest in the study include, depression, anxiety and grieving.

Grieving is a variable that has not currently been investigated in a study employing meditation. It is important to include it here because the first 20 minutes of meditation the practitioner may be simply utilizing the "relaxation response." More specifically, when one begins a meditation period, the initial stages of the practice involve physiological changes which include reduced heart rates, decreased oxygen consumption, decreased blood pressure, increased skin resistance, and increased alpha

level brain activity (Shapiro, 1980). These changes often leave the meditator refreshed and rejuvenated, which is one of the strong benefits of a relaxation practice. However, the purpose of mindfulness is not relaxation, but rather a change in attitude consisting of a nonjudgmental acceptance of the present moment experience. This acceptance is easy when one is feeling relaxed and refreshed, however, it is quite difficult when the experience is painful. Therefore, if people meditate longer than 20 minutes, they will have more practice at learning how to nonjudgmentally experience unpleasant feelings. Those who only practice 20 minutes will often only experience the pleasant feelings of relaxation and rejuvenation and not learn how to mindfully experience unpleasant feelings. Because unresolved grief issues often surface when a meditation practice is undertaken (Levine, 1994), those who have more practice time beyond relaxation may resolve more of their loss issues.

In Schneider's (1994) model of grieving, the first stage begins with awareness of the loss. When practicing meditation, the present moment experience is not cognitively defended against. Therefore, awareness of unresolved issues increases. After awareness of what is lost is complete, a deeper perspective and integration of the issue can take place and a determination of what is left after the loss occurs. This is the second stage of the model. The final stage involves reformulation and transformation, or what is now possible. Therefore, those who meditate longer will not only be able to cope with chronic pain better because of more practice time employing mindfulness with aversive states, but they will also have a greater opportunity to realize closure on unresolved loss issues.

Hypothesis

It is apparent that the mindfulness meditation program proposed by Kabat-Zinn (1990) is effective in helping people with chronic pain cope better with their situation. However, what is not known is how important meditating for 45 minutes per day is as opposed to a shorter duration. Because this program requires participants to practice for 45 minutes per day, some potential participants may choose not to take the program because sitting in silence with awareness focused inwards for 45 minutes may appear too overwhelming. In addition, some people may not have enough free time in their daily schedule to add a new activity requiring 45 minutes per day. Therefore, the purpose of this study was to investigate differences between meditating for different lengths of time. The null hypothesis for this study is there will be no difference between the comparison group and participants assigned to an 8 week, 45 minute per day mindfulness meditation program, and an 8 week, 20 minute per day mindfulness meditation program on measures of depression, anxiety, and grieving.

CHAPTER III

Methodology

The present study investigated the effect of varying treatment duration in a mindfulness meditation stress reduction program with 51 people with chronic pain in a between groups quasi-experimental design. This sample size was determined from effect size derived in previous research (Kabat-Zinn, 1992), and through a power analysis (Cohen, 1992) using a power of 0.8 and alpha level of 0.10. The participants were randomly assigned to one of two treatment groups: a 45 or a 20 minute per day mindfulness meditation group. Volunteers were assigned to a control group. Both treatment groups and the control group completed pre and post measures of depression, state and trait anxiety, and grieving. The treatment consisted of an 8-week mindfulness meditation program. For the purposes of this study, depression was assessed using the Beck Depression Inventory short form (Beck & Beck, 1972, Appendix A), while anxiety was measured using the State-Trait Anxiety Inventory (Spielberger, 1983, Appendix B), and grieving was measured using the Response to Loss Scale split-half form (Schneider, Deutsch, 1994, Appendix C).

Participants

Participants for this study were recruited from those seeking psychological assistance in coping with their chronic pain condition at a pain clinic. Recruitment took

place through psychologists at the clinic informing their clients of the program, as well as through brief presentations given during group psychoeducational and psychotherapy programs at the pain clinic. Twenty four participants were recruited for the treatment groups. These participants were randomly assigned to either a 45 or a 20 minute per day mindfulness meditation group. In an effort to control for between group differences with respect to the time of day the group met, equal numbers of both treatment groups met in the afternoon and in the evening. Eighteen people seeking or receiving medical assistance, or who were on a waiting list for psychological assistance in response to their chronic pain condition were recruited to serve as a comparison group. All participants completed a demographic data sheet (see Appendix D).

The 8 week mindfulness program

The primary objective of the mindfulness program (Appendix E) was to teach participants how to change their attitude toward their pain and their life in general. This change was brought about by developing an attitude that is based on living in the present moment in a nonjudgmental manner enabling insight into the nature and relationships between thoughts, and sensations (e.g., pain) to develop. In order to develop this insight, the focus of attention must shift from the continual stream of judgmental self-talk. This shift enables the field of awareness to expand allowing the current flow of feelings and thoughts to be observed and experienced in a nonjudgmental manner. From this perspective the present moment is able to be experienced without prejudice.

Participants in the mindfulness program attended 8 weekly 90 minute training

sessions (appendix E), and agreed to practice mindfulness meditation once per day for 45 or 20 minutes depending on their group assignment. Participants were given a meditation log (Appendix F) to record the actual time they spent meditating each day. The group size was between seven and ten participants per group. The program was led by the principle investigator. Much of the emphasis of this program was on self-responsibility (Kabat-Zinn, 1982). It was emphasized that participants must use and develop their own internal resources for self-healing. The long-term perspective of using mindfulness meditation in the healing process is also emphasized. The initial 8-week program is viewed as only a first step towards gaining greater insight into their own nature and the nature of the healing process.

The practice of mindfulness meditation in this program consisted of three different techniques: (a) the body scan, (b) mindfulness on the breath, and (c) hatha yoga. The body scan technique involved slowly sweeping the awareness throughout the body and observing the different sensations with a non-judgmental awareness. Mindfulness on the breath consisted of observing the respiration as well as the continual flow of thoughts and feelings as they appeared and faded in awareness. Hatha yoga postures were used to "reverse disuse atrophy of the musculoskeletal system while developing mindfulness during movement" (Kabat-Zinn, 1982, p.36).

The general outline for the mindfulness program consisted of initially practicing the body scan, followed by yoga and mindfulness of the breath meditation. During the eight week sessions, instructions on the various meditation techniques were given as well

as didactic information on the psychology and physiology of stress and coping covered. The background of the instructor of the mindfulness training groups in this study was a doctoral candidate in counseling psychology, and attended a training program led by Kabat-Zinn in Mindfulness-Based Stress Reduction in Mind-Body Medicine during the study. As recommended by Kabat-Zinn (Kabat-Zinn Personal Communication, July 1997) the instructor of the mindfulness groups in the this study had a daily mindfulness meditation practice.

Instruments

The Beck Depression Inventory short form (Beck & Beck, 1972; BDI, Appendix A) was used as a measure of depression. Due to the large number of inventories the participants were completing in this study the short form of the BDI was chosen over the standard form in an effort to keep response fatigue to a minimum. The BDI short form, which uses 13 of the 21 items from the standard form BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), is self-report measure of the presence and intensity of depressive symptomatology. For each item, the respondent is asked to choose which of four statements describes the way he or she has been feeling in the past week, including today. The items inquire about feelings of sadness, hopelessness, self-esteem, suicidal ideation, interest, decision-making ability, occupational functioning, fatigue, and appetite. Each participant's depression score on the short form is obtained by summing all of the numbers associated with each statement that the subject endorsed. These scores range from 0 to 39. The BDI short form takes about 5 minutes to complete, with high scores

indicating increased depressive symptomatology. The estimated degree of depression according to the BDI short form is: 0-4 none or minimal depression, 5-7 mild depression, 8-15 moderate depression, and greater than 16 severe depression (Beck & Beck, 1972).

Knight (1984) found the BDI short form to give an internal consistency reliability of 0.81, and Foelker, Shewchuk, and Niederehe (1987) found an internal consistency of .74 and .80 for two different samples. Scogin, Beutler, Corbishley, and Hamblin (1988) concluded their study investigating the psychometric properties of BDI short form with older adults stating that it was adequately reliable to suggest its use as a research and clinical tool.

With respect to validity of the BDI short form Doetch, Alger, Glasser and Levenstein (1994) found that it correlated so well with the longer Geriatric Depression Scale that they recommended it be substituted for it. Leahy (1992) conducted a principal-component factor analysis with the BDI short form which indicated a two-factor model for depression associated with bereavement. The first factor was affective and behavioral components of depression and the second was cognitive. The BDI short form was also found to correlate better with clinician's ratings of depression than the BDI standard form (Beck & Beck, 1972).

A combined approach of correlational analysis and clinician rating scores determined which questions should be dropped from the BDI standard form to create the BDI short form. The BDI short form was found to correlate 0.96 with the standard form (Beck & Beck, 1972). The standard form of the BDI is a widely used 21-item self-report

measure of the presence and intensity of depressive symptomatology. Split-half reliability estimates for the BDI (Beck, et al., 1961) have ranged from .53 to .93, while test-retest reliability using normal undergraduates was reported to be .74 after 3 months and .75 after 1 month (Gallager, Nies, & Thompson, 1982). The items on the test are relatively transparent, giving the BDI high face validity. Beck et al. (cited in Kolenc, Hartley, & Murdock, 1990) reported validity estimates greater than .60 for relationships with clinical assessments and at least .60 with other self-report measures of depression such as the Minnesota Multiphasic Personality Inventory (MMPI) Depression scale and the Multiple Affect Adjective checklist depression scale. Beck et al. (1988) also found acceptable discriminant validity when reviewing numerous studies; the BDI consistently differentiated normal and psychiatric samples.

State-Trait Anxiety Inventory for Adults (Spielberger, 1983, Appendix B) was used to measure anxiety. It is comprised of two, 20 item self-report measures. One measure is for state anxiety, and the other is for trait anxiety. The questions for both scales are answered on a 4-point likert scale. Questions pertaining to state anxiety ask how the person is feeling "right now, in this moment," whereas those on the trait anxiety scale ask how the person "generally" feels. Examples of questions on the state anxiety scale include: "I feel calm," "I feel nervous," "I feel frightened." Examples of questions on the trait anxiety inventory include: "I feel pleasant," "I feel inadequate," "I am a steady person." Approximately half of the questions on the state and trait anxiety inventories are reversed scored (i.e., on half of the items a high score represents high anxiety, on the

other half a high score represents low anxiety).

With respect to the reliability of the measure, the alpha coefficients ranged from 0.83 to 0.92 on the State Anxiety Inventory and 0.86 to 0.92 on the Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970). With respect to validity, the Trait Anxiety Inventory correlated 0.75 with the IPAT Anxiety Scale (Cattell & Scheier, 1963) and 0.80 Taylor Manifest Anxiety Scale (Taylor, 1953). The validity of the State Anxiety Inventory was determined by correlating it with the Mooney Problem Checklist (Mooney & Gordon, 1950). The results indicated strong positive correlations for the aggression, impulsivity and social recognition subscales. The STAI takes about 10 minutes to complete with high scores indicating a more anxious symptomatology.

The Response to Loss Scale (RTL; split-half) (Schneider, Deutsch, 1994, Appendix C) is an inventory that describes how a person is reacting to a loss. It was used in this study to measure how participants responded to the grieving process of a recent self-identified loss. The split-half version contains 262 questions answered on a 5 point likert scale. Seven subscales correspond to the different stages of grieving according to Schneider's (1984) model. Each of these, with the exception of Transformation, are measured on dimensions of: Behavioral, Cognitive, Emotional, Physical, and Spiritual characteristics. The seven subscales with corresponding Cronbach alpha's are: (a) Holding on (0.93), which is an attempt by the individual to overcome the loss by keeping busy (behavioral), being angry (emotional), and believing that it is reversible (spiritual); (b) Letting go (0.94), which involves responses that attempt to avoid the grief by drinking

(behavioral), doomsday thinking (cognitive), and pessimism, (spiritual), (c) Awareness (0.97), which involves exhaustion (physical), longing (emotional), and emptiness (spiritual), (d) Perspective (0.93) begins when the loss no longer feels like a crushing burden, yet the grief is still clearly present, the person is able to relax (physical), experience pleasure (emotional), and find meaning (spiritual); (e) Integration (0.95) is recognized when there is a renewed sense of passion (physical), new relationships (emotional), and forgiveness (spiritual), (f) Reformulation (0.97), begins when the person is self-confident (cognitive), spontaneous (behavioral) and more unconditionally loving (spiritual), (g) Transformation (0.88) which involves a merge or blur of the five dimensions with less distinction begins when the person has a greater sense of balance wholeness and wisdom, and can see the interconnectedness of people and things more clearly.

The reliabilities given are for the RTL long version which contains 520 questions. The items for the short version of the RTL were selected by taking the items with the highest reliabilities from the long version. Reliabilities for the short version are all approximately 0.90 (Schneider, personal communication, November 26, 1997).

In an attempt to determine the validity of the RTL, Picone and Hoogterp (1992) correlated the RTL with the Beck Depression Inventory (Beck et al., 1961). The results indicated strong positive correlations in the early stages of grieving and strong negative correlations in the final stages of grieving. The construct validity of the awareness scale of the RTL was demonstrated by McGovern (1983) who found that scores on the BDI

decreased as scores on the Awareness scale of the RTL increased. The RTL takes from 45 to 90 minutes to complete, with higher scores indicating greater intensity of grieving.

