The Acceptability and Effectiveness of Mindfulness-Based Cognitive Therapy in Adults with Acquired Brain Injury

By

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Supervisory Committee

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ABSTRACT

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The evidence base for Mindfulness-Based Cognitive Therapy (MBCT) is growing, but there is a lack of experimental validation among populations with acquired brain injuries (ABI). The purpose of this study was to investigate the acceptability and effectiveness of MBCT in fostering psychological recovery among adults with ABI. More specifically, this study was conducted to: (a) extend Finucane and Mercer's (2006) study by applying MBCT to another population (i.e., adults with ABI); (b) corroborate the Bedard et al. (2008) finding of MBCT's effectiveness in reducing depression in adults with TBI; (c) establish if empirical findings of the effectiveness of MBCT on depression and anxiety in the general population and in primary care patients with active symptoms of depression and anxiety extended to adults with ABI; and (d) explore the effect of MBCT treatment on measures of locus of control, satisfaction with life, self-awareness, and coping in adults with ABI. A mixed methods design was used and participants were recruited from two community-based brain injury programs. The final sample comprised 12 adults with mild, moderate, and severe injuries. Interview and self-report measures were administered pre- and post-treatment. Qualitative data were collected through semi-structured focus groups following MBCT treatment. Depression, denial, and self-awareness among participants showed statistically significant improvements and participants' demonstrated statistically significant increases in positive reframing and active coping. Focus group data confirmed MBCT as an acceptable and effective approach for adults with ABI, and also speak to implications for the use of MBCT in ABI populations specifically. The need for a larger replication study with a control group is discussed.

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Acknowledgments

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Chapter 1

INTRODUCTION

Acquired brain injury (ABI) is well recognized as a serious public health concern (International Brain Injury Association, IBIA, 2011) that can be sudden, unpredictable (Tasker, 2003), and most often, devastating to those affected. Each year an estimated 1,400,000 Canadians and 160,000 British Columbians (i.e., nearly four percent of the population) live with acquired brain injury (ABI) and resulting permanent disabilities (BRAINTRUST CANADA, 2007). Two common psychosocial sequelae of ABI are depression (Bechtold Kortte, Wegener, & Chwalisz, 2003; Bedard et al., 2003; Mazaux et al., 1997; Rosenthal, Christensen, & Ross, 1998; Seel, Macciocchi, & Kreutzer, 2010; Tacon, Caldera, & Ronaghan, 2004) and anxiety (Bechtold Kortte et al., 2003; Mazaux et al., 1997; Moore, Terryberry-Spohr, & Hope, 2006; Soo & Tate, 2009; Tacon et al., 2004). Psychosocial impairments such as depression and anxiety may persist indefinitely following ABI (Fraas & Calvert, 2009) and impose significant challenges to longer-term adjustment and reengagement of life for survivors (Malia et al., 1995). Yet, little focus is given to the longer-term living and coping with ABI (Kreutzer, 2010; Tasker, 2003), and few psychotherapeutic interventions have been used and tested as appropriate supports for psychological recovery following ABI (Kreutzer, 2010).

Mindfulness-based therapeutic practices are receiving increasing empirical and clinical attention for their efficacy in treating various clinical disorders amongst a range of populations (Baer, Fischer, & Huss, 2005; Bowen et al., 2006; Evans et al., 2008; Finucane & Mercer, 2006; Ivanovski & Malhi, 2007; Kabat-Zinn, 1982; Kabat-Zinn et al., 1992; Kristeller & Hallett, 1999; Ma & Teasdale, 2004; Marlatt, 2002; Ostafin & Marlatt, 2008; Palmer & Rodger, 2009; Speca, Carlson, Goodey, & Angen, 2000; Teasdale et al., 2000; Williams, Duggan, Taylor, Crane, &

Fennell, 2006; Williams et al. 2008) including individuals with ABI (Bedard et al., 2003, 2005, 2008). In particular, Mindfulness Based Cognitive Therapy (MBCT) is effective in treating depression (Dimidjian et al., 2010; Ma & Teasdale, 2004; Segal et al., 2002; Teasdale et al., 2000) and anxiety (Evans et al., 2008; Williams et al., 2008) in the general population and in primary care patients with active symptoms of depression and anxiety (Finucane & Mercer, 2006). The literature is virtually silent, however, on the utility of MBCT as a specific mindfulness-based intervention in promoting psychological recovery in ABI. Currently, the only documented findings known are those from a pilot study reporting the effectiveness of MBCT in reducing depression symptoms in people with traumatic brain injury (TBI; Bedard et al., 2008). Accordingly, this study hoped to extend the present knowledge concerning the effectiveness of MBCT in adults living with ABI.

This chapter provides a review of the literature to (a) outline the existing knowledge surrounding the mechanisms of MBCT, its usefulness, and its limitations; and (b) describe and discuss ABI and its related sequelae, focusing most specifically on depression and anxiety, feelings of loss of control (i.e., reduced internal locus of control), and coping responses in ABI. A case for the use of MBCT as a psychosocial treatment for ABI is subsequently presented. Chapter 1 is concluded by delineating the rationale, purpose, research questions, and hypotheses for the study presented herein.

Literature Review and Theoretical Background

Mindfulness-Based Cognitive Therapy

In response to research on key cognitive vulnerability factors in recurrent depression (Kenny, 2008; Kingston, Dooley, Bates, Lawlor, & Mahone, 2007; Segal, Williams, & Teasdale, 2002, p. 39), mindfulness-based cognitive therapy (MBCT) was developed, revised, and

empirically evaluated between 1994 and 1999, and first published as Teasdale, Segal, and Williams in 2000 (Z. Segal, personal communication, November 25, 2010). MBCT is a cost-efficient short-term group intervention designed specifically to reduce rates of depression recurrence (Kingston et al., 2007; Williams, et al., 2006) by decreasing negative cognitive reactivity and rumination patterns which perpetuate major depressive disorder (Kenny, 2008; Ma & Teasdale, 2004; Michalak, Heidenreich, Meibert, & Schulte, 2008). MBCT is a manualized, eight-week group intervention largely based on Kabat-Zinn's mindfulness-based stress reduction (MBSR) program (Dimidjian, Kleiber, & Segal, 2010).

MBCT is distinct from MBSR in that it employs mindfulness skills based on meditation techniques as well as techniques from cognitive (Kingston et al., 2007) and cognitive behavioural (Baer, 2003) therapies. MBCT groups comprise 12 to 15 participants who meet weekly across 8 weeks for 2 to 2.5 hours of psychoeducation regarding stress and coping, and practice in mindfulness meditation skills. Participants are assigned weekly homework; for example, participants are encouraged to practice meditation for 30 to 45 minutes daily with instructional CDs.