Statistical Analysis

The results from the pre-test measure of the BDI short form, The State-Trait Anxiety Scale, and the Response to Loss Scale split-half form were incorporated into an Analysis of Variance (ANOVA) to determine initial group differences. An ANCOVA was conducted with the group assignment (45 minutes, 20 minutes, or control) serving as the independent variable, and the post-treatment results from the BDI short form, the State-Trait Anxiety Scale, and the Response to Loss Scale split-half form serving as the dependent variables, while controlling for pre-treatment levels. Follow-up tests on demographic variables were investigated (e.g., gender, pain intensity, SES). The criterion for rejection of the null hypothesis was 0.10.

Chapter IV

Results

Introduction

This study investigated the effect of varying treatment duration in a mindfulness meditation program with chronic pain patients on levels of depression, anxiety, and grieving. In this chapter a preliminary analysis of the data will be presented followed by a restatement of each hypothesis along with the results of the statistical analysis conducted for each hypothesis. An exploratory analyses will also be conducted investigating the relationship between actual meditation time and levels of depression, anxiety, and grieving; and a complex comparison combining treatment groups and investigating differences between receiving treatment and no treatment.

Seventy-one people seeking treatment for chronic pain participated in the study. Fifty-three participants volunteered to be in a treatment group and were randomly assigned to either a 20 or 45 minute per day mindfulness meditation group. Eighteen participants comprised a comparison group which received no treatment and only agreed to complete the questionnaires. Thirty-nine of the original 53 participants in the treatment groups completed the 8 week program. There were 40 women and 17 men who completed the study. Forty three of the participants identified themselves as White, European American, one as Black - African American, one as Chicana, one as Italian, one as multicultural, one as Native American, and one as half American Indian and half

European American. The balance of participants did not identify their racial/ethnic background.

Quantitative Results

This study employed three different quantitative measures, the Beck Depression Inventory- Short Form (BDI), the State-Trait Anxiety Inventory, and the Responses to Loss Scale split-half form (RTL). The overall measurement psychometrics for participants who completed the program from all groups are reported in Table 1.

The BDI is a 13 item measure with a range from 0 to 39. The STAI is a 20 item measure with a range from 20 to 80. Consistent with previous research (Schneider & Deutsch, 1997) the RTL was divided into two factors, Cope/Awareness (151 items) and growth (99 items), each with a range from 0 to 1. The Cope/Awareness factor was made up of the holding on, letting go and awareness subscales; and the Growth factor consisted of the perspective, integration, and reformulation subscales of the RTL. The higher the number, the greater the intensity of grieving.

An initial Analysis of Variance (ANOVA) was performed on each of the pre-treatment measures to determine pre-treatment between group differences (the assumptions for all statistical analyses can be found in Appendix G). This analysis revealed no significant pre-treatment differences on any of the measures: BDI, $F(2,56) = .85, p < .43$; State Anxiety, $F(2,56) = 1.08, p < .346$; Trait Anxiety, $F(2,56) = .676, p < .512$; Cope/Awareness, $F(2,39) = .43, p < .65$; Growth, $F(2,39) = .41, p < .66$. However, because the effect sizes between the groups were moderately large for some of the groups

(e.g., the effect size between the 20 minute group and the 45 minute group on the BDI and the State Anxiety Inventory was $d = 0.45$), the post-treatment measures were

Table 1.

Means, Ranges, and Reliabilities for Quantitative Inventories for Completers

Inventory	N	Mean	SD	Poss. Min.	Poss. Max.	Actual Min.	Actual Max.	Alpha
Beck Depression Inventory								
Pre-Test	57	8.94	7.40	0	39	0	38	0.92
Post-Test	57	5.57	5.48	0	39	0	31	0.88
State Anxiety Inventory								
Pre-Test	57	45.59	11.92	20	80	20	73	0.93
Post-Test	57	38.22	10.84	20	80	20	68	0.92
Trait Anxiety Inventory								
Pre-Test	57	47.24	11.90	20	80	22	69	0.93
Post-Test	57	41.26	10.15	20	80	22	65	0.92
Cope/Awareness								
Pre-Test	40	0.38	0.14	0	1	0.13	0.75	0.97
Post-Test	40	0.29	0.10	0	1	0.11	0.54	0.93
Growth Pre-Test	40	0.58	0.16	0	1	0.24	0.91	0.96
Growth Post-Test	40	0.61	0.16	0	1	0.28	0.92	0.94

Table 2.
Means and Standard Deviations by Group and Inventory

Inventory	Group	N	Pre-Test Mean (SD)	Post-Test Mean (SD)
Beck Depression	20	17	7.23	3.11
Inventory			(5.41)	(2.97)
	45	22	10.36	5.77
			(6.98)	(4.15)
	Compar.	18	8.83	7.66
			(9.33)	(7.66)
State Anxiety	20	17	42.05	35.17
Inventory			(11.04)	(8.45)
	45	22	47.36	47.31
			(11.51)	(11.06)
	Compar.	18	46.77	42.22
			(12.82)	(11.90)
Trait Anxiety	20	17	45.05	38.52
Inventory			(9.92)	(8.00)
	45	22	46.91	41.40
			(13.94)	(11.51)
	Compar.	18	49.72	43.66
			(11.08)	(10.10)

Inventory	Group	N	Pre-Test Mean (SD)	Post-Test Mean (SD)
Response to Loss Scale Cope/ Awareness Factor	20	12	0.34 (0.12)	0.25 (0.08)
	45	15	0.37 (0.11)	0.28 (0.09)
	Compar.	13	0.39 (0.17)	0.34 (0.10)
	20	12	0.54 (0.16)	0.60 (0.17)
	45	15	0.57 (0.17)	0.59 (0.12)
Growth Factor	Compar.	13	0.60 (0.18)	0.63 (0.19)

analyzed using an Analysis of Covariance (ANCOVA) controlling for pre-treatment levels. The means, standard deviations, and ranges for the pre-treatment and post-treatment measures across groups are listed in Table 2 .

The alternative hypothesis for this study with respect to depression was that there would be a significant difference demonstrating a decrease in depression from the 45 minute treatment group to the 20 minute treatment group to the comparison group. The

results indicated that this hypothesis was partially supported. There was a significant difference for depression, $F(2, 56) = 8.34, p < .001$. Post hoc ANCOVAs revealed a significant mean difference in the hypothesized, direction between the 20 minute group and the comparison group, $F(1,34) = 13.44, p < .001$, and between the 45 minute group and the comparison group, $F(1,39) = 10.51, p < .003$. However there was not a significant difference between the two treatment groups, $F(1,38) = 2.46, p < .125$.

The alternative hypothesis for this study with respect to state and trait anxiety was that there would be a significant difference demonstrating a decrease in state and trait anxiety from the 45 minute treatment group to the 20 minute treatment group to the comparison group. Investigating the results with respect to state anxiety revealed that the difference was not significant, however, it did approach statistical significance, $F(2,56) = 1.95, p < .15$. The difference with respect to trait anxiety was not significant, $F(2,56) = 0.49, p < .614$.

Consistent with previous analyses (Schneider & Deutsch, 1997), the RTL was divided into two factors, Cope/Awareness and growth. The first factor, Cope/Awareness, incorporates questions that consider the initial phases of grieving, and consists of questions focused at developing greater awareness of what is lost. Higher scores on this factor reflect a higher intensity in the beginning phases of the grieving process. The second factor, growth, involves questions that consider what is left after the loss and what is now possible. Higher scores on this factor indicate that the loss has been more deeply

integrated. Analysis of the raw data indicated that a number of participants completed the 262 item questionnaire leaving many items either blank, or with a "0" response indicating that the item in question "isn't true about my current response to this loss." If over half of the items were left blank, or with a zero response, the questionnaire was considered invalid for the purposes of this analysis. Seventeen questionnaires were determined invalid using this procedure. Some possible reasons for incomplete questionnaires (or with excessive "0" responses) might include a participant selecting a loss that was not very significant to them, or the possibility of response fatigue because this was the last questionnaire in the packet and is quite lengthy (262 items).

The alternative hypothesis for this study with respect to the Cope/Awareness factor was that there would be a significant difference demonstrating a decrease on the Cope/Awareness factor from the 45 minute treatment group to the 20 minute treatment group to the comparison group. The results of the analysis with respect to the first factor, Cope/Awareness, indicated a significant difference in the hypothesized direction, $F(2,39) = 3.3, p < .05$. Post hoc analysis revealed significant differences in the hypothesized direction between the 20 minute group and the comparison group, $F(1,24) = 5.49, p < .02$, while the difference between the 45 minute group and the comparison group approached significance, $F(1,27) = 3.47, p < .07$. However, there was no significant difference between the two treatment groups, $F(1,26) = 0.51, p < .48$. These results indicate that, controlling for pretreatment differences, the intensity of the initial stages of grieving at post-treatment was less for the 20 minute treatment group compared to the comparison

group.

The alternative hypothesis for this study with respect to Growth factor was that there would be a significant difference demonstrating an increase in the Growth factor from the 45 minute treatment group to the 20 minute treatment group to the comparison group. The results of the analysis of the Growth factor on the RTL demonstrated no significant differences between groups, $F(2,39) = 0.347$, $p < .709$.

Completers vs. Drop-outs

Drop-outs were defined as those who completed the initial questionnaire and who attended at least one session, but then failed to complete the program or any other questionnaires. Most of the participants who dropped out of the program elected to do so by the third session, with no one dropping-out after the fourth session. Therefore, if a participant completed more than half of the program that person finished the study. Investigating which group the drop-outs attended revealed that ten were from the 20 minute treatment group and four were from the 45 minute treatment group. A Chi Square analysis revealed significant between group drop-out differences $X^2(1, N=14) = 2.57$, $p < .10$. Analysis of Variances (ANOVA) of the pre-treatment data were conducted to determine if there were any differences between those who completed the program and those who dropped-out. In this analysis the two treatment groups were combined. The results of these analyses revealed significant differences on State Anxiety, $F(1,52) = 2.83$, $p < .09$, and the on the Cope/Awareness factor, $F(1,35) = 3.04$, $p < .09$. In order to investigate this difference on the Cope/Awareness factor more closely, ANOVAs were

performed on its three Cope/Awareness factor subscales of holding on, letting go, and awareness. This analysis revealed significant differences on the first two stages, holding on, $F(1,47) = 4.99, p < .03$, and letting go, $F(1,47) = 3.41, p < .07$, but not on the third stage, awareness, $F(1,46) = 1.02, p < .31$. Therefore, those who dropped out of the program were significantly higher on the first two stages of the Cope/Awareness factor but not on the third.

Qualitative Data

The participants in the treatment groups completed an open-ended questionnaire containing three questions (Appendix H). The questions along with the response frequencies are given in Table 3. The first question asked what changes the participant has noticed, since starting the treatment, in their ability to cope with pain and cope with their life in general. The second question asked if they noticed any differences in their meditation practice when they meditate more as opposed to meditate less. The third question asked if they noticed any differences in their daily life when they meditate more as opposed to meditate less. The data from these questionnaires were coded by the investigator. For example, responses that stated that the treatment allowed one to be less judgmental, or that it increased awareness, were grouped under the heading of increased mindfulness. The data were coded by grouping similar statements for the same question. The coding was done while blind with respect to which treatment group a particular response was from. It is important to note that the investigator who coded the data also

Table 3.

Response Frequencies to Open-Ended Questionnaire.

		Group	
Question	Response	20 min	45min
Coping with pain	increased mindfulness	8	16
		(47%)	(73%)
	less reaction to pain	4	3
		(23%)	(14%)
	less actual pain	3	4
		(18%)	(18%)
Coping with life in general	increased peace/less stress	1	3
		(6%)	(14%)
	no difference	1	1
		(6%)	(4%)
	increased mindfulness	2	4
		(12%)	(18%)
	less reactivity	6	5
		(35%)	(23%)
	increased peace/less stress	1	6
		(6%)	(27%)
	improved self-esteem	3	2
		(18%)	(9%)
	improved ability to forgive	2	0
		(12%)	(0%)
	improve ability to sleep	0	2
		(0%)	(9%)

		Group	
Question	Response	20 min	45min
differences in meditation practice with respect to time	longer meditations better	5 (30%)	7 (32%)
	shorter meditations better	1 (6%)	2 (9%)
	less pain with longer	0 (0%)	2 (9%)
differences in life in general with respect to time	longer meditations better	5 (30%)	8 (36%)
	no difference	1 (6%)	1 (4%)

instructed the participants in mindfulness, and therefore may have inherent biases with respect to concluding “increased awareness,” or “more mindfulness.” It is also important to note that there were five more participants in the 45 minute group than in the 20 minute group, and that response frequencies were very low, therefore, these data should

not be emphasized in determining group differences.

In general, the qualitative data did not demonstrate a clear difference between the 20 and 45 minute groups. A noteworthy exception is in the categories of mindfulness and increased peace/less stress. When participants were responding to both coping with pain, and with their life in general, at least double the number of responses indicating increased mindfulness and increased peace/less stress came from participants in the 45 minute group. Similarly, although the number of respondents mentioning improved sleep and less pain with more meditation was very low ($N=2$), both were from the 45 minute group.

With respect to more or less meditation being better, the 45 minute group favored longer meditations when responding with respect to their meditation practice, whereas twice as many participants in the 45 minute group noted improvements in their life in general when they meditated longer rather than less. In addition, both groups indicated that they preferred longer meditation times.

Exploratory Analyses

In an effort to determine how much participants actually meditated, the meditation logs for each group were averaged. The participants in the 20 minute group averaged 971 total minutes or 19.8 minutes per day, while those in the 45 minute group averaged 1608 total minutes or 32.8 minutes per day. To determine if total meditation time was related to any of the outcome variables, a partial correlation analysis was performed between actual meditation time and all of the outcome variables controlling for pretreatment variables. This analysis revealed no significant correlations between actual meditation

time and the BDI ($r = .27, p = .13$), State Anxiety Inventory ($r = .02, p = .91$), Trait Anxiety Inventory ($r = .16, p = .37$), Cope/Awareness factor ($r = -.05, p = .82$), and the Growth factor ($r = .03, p = .89$).