MBCT incorporates aspects of cognitive behavioural therapy (CBT) that facilitate a detached view of one's thoughts, affect, and bodily sensations, and includes teachings such as *"thoughts are not facts"* and *"I am not my thoughts"* (Baer, 2003). Participants are taught how to view thoughts simply as fleeting mental events rather than aspects of themselves, or necessarily accurate reflections of reality (Baer, 2003). These exercises help participants recognize when they are operating on *"automatic pilot"* (Palmer & Rodger, 2009; Shapiro, Carlson, Astin, & Freedman, 2006). That is, when they become absorbed in a cycle of automatic reactive responses which inhibit the ability to experience the present moment and see situations

objectively (Bieling, Antony, & Beck, 2003). While there are commonalities between MBCT and CBT protocols in general, MBCT differs from CBT in important ways (Baer, 2003).

While both MBCT and CBT focus on cultivating the ability to detect early indicators of depression, MBCT differs from CBT in that it does not explicitly attempt to change or reformulate thoughts (e.g., from irrational to rational), but rather focuses on altering awareness and responses to thoughts (Teasdale et al., 2000; Teasdale, Hayhurst, Pope, Williams, & Segal, 2002). Overall, MBCT emphasises *acceptance* rather than change strategies (Williams et al., 2006). Participants are taught to notice the effect of negative mind states on the body and to explore associated visceral sensations directly, rather than ruminating about or suppressing the mind state (Williams et al., 2006). Not only does MBCT encourage participants to refrain from evaluating thoughts, but also to refrain from evaluating feelings and emotions, and to simply notice them as they arise (Baer, 2003; Baer et al., 2005; Bieling et al., 2003). Another important difference is that CBT interventions generally have a clear goal; this is not the case in MBCT, which promotes the attitude of nonstriving (Baer, 2003; Bieling et al., 2003). Lastly, in MBCT, practitioners are required to engage in their own regular mindfulness practice (Baer, 2003; Dimidjian et al., 2010); whereas, professionals offering CBT interventions are not expected to engage in the skills they are teaching (Baer, 2003).

What is Mindfulness Practice?

Despite having origins in ancient Buddhist teachings and having been practiced, discussed, and debated for centuries, it is only within the past decade that mindfulness has received significant attention in the medical and psychological literatures and empirical spheres (Garland, Gaylord, & Park, 2009). More recently, mindfulness principles have been integrated into Western psychological practice both as an adjunct to existing therapeutic modalities (such as

MBCT) and as a standalone therapeutic approach (Bieling et al., 2003; Bowen et al., 2006; Kenny, 2008; Williams et al., 2006). To date, mindfulness has been applied to a variety of disorders and continues to receive empirical validation for its efficacy (Garland et al., 2009).

Mindfulness meditation (MM), a central component of all mindfulness practice, is rooted in Buddhist *Vipassana* or *insight* meditation (Palmer & Rodger, 2009). MM cultivates a moment-to-moment awareness hinged on non-judgment and acceptance that serves to focus the mind to better recognize and assimilate one's perceptions of self and environment (Jain et al., 2007). This is generally accomplished by focusing one's attention on a singular continuous stimulus, such as the breath. Mindfulness practice centres on observing and becoming aware of internal and external experiences without attempting to alter them (Jain et al., 2007). This compassionate and curious awareness ideally extends beyond formal meditation practice into daily life and promotes a detached observation of thoughts and emotions, thereby discouraging automatic reactive responses and increasing peace of mind (Dimidjian et al., 2010). Thus, MM teaches attentional skills that, over time, contribute to a decentered metacognitive awareness which reduces the potency of emotional states and ruminative tendencies (Kenny, 2008; Ramel, Goldin, Carmona, & McQuaid, 2004; Shapiro et al., 2006). Indeed, it has been argued that meditation reduces cognitive fixedy which implicates mechanisms of depression and anxiety -- particularly rumination (Alexander, Langer, Newman, Chandler, & Davies, 1989). These teachings in MM are the foundation of all mindfulness interventions generally, and of MBSR and MBCT specifically. In addition to MM as a central component in all mindfulness practice, four foundational *attitudes* of mindfulness practice govern mindfulness-based treatment modalities such as MBCT.

Attitudes of Mindfulness

The four attitudes associated with mindfulness practices are: (a) nonjudging; (b) patience and nonstriving; (c) acceptance; and (d) letting go (Bieling et al., 2003). Because these are not necessarily familiar concepts, it may be useful to further define them.

Nonjudging. The first attitude to approach mindfulness with is *nonjudging* (Williams et al., 2006), which may be described as being an impartial witness to one's own experience (Bieling et al., 2003). For example, if one practices a breathing exercise and notices a draft in the room, one might think "I'm going to get too cold." Once the sensation has been judged as "drafty," it has been labelled as a problem, thus drawing further attention to it in order to find a solution. In Western society, we are routinely taught from the time we are young to make immediate judgements about situations and to do the *good* or *right* and not the *bad* or *wrong* thing. Good/bad dichotomous thinking is in many ways shaped or trained from the time we are young and becomes deeply ingrained in our consciousness. This perpetuates the notion that things (i.e., people, situations, events, thoughts, emotions, sensations, etc.) are inherently "*good*" or "*bad,*" but these concepts are coloured by our mood and perception of reality. The problem with dichotomous thinking patterns and the resultant judgements that follow, is that they negatively impact our emotions, sometimes altering them many times over the course of a day (Kornfield, 2008, p. 132). Accordingly, nonjudging in mindfulness practice centres on the idea that *things are not inherently good or bad, they just are*. Moreover, nonjudging is often a calming, peaceful attitude to take, especially when it is applied to uncomfortable situations like anxiousness or unpleasant physical sensations (Baer, 2003; Bieling et al., 2003).

Patience and nonstriving. Patient nonstriving is the second attitude and a central tenet of mindfulness practice and represents an interesting paradox: It seems the more we strive to be

mindful, the more elusive mindfulness becomes (Bieling et al., 2003). Similarly, in attempting to impatiently control our responses, feelings of grasping and desire may be invoked, which negate the benefits of mindfulness. It is only in the nonstriving attainment of mindfulness that we may acquire greater control of our responses. In practice, these teachings become important because novices tend to worry that they are not doing the exercises correctly, which instigates a cycle of distraction and reduces the effectiveness of the activity. Accordingly, participants are instructed to simply and patiently notice distracting thoughts as they arise and to gently bring their attention back to the target meditation. This practice often requires great patience, since it is the mind's nature to continuously generate thoughts.