In order to investigate the differences between receiving treatment and no treatment, a complex comparison was constructed by collapsing the 20 and 45 minute groups, and an ANCOVA was conducted investigating differences between the treatment group and the comparison group while controlling for pre-treatment differences. The results of these analyses revealed significantly lower mean differences favoring the combined treatment group on the BDI, $F(1,56) = 16.08, p < .001$, State Anxiety Inventory, $F(1,56) = 3.94, p < .052$, and the Cope/Awareness factor of the RTL, $F(1,39) = 6.18, p < .018$. Nonsignificant differences were found between the treatment group and the comparison group on the Trait Anxiety inventory, $F(1,56) = .39, p < .53$, and the Growth factor of the RTL, $F(1,39) = .06, p < .8$.

In order to determine generalizability of the results, and if other variables might have interacted with the above results, exploratory analyses were completed with respect to gender, pain intensity and SES. An exploratory analysis of the influence of gender revealed a significant interaction between group and gender for depression when pre-treatment depression levels were controlled for, $F(1,56) = 2.59, p < .085$. However, there were no significant interactions between group and gender for any of the other measures.

Investigating mean values of the group by gender interaction for depression (see Table 4), suggests that the treatment was more effective in lowering depression in women as

compared to men. It is important to interpret this interaction cautiously because some of the cell sizes are very small. For example, in the 20 minute group there were only 4 males.

Table 4.

Group by Gender Interaction for Beck Depression Inventory.

Gender	Group		
	45	20	Comparison
Male	6.33 (5.39, 6)	3.75 (2.87, 4)	7.71 (10.42, 7)
Female	5.56 (3.78, 16)	2.92 (3.09, 13)	7.63 (5.89, 11)

Note. Values are the mean post-treatment Beck Depression Inventory scores for each cell

(Numbers in parentheses denote standard deviation and cell size)

An exploratory analysis of the interaction between pain intensity and group on the

outcome variables, controlling for pre-treatment levels, revealed a significant interaction between group and pain intensity on the Cope/Awareness scale of the RTL, $F(1,31) = 1.88, p < .07$. The regression lines for this interaction are demonstrated in Figure 1. There were no other interactions between group and pain intensity on any of the other outcome variables.

Because it might be hypothesized that participants in higher SES groups may be more educated and grasp the conceptualizations of mindfulness more quickly, a follow-up analysis of the influence of SES on outcome also was investigated. SES was determined through prestige status ratings (Stevens & Hoisington, 1987). Ratings ranged from 15.60 (News Vendor) to 81.09 (Physician). Because the data from these ratings were not linearly distributed (i.e., they were skewed from the lower end of the distribution, indicating that most of the participants were from a lower SES group) the ratings were divided into 3 equally sized groups based on the frequency distribution of scores. The results of separate ANCOVAs revealed no significant interaction between group and SES on any of the measures (BDI, $F[2,42] = .25, p < .251$, State Anxiety Inventory, $F[2,42] = .81, p < .45$, Trait Anxiety Inventory, $F[2,42] = .96, p < .39$, Cope/Awareness factor, $F[2,30] = 2.38, p < .113$, Growth factor, $F[2,50] = .47, p < .63$).

During the second half of the data collection, it was determined that it would be helpful to know how many participants in the comparison group would be interested in taking a mindfulness meditation program, and if they were interested, what length of intervention they would prefer (20 or 45 minutes per day). Of the 11 participants who

responded to this question, 10 indicated that they would not be interested in taking a mindfulness meditation course; the one participant who was interested preferred a 45 minute group.

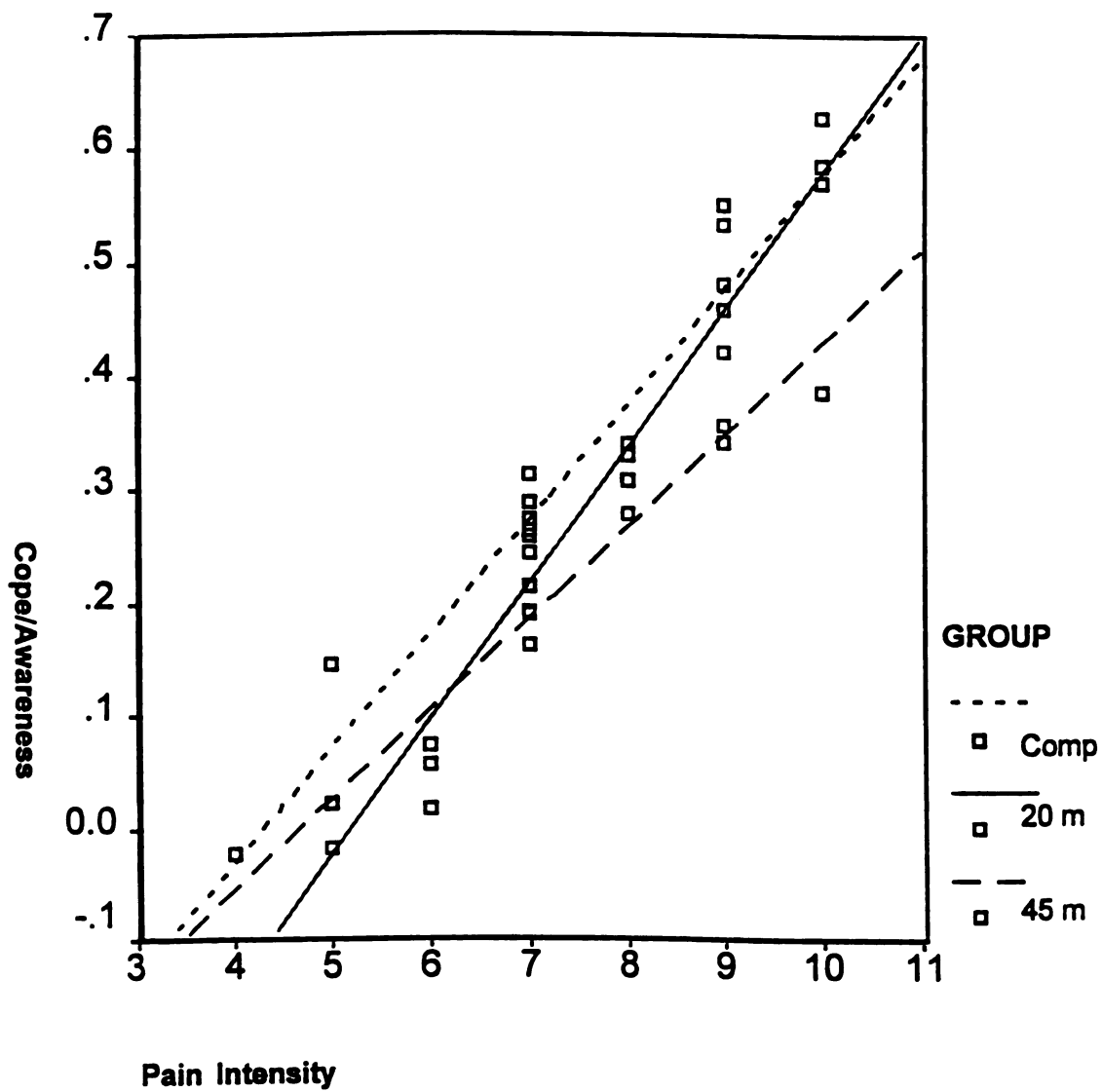


Figure 1. Pain intensity by group interaction for Cope/Awareness

Chapter V

Discussion

Chronic pain is a severely difficult disorder, striking one in five people in Michigan (Anstett,1997). This experience of intense prolonged pain has more than just physical ramifications, rather it affects a person on all dimensions of their life. The added psychological stress of managing the physical pain, coupled with the severe losses that often include careers, relationships, and hobbies, can make this an overwhelming experience. Therefore, interventions that help people better cope with chronic pain are desperately needed.

Recently, a number of studies have been published citing the effectiveness of mindfulness meditation in helping people cope more effectively with a variety of stressors. More specifically, Kabat-Zinn et al. (1985, 1992) have demonstrated significant reductions in depression and anxiety with participants diagnosed with anxiety disorders and with chronic pain using a mindfulness meditation program. One of the major requirements in Kabat-Zinn's mindfulness meditation program is a commitment for participants to practice 45 minutes per day. For two primary reasons this commitment may be too demanding for some people. From a pragmatic perspective, many people do not have 45 minutes available to them to commit to the practice. With dual income families becoming the norm in the current culture, along with other commitments, adding an extra demand of meditating for 45 minutes may steer people away from a program that

could potentially help them. From a psychological perspective, attempting to sit quietly for 45 minutes may be rather difficult. For people who are very active or who may be suffering from a recent loss, depression, or anxiety, sitting still with the awareness focused inwards for 45 minutes may initially appear too overwhelming, and detract them from participation in the program.

The purpose of this study was to investigate the effect of varying the treatment duration in a mindfulness meditation program with chronic pain patients. Participants were randomly assigned to one of two treatment groups. In one group, participants were assigned to meditate 20 minutes per day, while in the other participants were assigned to meditate 45 minutes per day. There was also a comparison group composed of volunteers seeking treatment for chronic pain who agreed to complete the questionnaires at the pre- and post-treatment intervals (8 weeks), but who did not receive any treatment. The treatment consisted of attending eight weekly sessions and agreeing to practice mindfulness meditation for the assigned amount each day (20 or 45 minutes). The weekly sessions consisted of instruction and practice in mindfulness meditation along with a group discussion on integrating the practice into coping with pain and with daily stressors. Participants were also requested to keep a daily log of their actual meditation times. The questionnaires consisted of a depression measure (BDI-Short Form), a measure of state and trait anxiety (STAI), and a measure of stages and intensity of grieving (RTL).

Seventy-one people seeking treatment for chronic pain participated in the study.

Fifty-three comprised the treatment group and 18 the comparison group. Fourteen people dropped out of the study, with all of them doing so by the fourth session. Consequently, if a person attended more than half of the weekly meetings, they finished the program. Therefore, people appeared to realize relatively quickly if mindfulness meditation was worthwhile for them. Analysis of the data on the pretest measures investigating differences between those who dropped out of the program as compared to those who completed it indicated that drop-outs demonstrated significantly more state anxiety, and more intensity in the beginning stages of the grieving process.

It is interesting to note that drop-outs did not differ significantly from those completing the program on depression, but they did differ on the initial phases of grieving, and on state anxiety. This finding may support Levine's (1994) theory regarding initial experiences in meditation. Levine (1994) argued that the initial personal issues that present when one undertakes a mindfulness meditation program are those related to grief. Because drop-outs did not report a significant difference in depression from completors, there appears to be a distinction between the experience of the initial phases of grieving and depression that may influence one's ability to complete an 8 week mindfulness meditation program. Therefore, it might be too difficult for many people to sit still with increased awareness of their internal experience while in the initial phases of grieving. This might also be reflected by the significant difference in state anxiety between dropouts and completors. Schneider (1994) has theorized that in the initial phase of grieving the response is to limit the awareness of the loss through fighting the loss and

keeping very busy (holding-on), or by minimizing the significance of the attachment to the lost object, person, or the feelings that accompany the loss (letting-go).

One recommendation that might be suggested from these results is that a screening assessment be developed using the questions from the RTL corresponding to the first stage of grieving, holding on and letting go. Potential participants who score high on this assessment might be advised to seek an alternative form of treatment before attempting an 8 week mindfulness meditation group.

Analyzing the pre-treatment data on all measures indicated no significant between group differences. However, the pre-treatment effect sizes between groups of differences were moderately large. For example, the effect size between the 20 minute group and the 45 minute group on the BDI and the State Anxiety Inventory was $d = 0.45$. Therefore, to account for these moderate, albeit, non-significant differences the post-treatment data were analyzed controlling for pre-treatment differences.

Hypotheses

The alternative hypothesis for this study was that there would be a significant difference between the comparison group and the treatment groups, and that there would be a significant difference between the 20 minute treatment group and the 45 minute treatment group on measures of depression, anxiety, and grieving. More specifically, it was hypothesized that longer meditation periods would result in a healthier outcome reflected in lower depression, anxiety, and intensity in the initial phases of grieving (coping), and increased intensity in the final stages of grieving (growth). The

results indicated that this hypothesis was partially supported. There were significant differences for depression and the Cope/Awareness factor of grieving. Post hoc analysis of the BDI revealed significant differences between the 20 minute treatment group and the comparison group, and between the 45 minute treatment group and the comparison group. These differences were in the hypothesized direction.

The significant differences between the treatment groups and the comparison group on the BDI indicates that, for people seeking treatment for chronic pain, participation in an 8 week mindfulness meditation program that incorporates a daily meditation of at least 20 minutes may result in significantly lower levels of depression. This finding is consistent with Kabat-Zinn et al. (1985) who found reductions in depression for those who participated in a mindfulness meditation program compared to a comparison group seeking other traditional treatments for chronic pain. However, there was not a significant difference between the two treatment groups. This indicates that with respect to depression, longer meditation time may not make much difference. There might be a plateau that is reached so that practicing some minimal amount, at least 20 minutes per day in the present study, leads to new awarenesses that reduce depression, yet practicing for longer periods does not result in additional significant decreases. In other words, longer meditations may not give added benefit with respect to depression over an 8 week period. However, it is important to note that the 8 week mindfulness meditation program is just an introduction to the technique, and that increased benefits of longer meditation periods resulting in greater drops in depression may appear over months or

years of practice.

As suggested by the correlation of depression and time it is also possible that longer sittings may allow more troubling emotions into awareness, and therefore inhibit some of the lowering of depression. Carrington (as cited in Mead, 1993) has commented that, for some people, meditating longer than 15 minutes of Clinically Standardized Meditation (CSM) may lead to adverse side affects, and therefore, it is preferable to “err on the side of under meditation ... rather than risk any build up of stress in the meditator” (Carrington, 1978, p. 108). Although, CSM is a more concentrative form of meditation than mindfulness meditation in that it employs a mantra, it does share many of the same characteristics. Carrington (1993) also recommends beginning with shorter meditations starting as low as 10 minutes per day. However, inspecting the raw data in the present study with respect to high scores on the BDI indicated that there were no increases in depression over the course of treatment. More specifically, higher depression levels dropped, while some very low depression levels slightly increased (e.g., below 2 on pre-treatment to 4 at post-treatment on the BDI). These lower scores increasing from pre-treatment to post-treatment might be due to becoming more mindful of issues that were previously held just outside of awareness, and therefore might be considered positively. It is also possible that these slight increases reflect error variance.

The hypotheses with respect to State and Trait Anxiety were not supported. The results of the State and Trait Anxiety Inventories did not demonstrate a significant difference between the three groups. However, when the treatment groups were

combined and compared to the comparison group, there was a significant difference between those who meditated and those who did not on State Anxiety. This finding is supported by Kabat-Zinn et al. (1985) who found lower levels of anxiety in chronic pain patients who participated in a mindfulness meditation program requiring 45 minutes per day when compared to those in a comparison group who did not meditate at all. One possible explanation for not finding a difference between the treatment groups is that initial levels of anxiety for the participants in this study might have been too low, and therefore created a floor effect.

Investigating the between group differences on trait anxiety indicated that there were no significant differences between any of the groups. It is difficult to compare these results with previous research comparing treatment to non-treatment groups of chronic pain patients because only one other study reviewed employed the STAI. For example Kabat-Zinn et al. (1985) determined anxiety levels with the SCL 90 which asks participants to complete the inventory according to how they felt over the past week. The Trait Anxiety Inventory instructs participants to complete the measure reflecting how they "generally feel" while the State Anxiety Inventory instructs participants to complete it reflecting how they are feeling "right now, that is, in this moment." Therefore, apparent inconsistencies of these results with previous research may be partially due to measuring different aspects of anxiety.

Consistent with previous research (Schneider & Deutsch, 1997), the RTL was

divided into two factors. The first factor, Cope/Awareness, incorporated the first 3 stages of Schneider's (1994) model of grieving, holding on, letting go, and awareness. The RTL asks participants to select a recent loss and complete the questionnaire in response to this loss. Examples of questions that make-up the first factor, Cope/Awareness, consist of, "since the time of the loss: 'I keep active', 'I avoid being alone', 'the tears are hard to stop', 'I lose track of what is going on'."

The second factor, growth is made up of the fourth, fifth, and sixth stages of Schneider's (1994) model of grieving, perspective, integration, and self-empowerment. Examples of questions from this factor consist of, "since this loss happened: 'being by myself has been healing', 'I've already passed the lowest point', 'I've changed in ways that would not have happened otherwise', 'I am more open to possibilities.'" Participants were instructed to complete the RTL at post-test using the same loss they selected at pre-test so that a measure of how they progressed through the stages of grieving may be obtained.

The hypothesis with respect to grieving was partially supported. There was a significant difference in the hypothesized direction for the Cope/Awareness factor, but there was not a significant difference for the Growth factor. Analysis revealed a significant difference between the 20 minute group and the comparison group. This suggests that those who participated in the 20 minute treatment progressed through the initial phases of grieving more than the comparison group. The difference between the 45 minute group and the comparison group approached significance. There were no

statistically significant differences between the 20 and 45 minute groups. When the two treatment groups were combined there was a difference in the hypothesized direction for the Cope/Awareness factor but not for the Growth factor. One possible reason for not finding a difference between treatment groups on both the Cope/Awareness and Growth factor and between the combined treatment group and the comparison group on the Growth factor might be similar for the reason cited for not finding a difference between treatment groups for depression. That is, longer meditation times may allow more unresolved grief into awareness which will take longer to resolve.

The decrease of intensity in initial phases of grieving for the participants in the combined treatment group as compared to those in the comparison group appears to support Levine's (1994) theory that the first issue that presents when a meditation practice is undertaken is grieving. Mindfulness may enable the loss issue to be more fully grieved because it fosters a non-judgmental attitude of emotional and cognitive material, thereby reducing defenses such as intellectualization, rationalization, and denial. This result may be related to the finding in the present study that drop-outs demonstrated significantly more intensity in the beginning stages of the grieving process and in state anxiety. A possible explanation for this is that drop-outs may not have been ready to increase their awareness of a loss they were grieving. Schneider (1994) has commented that in the first stages of grieving, defensive attempts are made to minimize awareness of the loss in an effort to lessen its emotional impact. Because mindfulness increases awareness, a person who may already be emotionally overwhelmed, may,

consequently discontinued their participation in the program. Therefore, beginning a mindfulness meditation practice during the very early phases of grieving may increase anxiety above an already elevated level and is not recommended. However, the current study did find that once the loss begins to be integrated, rather than defended against, a mindfulness meditation practice may be helpful in progressing through grieving more quickly. Future research might explore using the RTL as a screening instrument for mindfulness programs. Participants who demonstrate high scores on the holding on and letting go sub-scales should be recommended to seek alternative treatments, such as individual therapy, group therapy, or a support group focused on their loss issue(s) prior to undertaking a mindfulness meditation program.

Another possible explanation for the decrease in the initial stages of grieving while not also realizing a significant increase in the Growth aspects of grieving may be that moving from the initial stage of grieving, (determining what is lost) to the Growth stage (determining what is left) may not be a clear stage-wise progression. This is consistent with Schneider's (1994) theory which states that although the stages are organized in a linear fashion, "people do not go through a linear progression of grief stages.... we go through the grief process many times, often cycling through the same loss several times as we get new information or a new perspective"(p. 66). The increased awareness fostered through mindfulness meditation may offer this "new information or new perspective" which may instigate a recycling of the initial stages of the grieving

process, and therefore minimize progression into the growth stages of grieving. The significant drop of intensity in the Cope/Awareness stage of grieving for those in the treatment groups may reflect this recycling. However, Schneider (1994) does propose that “in the larger picture there is a progression toward integration and growth”(p. 66). Schneider (1994) also comments that entering into the full awareness of what is lost, the first stages of grieving, are “the most painful, lonely, helpless, and hopeless times we will ever face” (p. 158), and therefore the most difficult. Thus, it may take considerable time to move through the initial stages of grieving, and once this happens there may not be an immediate increase in the growth phase. Future research might profit from conducting a follow-up study after several months or years to determine if mindfulness may indeed accelerate the growth aspects of grieving. Another possible influence for the non-significant change in the Growth factor might be due to participants entering the study with already elevated levels on the Growth factor due to them being in treatment for chronic pain. Participants for this study were recruited from a multidisciplinary pain clinic. Therefore, they may already have elevated levels on the Growth factor due to this treatment, leaving little room for change in the eight week time span of the present study. For example, the pre-treatment intensities were all above 0.54, 0.15 points higher than any of the Cope/Awareness factor's intensities.

Qualitative Data

The qualitative data were collected from an open-ended questionnaire containing three questions (Appendix G). The responses were coded into different categories by the

investigator who also taught the mindfulness meditation classes, consequently there may be some biases in the manner the data were grouped. It is also important to note that the small number of responses in each category (see Table 3), and the differing numbers of people in the groups minimize the confidence of conclusions drawn from this data. Initial examination indicated no clear differences between the two groups. However, it is interesting to note that when asked how the meditation program assisted in coping with both pain and life in general, the 45 minute group had more than double the responses to categories that related to increased mindfulness and more peace/less stress. In addition, although only two people indicated that their mindfulness practice helped them get to sleep more quickly, they were both from the 45 minute group. Both treatment groups indicated that they preferred longer meditation times, a finding supported by Kabat-Zinn's (1997) theory. This theory differentiates between two purposes of meditation. One popular and effective use of meditation is as a relaxation exercise, the second is using meditation as a means to gain deeper insight into the nature of thoughts and feelings and the relationship between the two (i.e., increased mindfulness). For example, if meditation is practiced for a shorter period of time, a reversal of the stress response might occur and a pleasant relaxation may be experienced (the "relaxation response"). However, if meditation is continued beyond achieving relaxation, there is an opportunity to observe more clearly cognitive and affective patterns, rather than react in a habitual or addictive manner to given cognitive or affective stimuli. In addition, the longer meditation period gives more time to calm cognitive processes which will often carry over into daily life.

Therefore, longer meditation periods may increase the effectiveness of responding mindfully to stressful situations with respect to pain and daily life.

Drop-out Rates

Investigating the between group differences between drop-outs indicated that significantly more participants dropped out of the 20 minute group compared to the 45 minute group. A possible explanation for this finding might be that the longer meditation time gives more favorable results (not noticeable on the measures used in this study), and therefore has fewer dropouts. Another possible explanation is that the longer meditation time leads to a quicker realization of the benefit of the practice, and therefore fewer dropouts, but these results may plateau midway through the program allowing those in the shorter meditation group time to “catch up” during the later stages of the program. Another possible explanation is that there are benefits to meditating longer that the outcome measures used in this study did not represent. It is possible that longer practice times improved such characteristics as mindfulness, peace and sleep, and lowered stress as indicated by the qualitative data. It is important to interpret this finding cautiously because the number of dropouts was small (N=14).

In an attempt to determine if the amount of overall time influenced any of the outcome variables, the relationship between the total meditation time over the course of the program calculated from the participants’ meditation logs and the outcome variables were explored. There was no relationship between total amount meditated over the course of the program and any of the outcome variables. Combining these results with

the complex comparison analysis indicates that with respect to the quantitative data what appears most important is that a person meditate at least 20 minutes per day. Longer meditations may be more beneficial as reflected in the qualitative data, and the dropout rates, but these results may be too subtle to be indicated on the qualitative measures.

Interaction Effects

The influence of gender and SES on the outcome variables was analyzed to determine if these variables might have interacted with the treatment. The results indicated that women appeared to have greater drops in depression over the course of treatment as compared to men. However, these results should be interpreted cautiously because there were only 10 men compared to 29 women in the treatment groups. This enrollment gender difference is not unique to this study. Kabat-Zinn et al. (1984) also had an enrollment gender difference with twice as many women than men enrolling in a mindfulness meditation program. These results might indicate that women prefer, and improve more with a more passive or receptive form of treatment such as mindfulness meditation than men with respect to depression. Nolen-Hoeksema (1987) found that men tend to lessen their depressive symptomatology by distracting behaviors, but women are more likely to amplify their depressed mood by ruminating behavior. In addition, Butler and Nolen-Hoeksema (1994) found that when rumination style was controlled for gender was not a predictor of depression. Therefore, rumination and not gender appears to be what might differentiate depressive symptomatology in men and women. The attractiveness and effectiveness of mindfulness meditation for women might be in that it

inhibits a ruminative coping style. For example, whenever a participant becomes aware that they are ruminating they are instructed to change the focus of their attention to the breath or a body part. Nolen-Hoeksema (1998) concluded that those who use a ruminative style of responding to their initial symptoms of depression will have longer and more severe episodes of depressed mood than those who have more active or less ruminative styles.

Another possible explanation for these gender differences is in different styles of relating. Sethi and Nolen-Hoeksema (1997) found that women tend to be more relation focused than men. Therefore they might find it more difficult than men to take time out for themselves. They might judge taking this time as being self-fish and experience feelings of guilt. By taking this course they were instructed to take up to 45 minutes per day for self-nurturance. Being part of a research study might have enabled them to overcome possible feelings of guilt and take care of some of their own needs.

There was also a significant interaction between pain intensity and the initial stages of grieving. This demonstrated that for people who have higher pain intensities longer meditation times might be more beneficial in moving through the initial stages of grieving than shorter meditation times. A possible explanation for this might be that the longer meditation time might be needed to offer more of an opportunity to develop insight into beliefs and reactions to pain due to higher pain intensities. Schneider has stated that one begins to work through the initial phases of grieving when awareness of the lost issue is increased. It is possible that prior to learning mindfulness participants

with higher pain intensities used distraction techniques more than participants with lower pain intensities to deal with uncomfortable emotional and physical experiences.

Participants with greater pain might use more distraction from all feelings and sensations, including feelings related to unresolved loss issues. Therefore, longer meditation times might be recommended for those with higher pain intensities due to a possible inclination to use more awareness limiting techniques such as distraction. Those with lower pain intensities might not realize the same benefits with more practice due to a possible plateau being reached in the initial phases of working through unresolved grief issues.

Because it is conceivable that education, income, or occupational prestige might influence the results an investigation of the relationship between group assignment and SES on the outcome variables was conducted. The results indicated no significant interactions. Therefore, education, occupation, or status does not appear to influence the outcomes from learning and practicing mindfulness meditation.