Acceptance. Acceptance is a fundamental attitudinal component of mindfulness (Ostafin & Marlatt, 2008; Shapiro et al., 2006). Often, people learning about mindfulness believe they are successful when they have no negative thoughts or emotions, but the absence of negative affect is not the barometer of success in mindfulness (Bieling et al., 2003), nor is it realistic for continued sustainment. Rather, accepting the presence of a negative thought or feeling state, noticing it is there, attending to it, and then returning one's focus to the target exercise is the foundation of mindfulness (Baer, 2003; Bieling et al., 2003; Garland et al., 2009). It is important that thoughts, feelings, or sensations are accepted as they are, not as objective truths, irrespective of emotional valence. Furthermore, MBCT teaches the difference between acceptance and resignation, and helps participants determine when to implement acceptance and when to implement action.

Letting go. The fourth and final attitude of mindfulness is letting go (Bieling et al., 2003), and corresponds with the previous three. While letting go is related to nonstriving, it is also about its opposite: holding on tightly or not letting go, which can be problematic. Holding

on tightly often involves grasping, desire, and nonacceptance, all of which cause suffering and ultimately inhibit one's ability to live in the present moment (Kornfield, 2008, p. 296). Letting go is analogous to Csikszentmihalyi's (1990) concept of "flow" -- the intrinsically motivated autotelic (i.e., having a purpose in and not apart from itself; Merriam-Webster, 2011) experience in which awareness and action merge (cited in Brown & Ryan, 2004). In fact, Csikszentmihalyi suggests that the key to the autotelic personality is the individual's ability to be present in his or her ongoing experience (Brown & Ryan, 2004). This "flow" state is often illustrated by professional athletes who strive to perform optimally by letting go of their need to or habit of over-thinking their actions. Similarly, mindfulness is often attained through letting go.

In MBCT, the four attitudes of mindfulness are introduced and reinforced through various meditation practices. For instance, the *raisin exercise* is one of the first exercises used since it introduces the four underlying attitudes of mindfulness. In the raisin exercise, participants are given several raisins and are directed how to eat mindfully, in a slow and deliberate manner, focusing on the sensory experience (please refer to Appendix B). Participants are instructed to engage in the exercise *nonjudgmentally*, whether they enjoy raisins or not, simply observing the sensations that arise. Similarly, participants are encouraged to *let go* of judgments and preconceived perceptions about participating in such an activity, to *accept* the sensations that arise, and to allow the event to unfold as it will, with *patience* and *nonstriving*. Additionally, *patience* is acquired through the slow and deliberate nature of the activity, which is different from how individuals are accustomed to eating raisins. In doing so, this activity illustrates the idea of *getting off automatic pilot*, or acting mindfully rather than automatically. Other exercises include the *body scan*, a 45-minute practice in which attention is directed sequentially to numerous areas of the body while the participant assumes a meditative state and

observes associated sensations (Baer, 2003, 2006; please refer to Appendix C). Similarly, in *sitting meditation*, participants adopt a relaxed and wakeful posture with eyes closed and attend to breathing sensations (Baer, 2003, 2006) (please refer to Appendix D). With practice, participants come to realize that most sensations, thoughts, and emotions are transient like passing clouds in the sky. Such awareness effectively reduces the potency of disturbing thoughts or emotions and helps individuals maintain greater objectivity.

Mechanisms of Mindfulness-Based Cognitive Therapy

Several underlying mechanisms of MBCT have been proposed in the literature, including: (a) exposure (Baer, 2003; Bowen et al., 2006; Kingston et al., 2007); (b) cognitive change (Baer, 2003; Garland et al., 2009); (c) cognitive distraction (Garland et al., 2009); (d) self-regulation and coping (Baer et al., 2005; Brown & Ryan, 2003; Shapiro et al., 2006; Tacon, McComb, Caldera, & Randolph, 2003); (e) relaxation (Baer, 2003; Garland et al., 2009); (f) acceptance (Baer, 2003; Baer, 2006; Williams et al., 2006); (g) reperceiving (Garland et al., 2009; Shapiro et al., 2006); (h) positive reappraisal (Garland et al., 2009); and (i) locus of control (Matchim & Armer, 2007; Tacon et al., 2004). Please refer to the glossary in Appendix A for a brief description of each.

Principles for the Clinical Application of Mindfulness-Based Cognitive Therapy

The developers of MBCT have not proposed any formally required qualifications for instructors; however, they note that training in counselling or psychotherapy, cognitive therapy, and leading groups is important (Baer, 2006). Perhaps the most imperative guiding principle of MBCT is the instructor's own personal mindfulness practice (Baer, 2003; 2006; Dimidjian et al., 2010). The theory behind MBCT suggests that bringing compassionate and curious awareness to experience, even painful emotional states, is a critical skill to develop in preventing relapse in

depression (Dimidjian et al., 2010). In order to guide participants in the development of this skill, it is important for instructors to develop, practice, draw upon, and bring the same compassionate and curious awareness to their own experience in developing their own skills (Baer, 2006; Dimidjian et al., 2010; Segal et al., 2002, pp. 55-57). Indeed, the key principles for MBCT practice specifically relate to the paramount importance of practice (often in the form of homework) itself, for practitioners as much as for participants (Dimidjian et al., 2010). It is extremely difficult for instructors to respond effectively and credibly to participant questions and problems in the absence of their own personal practice (Dimidjian et al., 2010). Correspondingly, MBCT is considered to be a life-long practice for instructors and clinical practitioners.

Efficacy of Mindfulness-Based Cognitive Therapy

Despite being a relatively new approach originally designed for use in clinically depressed populations, research addressing MBCTs efficacy (Garland et al., 2009; Williams et al., 2006), key components, and application to a wide array of clinical populations is burgeoning (Dimidjian et al., 2010; Palmer & Rodger, 2009).

MBCT has been established as an effective method for preventing depression relapse (Finucane & Mercer, 2006; Ma & Teasdale, 2004; Teasdale et al., 2000). In the Teasdale et al. (2000) study, participants ($N = 145$) diagnosed with recurrent major depression were randomly assigned to receive treatment as usual (TAU), or MBCT in addition to TAU. Post-intervention relapse rate for the MBCT/TAU group was 37% compared to 66% in the TAU control group; a medium effect size ($h = 0.59$)[1] for MBCT/TAU was found, and the difference in relapse rate was statistically significant ($p < 0.005$). However, the reduction in relapse rates was statistically significant only for participants with *more than* two previous episodes of major depression

[1] While Cohen's *d* is used to assess effect size for t-tests, *h* involves a different formula and is used to assess effect size for tests of two independent proportions; *h*-values of 0,2, 0.5, and 0.8 represent small, medium, and large effect sizes (Cohen, 1988 cited in Quick-R, 2011).

(Teasdale et al., 2000); for participants with only two previous episodes of depression, MBCT treatment augmentation did not reduce relapse. In response to such findings, the authors noted (a) MBCT was specifically designed for remitted patients and therefore unlikely to be effective in treating acute/current depression, where factors such as impaired concentration and the intensity of negative thinking may preclude acquisition of the attentional skills central to MBCT; and (b) it might be that patients with a history of only one or two previous episodes were different from patients with a history of more than two previous episodes of depression. Nonetheless, Teasdale et al. (2000) concluded that MBCT offers a promising cost-efficient intervention for preventing relapse in recurrently depressed patients.

In 2004, Ma and Teasdale replicated these findings and more particularly, found that in a group of recovered depressed patients with three or more previous episodes of major depression, MBCT and TAU more than halved recurrence rates compared with the TAU group. In addition, MBCT/TAU accounted for more variance in the finding of reduced recurrence rates in the 2004 study compared with the earlier 2000 study. Further to the earlier Teasdale et al. (2000) finding that MBCT with TAU had no effect on relapse among individuals with two or less previous depressive episodes, not only did participants with two previous episodes in the 2004 study not benefit from MBCT/TAU, but they were more likely to relapse compared to those in the TAU control group (Ma & Teasdale, 2004). This finding suggests a possible contraindication of MBCT/TAU for this lower-risk population (Ma & Teasdale, 2004). That said, Ma and Teasdale (2004) reported the protective effects of MBCT/TAU were most apparent in patients with four or more episodes (38% relapse rate among patients with four or more episodes in the MBCT group; 100% relapse rate among patients with four or more episodes in the TAU control group). Further analyses determined reduction in relapse rates due to MBCT/TAU was greatest for onsets of

depression that were *not* associated with antecedent life events; there was no difference between MBCT/TAU and TAU for onsets preceded by significant life events. Interestingly, whereas onset of depression was significantly associated with antecedent life events in depressed individuals with two or fewer depressive episodes, this was not the case for depressed individuals with a history of three or more episodes. Thus, it was argued that MBCT is highly effective in reducing autonomous, presumably internally provoked relapse, but ineffective in reducing relapse associated with severe life events (Ma & Teasdale, 2004). This outcome would be expected if MBCT specifically intervenes by disrupting autonomous relapse processes involving reactivated rumination cycles, which reflects the original purpose of the intervention (Ma & Teasdale, 2004). Of course, further investigation is necessary to confirm such propositions. Taken together, findings from the Ma and Teasdale study suggest MBCT is an effective and efficient means of preventing relapse in recovered depressed individuals with three or more previous episodes.

In a more recent study, Finucane and Mercer (2006) examined the acceptability and effectiveness of MBCT for patients in primary care ($N = 11$) with a history of relapsing depression who had active symptoms of depression or depression and anxiety. A mixed method approach was implemented, involving both quantitative measures, such as the Beck depression (BDI) and anxiety (BAI) inventories, both with good reported validity, and qualitative data from semi-structured interviews 3 months following MBCT treatment. The quantitative measures were administered before treatment and 3 months post-intervention. The structure and format of the mindfulness course closely followed the original 8-week MBCT course developed by Williams, Segal, and Teasdale (2000; as cited in Finucane & Mercer, 2006). However, because concentration is affected by depression, the authors decided to shorten the longer meditations. Thus, the body scan was reduced from 40 to 30 minutes and the guided sitting meditation was

reduced from 40 to 25 minutes. Shortening the practices is a contentious matter within MBCT circles, since mindfulness training involves developing a decentered approach to difficult experience, and longer meditations are thought to provide better opportunities to encounter such adversity. Nonetheless this decision was upheld in an attempt to encourage participants' abilities to 'stay' with the exercises and, considering the participants' affective symptoms, it was believed that shorter sessions would likely produce similar difficulties as longer meditation sessions would in recovered patients.

Interviews were transcribed verbatim and audio recordings were compared against the transcripts to ensure accuracy. The researchers demonstrated further qualitative rigour by presenting predominantly descriptive rather than interpretive data, thus allowing patients' narratives to speak for themselves (Finucane & Mercer, 2006). Overall, the qualitative data indicated that the MBCT group was both acceptable and beneficial to the majority of patients. Participant testimonies indicated that for many, being in a group was an important normalising and validating experience. In particular, themes such as *being understood by the group*, *realising that you were not alone*, and *being able to show emotion in a safe environment* emerged as common positive aspects of the group. However, most participants said that eight weeks was too short and thought that follow-up support was essential. More than half the participants continued to apply the mindfulness skills three months after the treatment had ended. It is worth noting that a minority of participants continued to experience meaningful levels of distress three months after completion of the program, particularly anxiety. Nonetheless, quantitative results indicated statistically significant reductions in both mean depression and anxiety scores [mean pre-treatment depression score = 35.7 and post-treatment score = 17.8 ($p = 0.001$); mean pre-treatment anxiety score = 32.0 and post-treatment score = 20.5 ($p = 0.039$)]. Overall, 72% of

participants exhibited improvements on the BDI and 63% on the BAI. In general, qualitative and quantitative results were highly concordant, leading Finucane and Mercer (2006) to conclude that MBCT may play an effective role in treating active depression and anxiety.

Finucane and Mercer's (2006) findings effectively extend the existing knowledge in the field by showing the effectiveness of MBCT for reducing *current* depression and anxiety which contrasts previous findings that exclusively emphasized the benefits of MBCT for reducing *relapse* in chronically depressed samples with multiple prior episodes of depression (Ma & Teasdale, 2004; Teasdale et al., 2000). Nonetheless, this study suffers from a small sample size and weak methodological design, as exhibited by its failure to include a waitlist control group, making it impossible to exclude the possibility of an expectancy effect accounting for the benefit of MBCT. Thus, it is evident such considerations warrant further replication with a waitlist-control group.

Studies are ongoing in assessing the use of MBCT in the treatment of depression in the general population, and attention is also being directed to its use in subpopulations of depressed patients with limited treatment options, such as individuals with traumatic brain injury (TBI; Bedard et al., 2008), pregnant and postpartum women (Dimidjian et al., 2010), and patients with bipolar disorder (Williams et al., 2008). In a preliminary study, Williams et al. (2008) assessed and provided initial support for the use of MBCT in patients with bipolar disorder. Participants ($N = 68$) were recruited if they had experienced at least one prior episode of major depression accompanied by serious suicidal ideation or behaviour. The MBCT group was compared with a waitlist control group. Findings demonstrated the relevance of MBCT for this group that included participants with only one previous depressive episode, contrary to previous findings

amongst patients with recurrent episodes of major depression (Ma & Teasdale, 2004; Teasdale et al., 2000).