Limitations and Future Research

One of the limitations of this study was the small sample size. It is possible that a larger sample size might have been more representative of this population. This is especially noteworthy with respect to the representation of minorities in this study. Because some minorities are subject to increased stress due to being in the minority (Jackson & Sears, 1992), mindfulness meditation programs incorporating representatives from a broad array of minority groups is essential. If the power of mindfulness meditation is going to be utilized to make significant changes in the quality of a culture,

programs are going to have to incorporate more minority groups. Future research could follow Roth and Creaser's (1997) lead and offer programs in minority neighborhoods that are modified to fit the specific needs of that culture (e.g., child care, bilingual instructional tapes and instructors, tape player loans). The low representation of minorities in this study is probably due to the type and location of pain clinic where this study took place. Because participants were recruited for this study through psychologists at this clinic, the sample population reflected that of the clinic.

Another limitation of this study was the complete reliance on self-report data. The participants might have given a response in a biased manner due to their feelings towards the researcher or research in general. For example, if a participant was attempting to be a "good research participant" or desires to "look good" they might have answered the questions in a more positive manner. Conversely, a participant might have answered the questions in a negatively biased manner if they did not like the researcher or research in general, or as a "cry for help." Using data collection methods other than self-report might help eliminate these biases.

Another limitation of this study is the use of a comparison group rather than a randomly selected control group consisting of people who would be interested in taking a mindfulness meditation program. Although the comparison group used in this study consisted of people seeking treatment for chronic pain, they did not necessarily express an interest in taking a mindfulness meditation program. Of the 11 members of the comparison group questioned, only one expressed interest in participating in an 8 week

meditation course. Consequently, this is a difference between treatment and comparison groups and limits the internal validity of the study.

Another limitation of this study was the depth of the qualitative data. Although the data from the questionnaire did seem to support differences in the hypothesized direction, the nature and size of the data collected severely limited any conclusions that could be drawn from the participants' responses. A recommendation for future research that investigates varying meditation periods is a more extensive use of qualitative data. This could also validate the categories developed from this study. It seems apparent that if there are differences on the outcome variables used in this study with respect to varying treatment duration, they are difficult to discern on paper and pencil inventories. However, if an interview format of data collection were used that allowed for follow-up questions, the potential for discerning differences between shorter and longer meditation times might be increased.

Future research might follow-up on the results with respect to meditation and grieving. More specifically, studies could modify the Response to Loss scale to serve as a screening assessment for mindfulness meditation programs. Prospective participants who score high in the first stage of grieving might be referred for an alternative form of treatment prior to participation in this type of program. In addition, future research could employ 6 month or year long follow-up studies to investigate the aspects of grieving more completely than accomplished in the present study.

Conclusion

The purpose of this study was to determine what the differences were when the length of meditation is varied in a population of chronic pain patients. The results of this study indicated that there might be an advantage to longer meditation times with respect to increasing mindfulness, and peace, lowering stress, and completing a mindfulness program. In addition, women may prefer meditation, and benefit from it more with respect to depression than men. No advantage was found between the treatment groups with respect to depression, anxiety, or the factors associated with grieving. These results are not consistent with Smith et al. (1995) who did find a difference on symptom measures between those who meditated frequently as compared to occasional meditators. However, frequent meditation in that study was defined as more than three times per week. One possible reason for not finding significant differences on these measures was that the measures employed were not sensitive enough to tap the differences between the two treatment groups. Indeed, although the number of responses on the qualitative data were small, there did appear to be more indication of mindfulness being helpful in coping with pain and life in general from those in the longer meditation group. There was also a slight indication of increased ease in sleeping by those in the 45 minute group, and that both groups preferred longer meditations.

Another possible reason for not finding differences between treatment groups is that increased meditation time, above a threshold level (e.g., 20 minutes per day) does not make a significant difference on depression anxiety and grieving. Carrington et al.

(1980), did not find a difference between frequent and occasional meditators on symptom improvement. However Carrington et al. (1980) did find a difference between frequent and occasional meditators on statements by participants indicating improved social relationships, more satisfaction from the practice, and that the practice was more valuable to them. Therefore, the results of the present study are very consistent with Carrington et al. (1980), in that the present study also did not demonstrate a difference between length of meditation time and symptom improvement, but there was a difference with respect to participants' statements indicating increased mindfulness, peace, less stress, and higher completion rates by those in the longer meditation group. The higher completion rate in the 45 minute group could reflect, as in Carrington et al. (1980), that these participants found the practice more satisfying and valuable. Moreover, both groups in the present study indicated that they preferred longer meditations.

A major result of this study, and consistent with Kabat-Zinn et al. (1985), was that for people suffering from chronic pain, a mindfulness meditation program incorporating a daily meditation period of at least 20 minutes can be effective in helping to reduce depression, and state anxiety, and in accelerating the initial stages of grieving for people with chronic pain.

Currently, more than 100 mindfulness meditation programs are being offered in the United States (Roth & Creaser, 1997) that follow the format offered by Kabat-Zinn (1990). Much of the enthusiasm for this program has been generated through the research of Kabat-Zinn and/or the Stress Reduction Clinic, at the University of Massachusetts.

Therefore, the need to duplicate and extend these findings by other researchers and clinics is needed. The current study accomplished this by supporting and extending previous research by demonstrating significant reductions in depression, state anxiety, and the initial phases of grieving for participants seeking treatment for chronic pain who took part in the 8 week mindfulness meditation program when compared to a comparison group. The comments made by participants indicated that the mindfulness meditation practice enabled them to feel “more peace of mind” and not feel as “hopeless,” or “judgmental” as well as “develop an awareness that I have periods without pain.” With respect to longer meditations being more beneficial, the results of the current study indicated that those in the longer meditation group had less tendency to drop-out from the program than those in the shorter meditation group. In addition, the comments from participants seem to indicate that participants from both groups preferred longer meditations, and that those in the longer meditation group indicated more mindfulness, peace, and less stress. With respect to gender differences, women may prefer mindfulness meditation, and improve on depression more than men. Another interesting finding from this study is the relationship between grieving and meditation. More specifically, that in the initial stages of grieving, the increased awareness fostered by meditation may be too overwhelming, and therefore not recommended. However, after the initial stages of grieving have been completed, meditation appears to accelerate the grieving process. Consequently, the measure used in this study to quantify stages of grieving (the RTL) might be modified to serve as a screening assessment for future studies and meditation programs.

Mindfulness meditation appears to have many benefits, some of which were demonstrated in this study. In addition, longer meditation periods may be more beneficial, however, further research, utilizing multiple assessments including qualitative approaches, are needed to clarify these benefits.

Appendix A

INSTRUCTIONS: This is a questionnaire. On the questionnaire are groups of statements.. Please read the entire group of statements in each category. Then pick out the one statement in that group which best describes the way you feel today, that is, right now! Circle the number beside the statement you have chosen. If several statements in the group seem to apply equally well, circle each one.

BE SURE TO READ ALL THE STATEMENTS IN EACH GROUP BEFORE MAKING YOUR CHOICE.

A.

- 3 I am so sad or unhappy that I can't stand it.**
- 2 I am blue or sad all the time and I can't snap out of it.**
- 1 I feel sad or blue.**
- 0 I do not feel sad.**

B.

- 3 I feel that the future is hopeless and that things cannot improve.**
- 2 I feel I have nothing to look forward to.**
- 1 I feel discouraged about the future.**
- 0 I am not particularly pessimistic or discouraged about the future.**

C.

- 3 I feel I am a complete failure as a person (parent, husband, wife).**
- 2 As I look back on my life, all I can see is a lot of failures.**
- 1 I feel I have failed more than the average person.**
- 0 I do not feel like a failure.**

D.

- 3 I am dissatisfied with everything.**
- 2 I don't get satisfaction out of anything anymore.**
- 1 I don't enjoy things the way I used to.**
- 0 I am not particularly dissatisfied.**

E.

- 3 I feel as though I am very bad or worthless.**
- 2 I feel quite guilty.**
- 1 I feel bad or unworthy a good part of the time.**
- 0 I don't feel particularly guilty**

F.

- 3 I hate myself.**
- 2 I am disgusted with myself.**
- 1 I am disappointed in myself.**
- 0 I don't feel disappointed in myself.**

G.

- 3 I would kill myself if I had the chance.**
- 2 I have definite plans about committing suicide.**
- 1 I feel I would be better off dead.**
- 0 I don't have any thoughts of harming myself.**

H.

- 3 I have lost all of my interest in other people and don't care about them at all.**
- 2 I have lost most of my interest in other people and have little feeling for them.**
- 1 I am less interested in other people than I used to be.**
- 0 I have not lost interest in other people.**

I.

- 3 I can't make any decisions at all anymore.**
- 2 I have great difficulty in making decisions.**
- 1 I try to put off making decisions.**
- 0 I make decisions about as well as ever.**

J.

- 3 I feel that I am ugly or repulsive-looking.**
- 2 I feel that there are permanent changes in my appearance and they make me look unattractive.**
- 1 I am worried that I am looking old or unattractive.**
- 0 I don't feel that I look any worse than I used to.**

K.

- 3 I can't do any work at all.**
- 2 I have to push myself very hard to do anything.**
- 1 It takes extra effort to get started at doing something.**
- 0 I can work about as well as before.**

L.

- 3 I get too tired to do anything.**
- 2 I get tired from doing anything.**
- 1 I get tired more easily than I used to.**
- 0 I don't get any more tired than usual.**

M.

- 3 I have no appetite at all anymore.**
- 2 My appetite is much worse now.**
- 1 My appetite is not as good as it used to be.**
- 0 My appetite is no worse than usual.**

Appendix B

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-1

Please provide the following information:

Name _____ Date _____ S _____

Age _____ Gender (Circle) M F T _____

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right now*, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

NOT AT ALL
SOMEWHAT
MODERATELY SO
VERY MUCH SO

1. I feel calm 1 2 3 4
2. I feel secure 1 2 3 4
3. I am tense 1 2 3 4
4. I feel strained 1 2 3 4
5. I feel at ease 1 2 3 4
6. I feel upset 1 2 3 4
7. I am presently worrying over possible misfortunes 1 2 3 4
8. I feel satisfied 1 2 3 4
9. I feel frightened 1 2 3 4
10. I feel comfortable 1 2 3 4
11. I feel self-confident 1 2 3 4
12. I feel nervous 1 2 3 4
13. I am jittery 1 2 3 4
14. I feel indecisive 1 2 3 4
15. I am relaxed 1 2 3 4
16. I feel content 1 2 3 4
17. I am worried 1 2 3 4
18. I feel confused 1 2 3 4
19. I feel steady 1 2 3 4
20. I feel pleasant 1 2 3 4

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

Name _____ Date _____

DIRECTIONS

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

ALMOST NEVER
SOMETIMES
OFTEN
ALMOST ALWAYS

- | | | | | |
|--|---|---|---|---|
| 21. I feel pleasant | 1 | 2 | 3 | 4 |
| 22. I feel nervous and restless | 1 | 2 | 3 | 4 |
| 23. I feel satisfied with myself | 1 | 2 | 3 | 4 |
| 24. I wish I could be as happy as others seem to be..... | 1 | 2 | 3 | 4 |
| 25. I feel like a failure | 1 | 2 | 3 | 4 |
| 26. I feel rested | 1 | 2 | 3 | 4 |
| 27. I am "calm, cool, and collected" | 1 | 2 | 3 | 4 |
| 28. I feel that difficulties are piling up so that I cannot overcome them | 1 | 2 | 3 | 4 |
| 29. I worry too much over something that really doesn't matter | 1 | 2 | 3 | 4 |
| 30. I am happy | 1 | 2 | 3 | 4 |
| 31. I have disturbing thoughts | 1 | 2 | 3 | 4 |
| 32. I lack self-confidence | 1 | 2 | 3 | 4 |
| 33. I feel secure | 1 | 2 | 3 | 4 |
| 34. I make decisions easily..... | 1 | 2 | 3 | 4 |
| 35. I feel inadequate | 1 | 2 | 3 | 4 |
| 36. I am content | 1 | 2 | 3 | 4 |
| 37. Some unimportant thought runs through my mind and bothers me..... | 1 | 2 | 3 | 4 |
| 38. I take disappointments so keenly that I can't put them out of my mind..... | 1 | 2 | 3 | 4 |
| 39. I am a steady person | 1 | 2 | 3 | 4 |
| 40. I get in a state of tension or turmoil as I think over my recent concerns and interests..... | 1 | 2 | 3 | 4 |

Appendix C

- 0 = *this isn't true about my current responses to this loss.*
 1 = *occasionally this is true about my responses to this loss.*
 2 = *some of the time this is true about my responses to this loss.*
 3 = *most of the time this is true about my responses to this loss.*
 4 = *this definitely is true about my current responses to this loss.*

©1994 RESPONSE TO LOSS (RTL)-Odd

Questionnaire Instruction

Schneider-Deutsch

This is an inventory of ways people respond to losses in their lives. All of the questions reflect the normal process of grieving, although, of course, none of us reacts in all of these ways to any given loss. Responding to this Inventory may help you identify your current reactions to significant changes in your life, particularly losses. You may find responding to this questionnaire difficult because some questions may bring up memories or feelings which are painful. You may not wish to finish this inventory. You are not required to do so.

- Since this inventory asks you *only* how you are doing right now, you may find that you have changed from how you would have responded even a few days or a few months ago.

- It might be helpful to discuss your reactions with someone. You are invited to record your thoughts about taking the inventory at the end of your answer sheets.

- When possible, respond to only one particular loss or change in your life. The *Life Change Inventory* may have already helped you to select your most recent and/or most significant loss. Please note in the answer booklet which loss it is that you are considering.

- When it is not possible to focus on a single loss, please indicate all the losses which were involved in your response.