Beyond the limited number of evaluation studies, further confounding the assessment of MBCTs efficacy is treatment fidelity. Many studies discuss the therapeutic use of mindfulness in terms of *mindfulness-based interventions.* That is, it is not always clear if MBCT is a standalone intervention, or one intervention in a series of mindfulness-based interventions, or if aspects of MBCT are being incorporated in an idiosyncratic custom intervention. Taken together, it is difficult to tease out the main effects of MBCT from its interaction effects on outcomes reported in these studies. Nonetheless, mindfulness-based interventions have demonstrated significant benefits for a range of clinical disorders (Palmer & Rodger, 2009) other than depression, such as anxiety (Evans et al., 2008; Kabat-Zinn et al., 1992; Williams et al., 2008), chronic pain (Kabat-Zinn, 1982), binge eating disorder (Baer et al., 2005; Kristeller & Hallett, 1999), anger (Speca et al., 2000), and addictive behaviours (Bowen et al., 2006; Ivanovski & Malhi, 2007; Marlatt, 2002; Ostafin & Marlatt, 2008). [In fact, researchers are currently attempting to develop *Mindfulness-Based Relapse Prevention* (MBRP) for addictive behaviours based upon MBSR and MBCT (Bowen et al., 2006)]. Pilot studies have also shown encouraging results for the treatment of suicidal tendencies (Williams et al., 2006), and depressive symptoms in populations with TBI (Bedard et al., 2008). A further limitation is that few studies have been conducted with community samples and findings from clinical subgroups cannot be generalized to community samples (Palmer & Rodger, 2009).

Possible contraindications are not well known, although preliminary findings suggest MBCT may not be beneficial for individuals with two or fewer previous depressive episodes (Ma & Teasdale, 2004). The possibility that MBCT can potentially enhance patient receptivity to

other treatments has not yet been examined. Furthermore, it has been argued that the lack of standard treatment operationalization makes it challenging to test the construct of mindfulness empirically (Palmer & Rodger, 2009). Additionally, since studies seem to suggest that mindfulness-based interventions offer promising long-term protection from depression relapse, long-term longitudinal studies are necessary to support such claims. It is important for future studies to examine the underlying mechanisms of MBCT in greater detail, parsing out the relative importance of the attentional components of mindfulness, the elements of compassion, the cognitive-behavioural skills, the context of group support (Palmer & Rodger, 2009), and the attitudinal components of mindfulness. Despite only speculative understanding of its mechanisms and despite the practical and empirical limitations expected with novel interventions, MBCT has received a great deal of support for its efficacy. It remains an exciting time in the development of this promising intervention.

Applying Mindfulness-Based Cognitive Therapy to Acquired Brain Injury

As noted earlier, only one study appears to have specifically investigated the effectiveness of MBCT as a psychosocial intervention for adults with ABI. Bedard et al. (2008) reported positive findings from a pilot study where the effectiveness of MBCT in reducing depression symptoms in a sample of participants ($N = 20$) who had sustained TBIs was examined. It is particularly interesting to note that many of the proposed underlying mechanisms of MBCT have been associated with effective coping and psychosocial recovery from ABI, and as such, this suggests that MBCT may be a potentially useful and appropriate intervention for individuals with ABI.

Brain Injury

At present, ABI is a significant mental and public health concern (IBIA, 2011). Further to the data presented earlier, the prevalence of ABI is difficult to determine due to the diverse causes of ABI, the complexity in diagnosis (brain injuries are often missed or not accurately diagnosed by medical professionals), and the lack of sufficient information systems to capture such data (Ryu, Feinstein, Colantonio, Streiner, & Dawson, 2009; Silver, McAllister, & Yudofsky, 2005). Canadian estimates for brain injuries are generally extrapolated from American studies. According to the U.S. Centers for Disease Control (USCDC), the incidence of TBI alone is 500/100,000 individuals annually, equating to 166,455 in Canada, and 22,000 in B.C. each year (Langois, Rutland-Brown, & Thomas, 2006). Such figures translate to one person sustaining a TBI every 3 minutes in Canada without including the incidence of other ABIs (BRAINTRUST CANADA, 2007). When other ABIs are accounted for, nearly four percent of the population (1,400,000 individuals in Canada and 160,000 in B.C) live with ABI and resulting permanent disabilities (BRAINTRUST CANADA, 2007). The prevalence of ABI survivors continues to grow because of modern warfare (TBI is the signature injury of modern warfare; S. Tasker, personal communication, December 31, 2011) and advances in medicine (Fraas & Calvert, 2009; Moore & Stambrook, 1992) that have decreased the mortality rate for survivors (Hoge et al., 2008).

By definition and a growing consensus, any TBI is considered a sub-category of ABI and therefore may be categorized as an ABI (Brain Injury Association of America, 2010; Brain Injury Network, 2010). For this reason, the present investigation will use the term *ABI* to include all brain injuries, except degenerative brain diseases such as Alzheimer's and Parkinson's, for example. Only where authors have specifically referred to the inclusion of TBI participants in

studies, will the term TBI be used in the present paper. Please refer to the glossary (Appendix A) for definitions of ABI and TBI.

Acquired Brain Injury and Recovery

The medical condition of patients with ABI typically stabilizes relatively quickly and following discharge from hospital, contact is often lost with medical services. Thus, the long-term prognosis of these patients is not well established (Teasdale & Engberg, 2005). Typical phases of recovery generally include acute medical treatment, subsequent physical and cognitive rehabilitation, followed by life-long or "chronic living" (Tasker, 2003) with ABI either independently or with family support.

Although brain injury is highly variable and mostly unpredictable in outcome, sequelae include physical, cognitive, behavioural, emotional, and personality changes, all of which typically but not always, vary with injury locus and injury severity (Mazaux et al., 1997). Physical disabilities can be numerous, and their extent and severity depend on various factors such as age, premorbid physical state, and site and extent of damage (Leathem, Heath, & Woolley, 1996). Cognitive impairments typically include: memory, attention, acquisition difficulties (Hofer, Holtforth, Frischknecht, & Znoj, 2010; Malia, Powell, & Torode, 1995; Moore, Stambrook, & Peters, 1989; Jacobs, 1997; Teasdale & Engberg, 2005; Tiersky et al., 2005), mental fatigability, conceptual disorganization, poor planning (Mazaux et al., 1997); impaired abstraction (Toglia & Kirk, 2000) and complex problem-solving, reduced information processing speed, occasional impairment of language function, lack of awareness of deficits, inflexibility, a tendency towards perseveration, the absence of an ability to anticipate (Malia et al., 1995), and impaired self-awareness (Godfrey, Knight, & Partridge, 1996; Kreutzer, Marwitz, Godwin, & Arango-Lasprilla, 2010; Leathem et al., 1996; Malia et al., 1995; Noé et al., 2005;

Prigatano, 2005). Behavioural and emotional/personality changes include depression (Bechtold Kortte et al., 2003; Mazaux et al., 1997; Rosenthal et al., 1998; Tacon et al., 2004); anxiety (Bechtold Kortte et al., 2003; Mazaux et al., 1997; Moore et al., 2006; Soo & Tate, 2009; Tacon et al., 2004); affective lability, irritation, aggression (Kreutzer et al., 2010; Leathem et al., 1996; Mazaux et al., 1997); emotional withdrawal (Mazaux et al., 1997); decreased motivation and apathy (Jacobs, 1997; Kreutzer et al., 2010; Leathem et al., 1996; Malia et al., 1995; Teasdale & Engberg, 2005); lowered frustration tolerance and capacity for self-control (Jacobs, 1997; Kreutzer et al., 2010; Leathem et al., 1996; Teasdale & Engberg, 2005) which manifest as childish behaviour (Kreutzer et al., 2010); behavioural disinhibition (Leathem et al., 1996; Malia et al., 1995), and behavioural rigidity (Kreutzer et al., 2010; Leathem et al., 1996). Taken together, physical, cognitive, behavioural, emotional, and personality changes manifest more broadly as psychosocial changes and impairments (i.e., changes in emotion and emotion regulation, social skill, and personality; Kreutzer et al., 2010; Leathem et al., 1996; Malia et al., 1995) and tend to be the greatest source of difficulty and distress for family members (Kreutzer, 2010).

The frequent long-term effects of psychosocial changes and impairments, increased dependence on social supports, and the loss of future prospects greatly impact multiple aspects of a person's life (Hofer et al., 2010; Kreutzer et al., 2010; Leathem et al., 1996; Malia et al., 1995; Mazaux et al., 1997; Soo & Tate, 2009), resulting in the experience of tremendous and multiple losses (Tasker, 2003). Rehabilitation efforts following ABI primarily focus on three main goals: (a) using behavioural strategies to train compensatory behaviours to reduce deficits; (b) psychometrically guided retraining to remediate skill deficits; and (c) physically guided interventions which focus on retraining components of complex behaviours (Moore &

Stambrook, 1995). Poorly attended to however -- and the gap that I address in the present study -- is the psychosocial recovery process (Kreutzer, 2010) targeting psychosocial changes and impairments.

Psychosocial Changes and Impairments

Psychosocial changes and impairments and problematic adjustment may persist indefinitely following injury onset (Fraas & Calvert, 2009), show variability across injury severity (Mazaux et al., 1997), and impose significant challenges to the adjustment and reengagement of life for survivors (Malia et al., 1995). Consequently, ABI results in the experience of isolation and feelings of being alone (Tasker, 2003; Teasdale & Engberg, 2005) and a vast number of significant lifestyle changes and meaningful losses. Frequently cited losses experienced after ABI span the following domains: Love, Occupational, Social, Self, and Somatic (LOSSeS; Tasker, 2003). Such losses may compromise individuals' pursuits of important preinjury goals and values, such as employment, parenting, and interpersonal relationships (Godfrey et al., 1996; Jacobs, 1997; Mazaux et al. 1997; Tasker, 2003), and simultaneously institute an array of psychosocial hurdles, such as chronic pain, financial difficulties, and litigation (Moore et al., 2006) to overcome. Survivors frequently experience a loss of self or identity associated with former professions, relationships, and physiological capabilities; personal and social autonomy, self-confidence, self-efficacy, self-regulation, and a sense of "being" (Tasker, 2003). Considering the magnitude of change and loss resultant from ABI, it is not surprising that psychosocial changes and impairments underlie affective disruptions.

Affective Response to Brain Injury: Implications for Psychosocial Adjustment

Neurological, psychological, and psychosocial factors can all contribute to the emergence of emotional and psychiatric disturbances (Fann et al., 2004; Hofer et al., 2010; Tiersky et al., 2005) such as depression, anxiety (Bechtold Kortte et al., 2003; Tacon et al., 2004), somatisation and conversion disorder, dizziness, and insomnia (Mooney, Speed, & Sheppard, 2005) following ABI. In a quantitative study, Fann et al. (2004) found the prevalence of a psychiatric illness in the first year was 49% following moderate to severe TBI, 34% following mild TBI, and 18% in the non-injured control group (Fann et al., 2004). Interestingly, the same study found that moderate to severe TBI was associated with a higher initial risk of psychiatric symptoms, whereas mild TBI appeared to be associated with persistent psychiatric illness. Post-injury explanations for failure to recover as expected include affective responses and the development of new psychiatric conditions since the injury. Furthermore, substance abuse problems have also been well-documented in studies of ABI survivors (Rosenthal et al., 1998). However, despite the growing literature on substance abuse in individuals with ABI, and the well-documented correlation between substance abuse and depressive disorders, the relation between substance abuse and depression has not been empirically examined among this population (Rosenthal et al., 1998). It is important to note that a large number of individuals who sustain brain injuries have pre-existing psychiatric conditions (Mooney et al., 2005; Moore et al., 2006; Rosenthal et al., 1998). In fact, psychiatric history has a significant association with brain injury, and it has been speculated that increased rates of substance abuse account for increased vulnerability to brain injury (Moore et al., 2006). Emotional, psychiatric, and substance abuse factors are known to greatly impact individuals' coping and adjustment following ABI. With regard to emotional and psychiatric disturbances, the present study limited its focus to depression and anxiety, since they

are the most pertinent mental health concerns for individuals with ABI (Mazaux et al., 1997; Seel et al., 2010; Soo & Tate, 2009).

Depression. Depression occurs with sufficient frequency to be considered a significant correlate of ABI (Bedard et al., 2008; Rosenthal et al., 1998; Seel et al., 2010; Starkstein, Robinson, & Price, 1988). In fact, major depression (MD) is the most frequently diagnosed psychiatric disorder in ABI (Mazaux et al., 1997) with reported rates from 6% to 77% among TBI survivors (Seel et al., 2010), and its treatment remains difficult (Bedard et al., 2008). It has been reported that individuals with ABI are six times more likely than the non-depressed general population to threaten self-harm, and are at four times greater risk for committing suicide than persons in the general population (Rosenthal et al., 1998). Evidence suggests that depressive symptomology presents somewhat differently in individuals with ABI than in the general population, often through irritability, frustration, anger, and aggression more so than by sadness or tearfulness (Rosenthal et al., 1998). Nevertheless, other depressive symptomology, such as pathological crying, sleep disturbances, increased tiredness, and decreased libido has been frequently observed following brain injury (Prigatano, 1999, p. 135). Interestingly, objective levels of injury severity, impairment, and functioning do not appear to be related to the development of MD (Prigatano, 1999, p. 135; Seel et al., 2010). Furthermore, research suggests that other common correlates of ABI such as anxiety, aggression, sleep problems, alcohol use, lower income levels, and poor social functioning appear to be primarily associated with MD among this population (Seel et al., 2010).

Certainly depression can impede the achievement of optimal functional outcome and recovery goals, whether in the acute or chronic stages of recovery (Mooney et al., 2005; Rosenthal et al., 1998). In an evaluation of factors related to recovery after mild TBI, Mooney et

al. (2005) found depression had the greatest impact on outcome, even when physical pain was statistically controlled for. Furthermore, it is widely accepted that depression can impair cognitive functioning and therefore impede rehabilitation efforts and exacerbate existing neurological impairments (Rosenthal et al., 1998).