- As you read each question, ask yourself if the statement is true about you right now, or in the past few days or weeks. You can indicate the degree to which you are having these responses according to the following scheme:

- 0 = *this isn't true about my current response to this loss.*
 1 = *occasionally this is true about my responses to this loss.*
 2 = *some of the time this is true about my responses to this loss.*
 3 = *most of the time this is true about my responses to this loss.*
 4 = *this definitely is true about my current responses to this loss.*

NOTE: If a statement is true about you, but is not a response to this loss, leave it blank.

Please read all questions, even if you leave some of them blank. You may find it helpful to take one or more breaks while you are filling out the questionnaire. It does not need to be filled out in one day, but within a few days. If the loss you are considering has occurred recently, or if filling out these items provokes strong feelings, you may wish to postpone filling out this questionnaire.

RESPONSE TO LOSS (EVEN)

Name or code: _____ Date: _____
Age: _____ Sex: Male: _____ Female: _____
Living Condition: Alone: _____ With partner: _____ With parent(s): _____
With children: _____ With family (partner & children): _____ Others: _____

The loss(es) I am considering is (if possible check only one):

- ☐ 00 = my own life-threatening illness or condition
- ☐ 01 = death of a partner/spouse
- ☐ 02 = death of a child
- ☐ 03 = death of a grandchild
- ☐ 04 = death of a parent
- ☐ 05 = death of a grandparent
- ☐ 06 = death of a friend
- ☐ 07 = death of a brother or sister
- ☐ 08 = loss of job (e.g., being fired, quitting, retirement)
- ☐ 09 = loss of partner/spouse other than by death
- ☐ 10 = loss of health
- ☐ 13 = loss of freedom (e.g., arrest, imprisonment)
- ☐ 14 = loss of parents other than through death
- ☐ 15 = loss of children other than through death
- ☐ 16 = loss of self due to traumatic experience(s) (e.g. due to accident, criminal conviction, murder, war, natural disaster, rape, incest, extended litigation)
- ☐ 17 = Multiple losses. Please indicate which losses apply:

I was first aware of this loss (or the first of these losses):

- ☐ Within the past three months
- ☐ Four to six months ago
- ☐ Seven months to a year ago
- ☐ More than a year but less than two years
- ☐ Two to four years ago
- ☐ More than four years, but less than ten years ago
- ☐ More than ten years ago

This loss was (check all that apply):

- ☐ Sudden ☐ Violent ☐ Premeditated ☐ Accidental ☐ Unknown
- ☐ Suicide ☐ Homicide

Check all of the following that apply to your loss:

- ☐ I witnessed the murder(s)/suicide
- ☐ I viewed the body(ies)
- ☐ I saw photos of the body(ies)
- ☐ I knew the perpetrator prior to the time of the murder(s)
- ☐ Someone was charged with the murder
 - If yes, how long did the legal process last? _____
 - How long ago was it completed? _____
- ☐ Someone was convicted of the murder
- ☐ I received therapy after the murder(s)/suicide
 - If yes, how soon after? _____
 - For how long? _____
 - What was the effect of this therapy? _____

Mark your answers on the answer sheet provided with this questionnaire.

Items of special note:

Comments:

- 0 = *this isn't true about my current responses to this loss.*
 1 = *occasionally this is true about my responses to this loss.*
 2 = *some of the time this is true about my responses to this loss.*
 3 = *most of the time this is true about my responses to this loss.*
 4 = *this definitely is true about my current responses to this loss.*

Since the time of the loss,

1. I keep active and busy.
2. I am smoking more.
3. Taking care of others distracts me from thinking about my loss.
4. I want/need to tell others what happened.
5. If I try hard enough, I can bring back what I lost.
6. I'm looking for who made this loss happen.
7. I remain involved with my friends and family to stay connected with my loss.
8. I haven't given up the rituals and habits that connect me to my loss.
9. I look just as good as I always did.
10. I've found someone or something to replace what/who I've lost.

Since the time of this loss, I have thought

11. I don't believe that this loss really happened.
12. I keep thinking something could be done to bring back what I lost.
13. I try to figure out how it could have been different.
14. I try to figure out why this loss happened to me.
15. If I don't concentrate on remembering what has happened, I'll forget it.
16. If I'm good enough, nobody I love will ever die.
17. It will all work out in the long run.
18. Every cloud has a silver lining.
19. People get the respect they deserve in this world.
20. The show must go on.
21. Idle hands are the devil's workbench.
22. If I am good enough or perfect enough, what was lost will come back.
23. I think I am responsible for this loss.
24. I wish things were the way they were before this loss occurred.
25. I'm scared to share what I've been thinking, feeling and doing.
26. My feelings are so unpredictable I wonder if I am crazy.
27. I feel guilty just thinking about enjoying myself.
28. My feelings are so intense I'm afraid I'm losing control.
29. I try to hold back the tears.
30. Unless something happens to change this, I don't know if I can control myself.
31. I am afraid to think about anything else but my loss.
32. Nothing is going to rob me of my feelings about this loss.
33. I've increased my exercise.
34. Sex gets my mind off the loss.
35. I don't feel like I am a sexual creature.
36. I have trouble breathing.
37. I don't eat as much.
38. I am sleeping less.

In the time since this loss,

39. I dream that something has happened to reverse my loss.
40. Life seems unfair.
41. I believe something good will happen.
42. I can outlast any intruder.
43. I can still find meaningful and supportive relationships.
44. I know I will not be tested beyond my capacity to endure.
45. I wonder if I really deserve what I have.

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 4 = *this definitely is true about my current responses to this loss.*

Since this loss occurred,

46. I know I won't give up.
 47. I am determined to make those responsible pay for this.
 48. This loss must be changed.
 49. I avoid telling anyone what I'm thinking, feeling and/or doing about this loss.
 50. I'm less patient with people.
 51. I don't see much of my old friends.
 52. I've been careless.
 53. I avoid getting involved in anything.
 54. I use drugs to forget my loss.
 55. I've put away anything which could remind me of this loss.
 56. I have kept secret what really happened.
 57. I can be verbally abusive when others remind me of this loss.
 58. I've had more sex with more people.

Since the time of this loss, I have thought

59. If I get too happy, something bad is bound to happen.
 60. This loss is evidence that I have failed as a person.
 61. I deserve a better deal than I'm getting.
 62. I'm better off without it/him/her.
 63. No matter what I do, what will happen will happen.
 64. Even if I could understand why it happened, it wouldn't change anything.
 65. It's easier when I can forget what happened.
 66. Nobody really cares how this loss affects me.
 67. I've rejected others' ideas about the loss.
 68. I should eat, drink and be merry, for tomorrow may never come.
 69. Don't rock the boat. You'll just get noticed.
 70. Nobody cares about me. Why should I care about anyone else?
 71. Easy come, easy go.
 72. The good die young.
 73. What the eye doesn't see, the heart doesn't remember.
 74. Enjoy yourself now. Who cares about tomorrow?
 75. If you're too happy, something bad is bound to happen.
 76. It is the nail that stands out that gets hammered the hardest.

Since this loss happened,

77. I feel confused and disoriented.
 78. I try not to let anything affect me.
 79. I feel detached and separate from others.
 80. I feel bored with life.
 81. People irritate me easily.
 82. I feel frustrated.
 83. If I let myself, I get so unhappy I can't stand it.
 84. I get upset with myself for the way I have behaved.
 85. I am revolted by the way people have responded.
 86. I don't want to be touched.
 87. I'm more clumsy and accident prone.
 88. I have felt sick to my stomach.
 89. I exercise less.
 90. I don't watch what I eat.

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Since this loss happened,

91. I doubt that anything or anyone can give my life meaning again.
 92. I can't imagine anyone ever being as important to me.
 93. I've given up believing that my life has any particular significance.
 94. It's hard for me to trust anybody.
 95. Nothing has really made any difference, so why do I bother?
 96. I've realized that nothing could have prevented it.
 97. I wonder if I'm really a disgusting, worthless person.
 98. I don't remember any dreams.
 99. I dream that I destroyed what/who I lost.
100. No one can blame me for the way it turned out.
 101. I deserve to be taken care of after what's happened.
 102. I am scattered and ineffective.
 103. I forget to do routine, everyday tasks.
 104. I never seem to know what to do with myself.
 105. I have very little to say.
 106. I do less of the things I enjoyed before.
 107. I've not been interested in meeting anyone new.
 108. I lack love, affection and companionship.
 109. I've lost friends.
In the time since this loss,
110. My thinking has been slower than usual.
 111. I am unable to find anything to look forward to.
 112. I forget how it used to be before this happened.
 113. I'm struck by how other people seem to go on with their lives while I cannot.
 114. I know I cannot bring it back.
 115. There's no way I can fully understand why it happened.
 116. I am aware of what is no longer a part of my life.
 117. I think about what's missing in my life.
 118. The tears are hard to stop.
 119. I long for what (whom) I've lost.
120. It's hard to express what I feel in words.
 121. I miss feeling happy.
 122. I feel a great deal of hurt or emotional pain.
 123. I feel helpless.
 124. I feel lonely and alone.
 125. Being in certain places stirs up unexpected feelings.
 126. Certain odors (e.g. perfumes, old houses) can trigger feelings.
In the time since this loss,
 127. I feel tense.
 128. My body feels heavy.
 129. I've had no energy to do anything.
130. I feel numb.
 131. I sigh.
 132. I wake up feeling stiff and achy, as if I'd been tense all night.
 133. I wake up during the night.
 134. My dreams remind me of my loss.
 135. I lack a sex life.

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Since this loss happened,

136. When someone touches me, my feelings come to the surface.
137. I feel sick.
138. My stomach really churns.
139. I have aches and pains which remind me of my loss.
140. I would rather die than go on experiencing this.
141. No amount of money could ever replace it.
142. The future seems empty.
143. What I value most in life has been destroyed.
144. I question the existence of the God I used to believe in.
145. I cannot continue life the same way as before.
146. My life will never be totally free from pain and suffering.
147. I will lose things and people important to me.
148. Parts of me are missing.
149. I am not the loving, caring, trusting person I was.
150. When I'm convinced things can't get any worse, they do.
151. I have lost my desire to live.
152. Hearing about other's experiences with similar losses helps.
153. There is at least one person I can count on for support.
154. Being by myself has been healing.
155. I take long walks and just daydream.
156. Activities like getting a massage, painting or music are soothing.
157. Talking or writing about it gives me relief and release.
158. I can let things turn out the way they will.
159. I realize that I've lost a lot, but I haven't lost everything.
160. I think about how I have changed, what is different.
161. I'm not as responsible as I thought I was for what happened.
162. I have already passed the lowest point.
163. My fears about dying are less.
164. I am able to express my feelings about the loss.
165. My feelings still catch me by surprise, but they don't last as long.
166. My guilt has lessened.
167. I'm not so sad.
168. My disgust over what happened has lessened.
169. I realize that sadness and peacefulness can co-exist.
170. I can enjoy simple pleasures of life again.
171. The aches and pains I used to have with this loss have lessened.
172. I enjoy being touched and held once again.
173. It takes less energy to do things than it used to.
174. I notice how things smell and taste again.
175. I have learned to accept that losses and changes are a part of life.
176. My life will continue.
177. My dreams seem to help me understand and accept what happen.
178. My faith or spiritual understanding helped me with this experience.
179. My life does seem to have meaning.
180. Whatever I contributed to this loss, I did not want it to happen.

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Since this loss happened,

181. Life seems more fragile and precious.
 182. My past will always be a part of me.
 183. The fond memories are there along with the painful ones.
 184. I've found ways to get back my integrity.
 185. I don't depend as much on others.
 186. I've remembered what I really want to remember about it.
 187. I've finished things related to my loss as completely as I can.
 188. I've taken steps to forgive those involved.
 189. I am making restitution for my contributions to this loss.
 190. I like being with people again.
 191. Putting my thoughts into words has helped me recover.
 192. It's important to have times of celebration and remembrance before it's too late.
 193. My life has more to it.
 194. I've felt all I can feel about this loss.
 195. I've found effective ways to express my feelings.
 196. I've experienced this loss in ways that were healing.
 197. I've let go of the guilt.
 198. I've let go of the anger.
 199. I can make sense out of the messages from my body.
 200. I don't push my body beyond limits.
 201. I relax.
 202. I sleep well.
 203. I eat sensibly.
 204. I can be sexually or romantically interested.
 205. I know my life is important.
Since this loss happened,
 206. My dreams are restful, playful and helpful.
 207. I've restored or regained part of what I had lost.
 208. I feel the presence of what/who I lost.
 209. I have forgiven myself for what happened.
 210. I have forgiven others for what happened.
 211. I would not want my loss reversed if it meant giving up all my growth from it.
 212. I feel confident enough in myself to move on to other things.
 213. It takes less effort and thought to do what I need to do.
 214. I enjoy being alone.
 215. I'm nicer to myself.
 216. I'm not as serious a person.
 217. I'm able to take risks again.
 218. I'm more self-disciplined.
 219. I don't place limits in front of myself as readily as I did before this loss.
 220. I am more able to give to others.
 221. I have time for my family and friends and time for me.
 222. I can express myself in many ways.
 223. I can appreciate the paradoxes and seeming contradictions in my life.
 224. I feel more confident.
 225. I've grown.

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Since this loss happened,

226. I see the past as just as important as what is happening now.
 227. Past, present and future are equally important.
 228. I feel challenged to keep on going.
 229. I trust my ways of thinking.
 230. I don't avoid my feelings.
 231. I've found new ways to express my feelings.
 232. I feel loving and affectionate.
 233. Sadness reminds me how important this loss was to me.
 234. I am curious about many things.
 235. I listen to what my body tells me.
 236. I enjoy making love.
 237. I feel strong.
 238. I am active in caring for myself physically.
 239. What I eat is healthy.
 240. I feel warm all over.
 241. I have what is meaningful within me.
 242. I've learned to respect myself.
 243. I feel like a whole person.
 244. I've discovered that there is more to me than what meets the eye.
 245. My dreams make sense.
 246. I live as fully as I can.
 247. What is important to me has changed.
 248. I have fewer conditions on my love.
 249. I realize I can do destructive things.
 250. I feel lovable.
 251. I've challenged and altered some of my most cherished and long standing assumptions and beliefs.
 252. I want other people in my life.
 253. I want to share with others who have these life experiences.
 254. What I own isn't as important.
 255. The cycles of life have times of birth and death.
 256. I am sometimes surprised by what I know and say.
 257. I feel connected to the world and to nature.
 258. Things in my life can change and life can still be meaningful.
 259. I am curious about what will happen after I die.
 260. I can't live without loving myself.
 261. I discovered some essential parts of me.
 262. My life has times of joy.

RTL Answer Sheet

Form 2, Odd, pg. 1

Directions:

Fill in the answers on this answer sheet, using the following key.

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3 = most of the time this is true about my current response to this loss.

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PLEASE RECORD YOUR ANSWERS ON THESE ANSWER SHEETS

- | | | | |
|-------------------------|-------------------------|-------------------------|--------------------------|
| 1. (0) (1) (2) (3) (4) | 31. (0) (1) (2) (3) (4) | 61. (0) (1) (2) (3) (4) | 91. (0) (1) (2) (3) (4) |
| 2. (0) (1) (2) (3) (4) | 32. (0) (1) (2) (3) (4) | 62. (0) (1) (2) (3) (4) | 92. (0) (1) (2) (3) (4) |
| 3. (0) (1) (2) (3) (4) | 33. (0) (1) (2) (3) (4) | 63. (0) (1) (2) (3) (4) | 93. (0) (1) (2) (3) (4) |
| 4. (0) (1) (2) (3) (4) | 34. (0) (1) (2) (3) (4) | 64. (0) (1) (2) (3) (4) | 94. (0) (1) (2) (3) (4) |
| 5. (0) (1) (2) (3) (4) | 35. (0) (1) (2) (3) (4) | 65. (0) (1) (2) (3) (4) | 95. (0) (1) (2) (3) (4) |
| 6. (0) (1) (2) (3) (4) | 36. (0) (1) (2) (3) (4) | 66. (0) (1) (2) (3) (4) | 96. (0) (1) (2) (3) (4) |
| 7. (0) (1) (2) (3) (4) | 37. (0) (1) (2) (3) (4) | 67. (0) (1) (2) (3) (4) | 97. (0) (1) (2) (3) (4) |
| 8. (0) (1) (2) (3) (4) | 38. (0) (1) (2) (3) (4) | 68. (0) (1) (2) (3) (4) | 98. (0) (1) (2) (3) (4) |
| 9. (0) (1) (2) (3) (4) | 39. (0) (1) (2) (3) (4) | 69. (0) (1) (2) (3) (4) | 99. (0) (1) (2) (3) (4) |
| 10. (0) (1) (2) (3) (4) | 40. (0) (1) (2) (3) (4) | 70. (0) (1) (2) (3) (4) | 100. (0) (1) (2) (3) (4) |
| 11. (0) (1) (2) (3) (4) | 41. (0) (1) (2) (3) (4) | 71. (0) (1) (2) (3) (4) | 101. (0) (1) (2) (3) (4) |
| 12. (0) (1) (2) (3) (4) | 42. (0) (1) (2) (3) (4) | 72. (0) (1) (2) (3) (4) | 102. (0) (1) (2) (3) (4) |
| 13. (0) (1) (2) (3) (4) | 43. (0) (1) (2) (3) (4) | 73. (0) (1) (2) (3) (4) | 103. (0) (1) (2) (3) (4) |
| 14. (0) (1) (2) (3) (4) | 44. (0) (1) (2) (3) (4) | 74. (0) (1) (2) (3) (4) | 104. (0) (1) (2) (3) (4) |
| 15. (0) (1) (2) (3) (4) | 45. (0) (1) (2) (3) (4) | 75. (0) (1) (2) (3) (4) | 105. (0) (1) (2) (3) (4) |
| 16. (0) (1) (2) (3) (4) | 46. (0) (1) (2) (3) (4) | 76. (0) (1) (2) (3) (4) | 106. (0) (1) (2) (3) (4) |
| 17. (0) (1) (2) (3) (4) | 47. (0) (1) (2) (3) (4) | 77. (0) (1) (2) (3) (4) | 107. (0) (1) (2) (3) (4) |
| 18. (0) (1) (2) (3) (4) | 48. (0) (1) (2) (3) (4) | 78. (0) (1) (2) (3) (4) | 108. (0) (1) (2) (3) (4) |
| 19. (0) (1) (2) (3) (4) | 49. (0) (1) (2) (3) (4) | 79. (0) (1) (2) (3) (4) | 109. (0) (1) (2) (3) (4) |
| 20. (0) (1) (2) (3) (4) | 50. (0) (1) (2) (3) (4) | 80. (0) (1) (2) (3) (4) | 110. (0) (1) (2) (3) (4) |
| 21. (0) (1) (2) (3) (4) | 51. (0) (1) (2) (3) (4) | 81. (0) (1) (2) (3) (4) | 111. (0) (1) (2) (3) (4) |
| 22. (0) (1) (2) (3) (4) | 52. (0) (1) (2) (3) (4) | 82. (0) (1) (2) (3) (4) | 112. (0) (1) (2) (3) (4) |
| 23. (0) (1) (2) (3) (4) | 53. (0) (1) (2) (3) (4) | 83. (0) (1) (2) (3) (4) | 113. (0) (1) (2) (3) (4) |
| 24. (0) (1) (2) (3) (4) | 54. (0) (1) (2) (3) (4) | 84. (0) (1) (2) (3) (4) | 114. (0) (1) (2) (3) (4) |
| 25. (0) (1) (2) (3) (4) | 55. (0) (1) (2) (3) (4) | 85. (0) (1) (2) (3) (4) | 115. (0) (1) (2) (3) (4) |
| 26. (0) (1) (2) (3) (4) | 56. (0) (1) (2) (3) (4) | 86. (0) (1) (2) (3) (4) | 116. (0) (1) (2) (3) (4) |
| 27. (0) (1) (2) (3) (4) | 57. (0) (1) (2) (3) (4) | 87. (0) (1) (2) (3) (4) | 117. (0) (1) (2) (3) (4) |
| 28. (0) (1) (2) (3) (4) | 58. (0) (1) (2) (3) (4) | 88. (0) (1) (2) (3) (4) | 118. (0) (1) (2) (3) (4) |
| 29. (0) (1) (2) (3) (4) | 59. (0) (1) (2) (3) (4) | 89. (0) (1) (2) (3) (4) | 119. (0) (1) (2) (3) (4) |
| 30. (0) (1) (2) (3) (4) | 60. (0) (1) (2) (3) (4) | 90. (0) (1) (2) (3) (4) | 120. (0) (1) (2) (3) (4) |

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RTL Answer Sheet Form 1, Odd, pg.2

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|--------------------------------------|--------------------------|--------------------------|--------------------------|
| 121. (0) (1) (2) (3) (4) | 161. (0) (1) (2) (3) (4) | 201. (0) (1) (2) (3) (4) | 241. (0) (1) (2) (3) (4) |
| 122. (0) (1) (2) (3) (4) | 162. (0) (1) (2) (3) (4) | 202. (0) (1) (2) (3) (4) | 242. (0) (1) (2) (3) (4) |
| 123. (0) (1) (2) (3) (4) | 163. (0) (1) (2) (3) (4) | 203. (0) (1) (2) (3) (4) | 243. (0) (1) (2) (3) (4) |
| 124. (0) (1) (2) (3) (4) | 164. (0) (1) (2) (3) (4) | 204. (0) (1) (2) (3) (4) | 244. (0) (1) (2) (3) (4) |
| 125. (0) (1) (2) (3) (4) | 165. (0) (1) (2) (3) (4) | 205. (0) (1) (2) (3) (4) | 245. (0) (1) (2) (3) (4) |
| 126. (0) (1) (2) (3) (4) | 166. (0) (1) (2) (3) (4) | 206. (0) (1) (2) (3) (4) | 246. (0) (1) (2) (3) (4) |
| 127. (0) (1) (2) (3) (4) | 167. (0) (1) (2) (3) (4) | 207. (0) (1) (2) (3) (4) | 247. (0) (1) (2) (3) (4) |
| 128. (0) (1) (2) (3) (4) | 168. (0) (1) (2) (3) (4) | 208. (0) (1) (2) (3) (4) | 248. (0) (1) (2) (3) (4) |
| 129. (0) (1) (2) (3) (4) | 169. (0) (1) (2) (3) (4) | 209. (0) (1) (2) (3) (4) | 249. (0) (1) (2) (3) (4) |
| 130. (0) (1) (2) (3) (4) | 170. (0) (1) (2) (3) (4) | 210. (0) (1) (2) (3) (4) | 250. (0) (1) (2) (3) (4) |
| 131. (0) (1) (2) (3) (4) | 171. (0) (1) (2) (3) (4) | 211. (0) (1) (2) (3) (4) | 251. (0) (1) (2) (3) (4) |
| 132. (0) (1) (2) (3) (4) | 172. (0) (1) (2) (3) (4) | 212. (0) (1) (2) (3) (4) | 252. (0) (1) (2) (3) (4) |
| 133. (0) (1) (2) (3) (4) | 173. (0) (1) (2) (3) (4) | 213. (0) (1) (2) (3) (4) | 253. (0) (1) (2) (3) (4) |
| 134. (0) (1) (2) (3) (4) | 174. (0) (1) (2) (3) (4) | 214. (0) (1) (2) (3) (4) | 254. (0) (1) (2) (3) (4) |
| 135. (0) (1) (2) (3) (4) | 175. (0) (1) (2) (3) (4) | 215. (0) (1) (2) (3) (4) | 255. (0) (1) (2) (3) (4) |
| 136. (0) (1) (2) (3) (4) | 176. (0) (1) (2) (3) (4) | 216. (0) (1) (2) (3) (4) | 256. (0) (1) (2) (3) (4) |
| 137. (0) (1) (2) (3) (4) | 177. (0) (1) (2) (3) (4) | 217. (0) (1) (2) (3) (4) | 257. (0) (1) (2) (3) (4) |
| 138. (0) (1) (2) (3) (4) | 178. (0) (1) (2) (3) (4) | 218. (0) (1) (2) (3) (4) | 258. (0) (1) (2) (3) (4) |
| 139. (0) (1) (2) (3) (4) | 179. (0) (1) (2) (3) (4) | 219. (0) (1) (2) (3) (4) | 259. (0) (1) (2) (3) (4) |
| 140. (0) (1) (2) (3) (4) | 180. (0) (1) (2) (3) (4) | 220. (0) (1) (2) (3) (4) | 260. (0) (1) (2) (3) (4) |
| 141. (0) (1) (2) (3) (4) | 181. (0) (1) (2) (3) (4) | 221. (0) (1) (2) (3) (4) | 261. (0) (1) (2) (3) (4) |
| 142. (0) (1) (2) (3) (4) | 182. (0) (1) (2) (3) (4) | 222. (0) (1) (2) (3) (4) | 262. (0) (1) (2) (3) (4) |
| 143. (0) (1) (2) (3) (4) | 183. (0) (1) (2) (3) (4) | 223. (0) (1) (2) (3) (4) | |
| 144. (0) (1) (2) (3) (4) | 184. (0) (1) (2) (3) (4) | 224. (0) (1) (2) (3) (4) | |
| 145. (0) (1) (2) (3) (4) | 185. (0) (1) (2) (3) (4) | 225. (0) (1) (2) (3) (4) | |
| 146. (0) (1) (2) (3) (4) | 186. (0) (1) (2) (3) (4) | 226. (0) (1) (2) (3) (4) | |
| 147. (0) (1) (2) (3) (4) | 187. (0) (1) (2) (3) (4) | 227. (0) (1) (2) (3) (4) | |
| 148. (0) (1) (2) (3) (4) | 188. (0) (1) (2) (3) (4) | 228. (0) (1) (2) (3) (4) | |
| 149. (0) (1) (2) (3) (4) | 189. (0) (1) (2) (3) (4) | 229. (0) (1) (2) (3) (4) | |
| 150. (0) (1) (2) (3) (4) | 190. (0) (1) (2) (3) (4) | 230. (0) (1) (2) (3) (4) | |
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| 151. (0) (1) (2) (3) (4) | 191. (0) (1) (2) (3) (4) | 231. (0) (1) (2) (3) (4) | |
| 152. (0) (1) (2) (3) (4) | 192. (0) (1) (2) (3) (4) | 232. (0) (1) (2) (3) (4) | |
| 153. (0) (1) (2) (3) (4) | 193. (0) (1) (2) (3) (4) | 233. (0) (1) (2) (3) (4) | |
| 154. (0) (1) (2) (3) (4) | 194. (0) (1) (2) (3) (4) | 234. (0) (1) (2) (3) (4) | |
| 155. (0) (1) (2) (3) (4) | 195. (0) (1) (2) (3) (4) | 235. (0) (1) (2) (3) (4) | |
| 156. (0) (1) (2) (3) (4) | 196. (0) (1) (2) (3) (4) | 236. (0) (1) (2) (3) (4) | |
| 157. (0) (1) (2) (3) (4) | 197. (0) (1) (2) (3) (4) | 237. (0) (1) (2) (3) (4) | |
| 158. (0) (1) (2) (3) (4) | 198. (0) (1) (2) (3) (4) | 238. (0) (1) (2) (3) (4) | |
| 159. (0) (1) (2) (3) (4) | 199. (0) (1) (2) (3) (4) | 239. (0) (1) (2) (3) (4) | |
| 160. (0) (1) (2) (3) (4) | 200. (0) (1) (2) (3) (4) | 240. (0) (1) (2) (3) (4) | |

Appendix D

Research Number _____ (do not put your name on this form)

(1) Age _____

(2) Gender: Male _____, Female _____

(3) Marital Status _____

(4) Please circle the number next to your Race/Ethnicity or please describe the specific group that you identify with the most in the blank next to your ethnicity (for example Chinese American, German, Navajo, Alaskan Aleut):

- (1) Asian or Asian-American _____
- (2) Black, African-American _____
- (3) Hispanic, Latino, Mexican-American _____
- (4) Pacific Islander _____
- (5) Native American or American Indian _____
- (6) White, European American _____
- (7) Multicultural, Mixed Race _____
- (8) Other, Please Specify _____

(5) What was your highest level of formal education you completed?