It appears that a combination of neuroanatomic, neurochemical, and psychosocial factors contribute to the onset and maintenance of depression among this population (Prigatano, 1999, pp. 133-139; Rosenthal et al., 1998). Studies have found a direct relationship between brain injury site and depression (Prigatano, 1999, p. 134). For instance, researchers have demonstrated that MD soon after stroke was frequently associated with injury to the left hemisphere (Prigatano, 1999, p. 134; Starkstein et al., 1988). However, as stroke patients recovered with time, depression was less directly correlated with lesion location (Prigatano, 1999, p. 134). Interestingly, Robinson, Bolduc, and Price (1987) found that two years post-stroke, all patients who were initially depressed showed significant improvements, whereas patients who were initially dysthymic (very slightly depressed) demonstrated serious deteriorations in terms of depressive symptomology. These results suggest that with time, depression is correlated with factors unrelated to lesion location (Prigatano, 1999, p. 134). This finding may suggest that psychosocial change and adjustment factors are important.

Considering the diverse cognitive, neurobehavioural, and psychosocial sequelae in ABI, and complex and highly individual premorbid factors, it is difficult to definitively ascertain the mechanisms that contribute to depression in ABI (Rosenthal et al., 1998). Nonetheless, depression remains a significant barrier to successful recovery (Mooney et al., 2005; Rosenthal et al., 1998). Some researchers suggest this risk of depression may be associated with increased learned helplessness (Bedard et al., 2003; Tacon et al., 2004). Such considerations reflect the

importance of developing effective psychosocial treatments for ABI which specifically address depressive symptomology and foster empowerment, self-regulation, coping, and adjustment.

Anxiety. Similarly to depression, individuals with ABI are thought to be at increased risk for developing anxiety (Soo & Tate, 2009) or post-traumatic stress disorder (PTSD; Tiersky et al., 2005). PTSD *is* an anxiety disorder resulting from the direct or indirect experience of a traumatic, often terrifying, event in which grave physical harm occurred, was threatened, or perceived (National Institute of Mental Health, 2011). In general, anxiety has been reported at rates as high as 70% among individuals with TBI (Moore et al., 2006). Anxiety may manifest as symptoms linked to the process of adjustment to the injury, and often co-occurs with depression (Seel et al., 2010). Anxiety presents as feelings of free-floating, intense worry, generalized uneasiness, social withdrawal, interpersonal sensitivity, anxious dreams (Moore et al., 2006), apprehension or fearfulness, PTSD, or obsessive compulsive disorder (OCD; Soo & Tate, 2009). The impact of anxiety following ABI is pervasive, often adversely affecting rehabilitation outcomes, functional abilities, interpersonal relationships, and employment prospects (Moore et al., 2006; Soo & Tate, 2009).

Various neurological explanations have been proposed for the etiology of anxiety following ABI. For instance, since motor vehicle accidents account for a great proportion of ABIs (Brain Injury Association of America, 2010; Moore et al., 2006), this often results in damage to the pre-frontal cortex, either through direct impact with the skull (a *coup* injury), or from contact following a 'rebound' from impacting the posterior side of the skull (a *recoup* injury) (Moore et al., 2006). The pre-frontal cortex is involved in inhibitory functions (Constantinidis, Williams, & Goldman-Rakic, 2002) and relaying environmental, verbal, and predictive information to the septo-hippocampal region -- the region attributed to producing

anxious symptomology (Moore et al., 2006). Although no direct investigation exists, it seems reasonable to conclude that this 'behavioural inhibition system' could be a frequent recipient of damage (Moore et al., 2006). Of course too, in the case of traumatically induced brain injury, the initiating event and cause of the TBI, especially if this was associated with fear, helplessness, and threatened loss of life, is likely to contribute to the psychological manifestation of anxiety post injury. In more generalized cases of ABI, which can involve widespread neurological damage to various cortical regions, the experience of anxiety, while less clearly etiologically delineated, is nonetheless understandable.

Building the Case for Locus of Control and Coping as Targets for Psychological Recovery in Acquired Brain Injury

Considering depression and anxiety are affective responses to ABI, it is plausible that both may be linked to LOC orientation and coping style. The following section argues for the inclusion of these variables in research examining the psychological impact of ABI.

Locus of control. ABI is associated with feelings of helplessness, anxiety, depression, and loss of control. Surprisingly, little research to date has investigated how psychological variables such as LOC may be involved in longer-term adjustment and psychological recovery in ABI. One of the few studies is a pilot study conducted by Moore and Stambrook (1992) who investigated coping strategies and LOC beliefs following TBI and their relationships to long-term outcome. The sample was comprised of 53 adult males with mild (n = 11), moderate (n = 24), and severe (n = 18) TBI. Since this was an exploratory study, no hypotheses were stated. Variables were subscale scores from the Ways of Coping-Revised Questionnaire (WOC-R) and forms A and B of the Multidimensional Health Locus of Control Scale (MHLC). Convergent validity measures included the Total Mood Disturbance scale of the Profile of Mood States

(POMS), the Physical and Psychosocial dimensions of the Sickness Impact Profile (SIP), and the Center for Epidemiological Studies Depressed Mood Scale (CES-D). Glasgow Coma Scale scores were assessed as a measure of TBI severity. Participants were contacted upon discharge from hospital, and the battery of self-report instruments was sent to the participants by mail and completed independently.

Cluster analysis classified participants into two clusters. Cluster 1 participants made significantly less use of Self-Controlling and Positive Reappraisal coping strategies, and had high Powerful Others and Chance LOC (i.e., greater external LOC). Cluster 1 participants were significantly older and sustained less severe injuries than Cluster 2, and exhibited significantly greater overall mood disturbance and depression, and reported greater physical difficulties. The two clusters did not significantly differ in time post-injury, or in reports of psychosocial difficulties. Moore and Stambrook (1992) used Taylor's (1983) model of cognitive adaptation to interpret their findings. The model posits that when confronted with a threatening event, an individual (a) searches for meaning in the experience; (b) attempts to gain mastery over the event and life in general; and (c) makes efforts to restore self-esteem (Taylor, 1983). Accordingly, use of positive reappraisal and self-controlling coping strategies were proposed to address Taylor's (1983) first and second suggested mediators of cognitive adaptation, and lower external LOC to support efforts to restore or increase self-esteem (Moore & Stambrook, 1992). While Moore and Stambrook argued that age plays a large role in the coping strategies and LOC adopted after injury, age appears to be a confound not controlled for in the data analysis. Moore and Stambrook (1992) concluded that the patterns of coping strategies and LOC beliefs are associated with different quality of life outcomes following TBI. Specifically, greater use of self-

controlling and positive reappraisal coping strategies was associated with lower external LOC and greater psychosocial adjustment following TBI.