- (1) less than high school
- (2) high school degree (or GED)
- (3) post high school (e.g., trade, technical, secretarial)
- (4) some college (e.g., one year, associate's degree)
- (5) completed college (e.g., bachelor's degree)
- (6) some graduate or post-bachelor's training
- (7) completed graduate or post-bachelor's training

Are there other important education experiences? _____

(6) What is your current occupation (please name job or describe what you do or did, even if you are laid off disabled or retired?)

(7) What is your current employment status?

- (1) I work full-time
- (2) I work part-time (less than 30 hours per week)
- (3) I do not work outside the home because I am employed full-time in home-making.
- (4) I do not work because I was laid off or unemployed.
- (5) I do not work because I am disabled
- (6) I do not work because I am retired
- (7) other (please describe _____)

(8) How would you rate your current stress level?
(circle an appropriate number on the scale)

not at all stressed				moderately stressed				extremely stressed		
1	2	3	4	5	6	7	8	9	10	

(9) How well are you managing your current stress level?
(circle an appropriate number on the scale)

not at all well				moderately well				extremely well		
1	2	3	4	5	6	7	8	9	10	

(10) Have you been currently experiencing chronic pain?

Yes _____ No _____ If so, please answer Questions 11 - 14. If not please skip to question 15.

(11) Where are you currently experiencing pain?

(12) How long have you been experiencing this pain? _____

(13) How intense does your pain get?
(circle an appropriate number on the scale)

mild irritation			moderately intense			extremely intense			
1	2	3	4	5	6	7	8	9	10

(14) How often does it get to the maximum intensity ?
_____ (please specify, times/day or times/week).

(15) Have you or (do you) practice relaxation (do not include mindfulness meditation)?
yes _____, No _____

(16) If you have used (or currently use) relaxation how often did (do) you practice it (do not include mindfulness meditation)? _____ (please specify, times/day or times/week)?

Are you still practicing this amount? _____

(17) I consider myself a spiritual person
(circle an appropriate number)

strongly agree	agree	neutral		disagree		strongly disagree
1	2	3	4	5	6	7

(18) I consider myself a religious person
(circle an appropriate number)

strongly agree	agree	neutral		disagree		strongly disagree
1	2	3	4	5	6	7

(19) Taking time out of my day for personal prayer is important to me
(circle an appropriate number)

strongly agree	agree	neutral		disagree		strongly disagree
1	2	3	4	5	6	7

(20) How satisfied are you with the quality of your social relationships?

not at all satisfied			moderately satisfied			extremely satisfied		
1	2	3	4	5	6	7	8	9 10

(21) How satisfied are you with the quality of your relationships with your family?

not at all satisfied			moderately satisfied			extremely satisfied		
1	2	3	4	5	6	7	8	9 10

(22) Are you taking medication? _____ (if not skip to 24)

If so, what types? _____

(23) Does the medication make you drowsy? _____

(24) Before taking this mindfulness meditation class how did you cope with pain?

(25) How motivated were you to take this program?

Not very motivated			moderately motivated				Very motivated
1	2	3	4	5	6	7	8 9 10

(26) How confident were you that you would be able to learn and practice meditation successfully?

not at all confident			moderately confident			extremely confident
1	2	3	4	5	6	7 8 9 10

Appendix E

8 Week Mindfulness Program Outline

Required text: Full Catastrophe Living, Kabat-Zinn (1994).

Required tape: Side A: Body Scan followed by hatha yoga,

Side B: Mindfulness of Breathing followed by hatha yoga.

(Tape created for the study by principal investigator.)

Week 1:

Introductions, describe course outline, describe required text and tape, introduce mindfulness, practice body scan technique.

Week 2:

Discussion on weeks practice, discussion on how to be mindful with thoughts and feelings, practice body scan.

Week 3:

Field questions on weeks practice, discussion on how to use mindfulness with pain and suffering, introduce and practice mindfulness of the breath technique.

Week 4:

Field questions on the week's practice, describe fight or flight response, discussion on how to use mindfulness to manage daily stressors, introduce hatha yoga, practice yoga and mindfulness on the breath technique.

Week 5:

Field questions on weeks practice, describe grieving process and how to use mindfulness in grieving, practice mindfulness on the breath.

Week 6:

Field questions on weeks practice, discussion on meaningfulness and meaninglessness of chronic pain and of life in general, practice mindfulness on the breath.

Week 7:

Field questions on weeks practice, discussion on forgiveness and its relationship to grieving, practice mindfulness on the breath.

Week 8:

Field questions on weeks practice, discussion on integrating mindfulness in everyday life and how to support daily practice without weekly group, practice mindfulness on the breath.

Appendix F

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Monday	2/3	2/10	2/17	2/24	3/3	3/10	3/17	3/24
Tuesday	2/4	2/11	2/18	2/25	3/4	3/11	3/18	3/25
Wed.	2/5	2/12	2/19	2/26	3/5	3/12	3/19	3/26
Thurs.	2/6	2/13	2/20	2/27	3/6	3/13	3/20	3/27
Friday	2/7	2/14	2/21	2/28	3/7	3/14	3/21	3/28
Saturday	2/8	2/15	2/22	3/1	3/8	3/15	3/22	3/29
Sunday	2/9	2/16	2/23	3/2	3/9	3/16	3/23	3/30

Appendix G

Assumptions for the use of Analysis of Variance:

The following are the list of assumptions that must be met in order to use an analysis of variance and/or analysis of co-variance. A statement regarding how each assumption was handled will be given.

Independence: Each individuals scores on the pre-treatment and post-treatment measures are independent of the scores of all other subjects. With respect to the relationship between the treatment groups independence can be assumed due to random assignment. However, it is possible to have a violation with respect to comparing treatment and non-treatment because participants self-selected to the treatment, and the comparison group was not necessarily made up of participants who would want to take a mindfulness meditation program. Therefore, the comparison group may share some factor in common that the treatment group does not and thus violate subject independence.

Normality: Normality was determined by comparing the values of skewness with the standard error for skewness. According to Tabachnick and Fidell (1983) the standard error of skewness can be calculated from

$$sss = (6/N)^{1/2}$$

where N is the number of cases.

To determine the probability that a data set is skewed a z value is calculated

$$z = S-0/sss$$

Where S is value reported for skewness. Kurtosis is calculated in a similar manner using the equations

$$ssk=(24/N)^{1/2}$$

and

$$z = (k-3)/ssk$$

A z value in excess of + or – 2.58 leads to a rejection of the assumption of normality at $p<.01$.

The values for skewness and kurtosis can be found in table 5

The normality assumption is violated for BDI pre and post. The positive skewness indicates that the bulk of the scores are distributed at the lower end of the scale. This is not surprising because the normal range for depression on the BDI is at the lower end of the inventory's range. Therefore, when given to the general population a floor effect is possible. With respect to violations to normality, the ANCOVA is robust provided the sample sizes are equal (Shavelson 1981). Because the sample sizes in these analyses are similar the violation of this assumption is not a problem.

Table 5.

Skewness and Kurtosis

<u>Inventory</u>	<u>Skewness</u>	<u>Kurtosis</u>
BDI pre	4.07	3.36
BDI post	6.64	11.70
State pre	0.40	0.05
State post	0.58	0.61
Trait pre	0.36	1.17
Trait post	0.41	1.20
Cope/ Aware.pre	1.39	0.30
Cope/ Awarepost	0.69	-0.55
Grwthpre	0.15	-0.70
Growthpst	0.18	- 0.74

Homogeneity of variances: Levine's test was used to determine if the error variances were equal across groups. The probability that the error variances were not equal can be found in Table 6. From these results it is apparent that the Growth factor of the RTL violates the assumption of homogeneity of variances. However, with respect to violations to the homogeneity of variance, the ANCOVA is robust provided the sample sizes are equal (Shavelson 1981). Because the sample sizes in these analyses are similar the violation of this assumption is not a problem.

Table 6.
Homogeneity of Variances: Levine's Test

<u>Inventory</u>	<u>Sign.</u>
BDI	0.63
State	0.96
Anx.	
Trait	0.46
Anx.	
Cope/	0.37
Aware.	
Grwth	0.02
Factor	

Linearity: Because the pre-test measures are all linear with the post-test measures this assumption is met.

Homogeneity of regression slopes: The significance of the interaction of the pretest measure and group is given in Table 7. From these results it is apparent that the BDI violates the assumption of homogeneity of regression slopes. More specifically, this means that there is an interaction between the pre-test measure and the group assignment. Investigating the data revealed that for those in the treatment groups, high scores on the BDI pre-test resulted in greater decreases than low scores on the BDI when compared to the comparison group. This result is not surprising due to the floor effect of the BDI (see normality assumption). Those on the low end of the scale do not have as much opportunity to lower their score as those on the high end of the scale. With respect to

violations of this assumption, Maxwell and Delaney (1989) state that for randomized designs the effect is a loss of power. However, because power relates to the probability of rejection of the null hypothesis given it is false, and the overall F test for the BDI was, $F(2,56) = 8.34, p < .001$ with an average effect size between treatment and comparison groups of $d=0.9$, a slight loss in power does not appear to be critical.

Table 7.

Homogeneity of Regression

<u>Inventory</u>	<u>Sign.</u>
BDI	0.002
State Anx.	0.110
Trait Anx.	0.930
Cope/ Awareness	0.670
Growth	0.85

Independence of covariate and treatments: Because the covariates were all measured prior to treatment this assumption is valid.

Covariate measured without error: The reliability and validity of all the measures is given in the methods section. All of the measures have demonstrated good reliability and validity.

Appendix H

Research Number _____ (do not put your name on this form)

(1) With respect to coping with pain, and with your life in general, what changes have you noticed since starting this mindfulness meditation program?

(2) What differences have you noticed in your meditation practice when you meditate longer (required amount of time or more each day) as opposed to when you meditate less?

(3) What differences have you noticed in your daily life when you meditate longer (required amount of time or more each day) as opposed to when you meditate less?

Appendix I

MICHIGAN STATE
UNIVERSITY

January 17, 1997

TO: Kenneth G. Rice
CEPSE
440 Erickson Hall

RE: IRB#: 97-016
TITLE: THE EFFECT OF DIFFERENT TREATMENT DURATIONS ON
THE OUTCOME OF A MINDFULNESS MEDITATION BASED
STRESS REDUCTION PROGRAM
REVISION REQUESTED: N/A
CATEGORY: 1-C
APPROVAL DATE: 01/17/97

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project and any revisions listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/
CHANGES: Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517) 355-2180 or FAX (517) 432-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:bed

✓cc: David Sagula



OFFICE OF
RESEARCH
AND
GRADUATE
STUDIES

University Committee on
Research Involving
Human Subjects
(UCRIHS)

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FAX: 517/432-1171

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Appendix J

Consent Form

I freely consent to take part in this study on mindfulness meditation being conducted by David Sagula, a doctoral candidate at Michigan State University under the supervision of Dr. Ken Rice. I understand that this study will require me to attend eight-weekly meetings and practice mindfulness meditation up to 45 minutes per day and to purchase or borrow the book Full Catastrophe Living by Jon Kabat-Zinn. I am also aware of the potential risks and benefits associated with this type of practice. The risk in participating in this study is that through increased awareness via the mindfulness meditation program I may become cognizant of a preexisting unresolved personal issue. If this does happen and it is of significant magnitude I understand that personal counseling will be recommended and I may pursue this on my own accord.

The benefits of this program may include lowering anxiety and depression levels. In addition, the risk outlined in the preceding paragraph may also be a benefit because becoming cognizant of some unresolved issue allows for the opportunity for it to be worked through and integrated into my life.

I also understand that I will be given a questionnaire packet before and after the program begins. When completing these questionnaires I understand that I am to do so anonymously using only an assigned I.D. number in order to match my pre and post study questionnaires.

I understand that I am free to refuse to participate and to discontinue my participation in the study at any time, and to choose not to answer any or all of the questions, without any penalty. In addition, if I have any questions or concerns regarding this study, I may contact David Sagula at 517-347-2944.

Signature _____ Date _____

Name (print) _____

UCRIHS APPROVAL FOR
THIS project EXPIRES:

JAN 17 1998

SUBMIT RENEWAL APPLICATION
ONE MONTH PRIOR TO
ABOVE DATE TO CONTINUE

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