It should be noted that the sample population was somewhat older (M = 38.28 years) in comparison with most studies investigating TBI (Moore & Stambrook, 1992). Furthermore, study participants were exclusively male; therefore, the study offers limited generalizability and warrants replication with a mixed sample. The use of a *health* related locus of control measure further limits generalizability of findings. Nonetheless, this investigation offers important findings for the purposes of the present study. It seems greater use of self-controlling and positive reappraisal coping strategies and *lower external LOC* were associated with better outcomes following TBI, which provides a foundation to base future therapeutic interventions upon. These findings further support the notion that MBCT may be beneficial to this population, considering the proposed mechanisms of mindfulness, which include increased self-regulation (Baer et al., 2005; Brown & Ryan, 2003; Shapiro et al., 2006; Tacon et al., 2003), positive reappraisal (Garland et al., 2009), and increased internal LOC (Ivanovski & Malhi, 2007; Matchim & Armer, 2007; Tacon et al., 2004). Indeed, this study is an important step in the transition from providing descriptive accounts of psychosocial sequelae to inferential methods that examine underlying psychosocial mechanisms of depression and adjustment in individuals with TBI (Rosenthal et al., 1998).

In a subsequent exploratory pilot study, Lubusko, Moore, Stambrook and Gill (1994) investigated the relationship between LOC and post-injury employment status in adult males with TBI. It was hypothesized that participants with lower post-injury occupational status would exhibit cognitive beliefs reflecting lower internal LOC and higher levels of hopelessness compared to those whose status remained the same or improved. Participants were selected on

the basis of pre- and post-injury employment status (full-time, part-time, unemployed, and student), and divided into two groups as measured by the Blishen social economic index: Group 1, post-injury employment status improved or remained the same (n = 9); Group 2, post-injury employment status declined (n = 10). Participants completed the Multidimensional Health Locus of Control Scale (MHLC), the Revised Internal-External Scale (RIES), and the Beck Hopelessness Scale (BHS) in order to measure cognitive beliefs; injury severity was determined by GCS scores. Strikingly, two different measures of LOC were employed in the study. Although no rationale was provided for this, the use of multiple data sources increased the credibility and reliability of findings with regards to LOC.

Demographic analyses indicated no significant differences between groups on measures of age, years of education, GCS, length of coma, time since injury, or pre-injury occupation. Several significant differences were observed between groups for the cognitive belief variables. Group 2 (worse employment status) exhibited significantly lower levels of internal LOC than Group 1 (same/improved employment status) according to measures on the MHLC scale and the RLES. Moreover, Group 2 demonstrated significantly higher Powerful Others LOC beliefs on the RIES, and greater feelings of hopelessness on the BHS. Therefore, as hypothesized, the results indicated that lower levels of internal LOC were associated with decreased post-injury employment status. Although this study does not clarify whether lower internal LOC causes poor employment status, or whether poor employment status causes lower internal LOC, the findings are consistent with the existing literature linking low employment status with external attributions, the perception of uncontrollability, and depression (Lubusko et al., 1994). Lubusko et al. (1994) argued that these findings suggest post-injury outcome is associated with

participants' LOC and cognitive beliefs, which should be a target for future research and intervention among this population.

Although this study only involved an adult male sample, which significantly reduces the generalizability of the findings, especially considering differential employment factors between males and females, the findings reflect existing evidence which suggests that more well-adjusted coping is associated with a higher internal LOC. Indeed, this study provides support for the notion that LOC is an important factor in psychological recovery, coping strategies, and outcome following ABI.

Based on this research, Moore and Stambrook (1995) proposed a conceptual model to address LOC, cognitive moderators, coping, and quality of life following TBI. In brief, the model suggests that the long-term cognitive, behavioural, emotional, psychiatric, and interpersonal consequences of TBI may contribute to the development of learned helplessness, coping deficits, and altered LOC beliefs (Moore & Stambrook, 1995). The concept of learned helplessness was derived from animal studies and observations that when events are uncontrollable, an organism learns that its behaviour and outcomes are independent, thus leading to motivational deficits, disruptions in learning, and emotional disturbances related to uncontrollability (Maier & Seligman, 1976; Moore & Stambrook, 1995). This pertains to a model of depression, and studies with humans have emphasized the role of cognition in learned helplessness (Moore & Stambrook, 1995). Consequently, Moore and Stambrook (1995) argued that individuals with TBI are at risk for developing self-limiting beliefs about their effectiveness in altering significant events, which may result in over-generalizing the effects that TBI has on one's daily life. Such belief systems are characterized by an external LOC, a helpless or hopeless cognitive style, and poor choices in coping strategies (Moore & Stambrook, 1995). The self-

fulfilling nature of these beliefs may create a negative feedback loop, where the belief in the uncontrollability of one's circumstances is not tested and life opportunities are further restricted, resulting in suboptimal outcomes and reduced quality of life (Moore & Stambrook, 1995).

Correspondingly, Moore and Stambrook (1995) suggested that interventions should involve acknowledging and working through feelings of anger, depression, and anxiety; provide structure, establish contingencies, and provide reinforcement of adaptive behaviour. The goal should be to reframe the meaning of deficits in a less helpless, more active, and more self-efficacious manner (Moore & Stambrook, 1995). According to this model, psychotherapeutic interventions designed to break the negative cycle and address issues of grieving a loss of self (Moore & Stambrook, 1995) and accommodating changes and limitations (S. Tasker, personal communication, January 4, 2011) are paramount. Taken together, these studies highlight the influence of LOC orientation upon coping strategies and subsequent recovery outcomes among individuals with ABI. Considering the vast implications these factors have for quality of life post-injury, it is surprising these considerations have received such little empirical attention. Evidently, further research is warranted on this subject matter. To expand on the role of coping strategies presented above in conjunction with LOC as a treatment target, coping in response to brain injury is discussed in greater detail below.

Coping. There has been little empirical research on individuals' coping processes and outcomes (Hofer et al., 2010; Malia et al., 1995; Moore & Stambrook, 1992). Nonetheless, the following information on coping and psychological recovery following ABI is available.

Malia et al. (1995) investigated coping and psychosocial function following brain injury. This study is relevant here because it attempted to further the existing knowledge within the field regarding the moderators and predictors of coping and psychosocial function so as to inform

rehabilitative efforts. Adults with brain injury (n = 74) were compared with non-neurological matched controls (n = 46); participants were predominantly male. Demographic information collected was limited compromising the meaning and generalizability of findings. Occupational and marriage status, sex, age [M = 27.4 (participants); 25.7 (controls)], and educational level were reported; but mean time since injury, for example, was not provided. The Ways of Coping checklist (WOC) was administered, as was the Headley Court psychosocial rating scale, which was also completed by participants' relatives. It was stated that the WOC has good reported validity. No mention of reliability was provided. The Headley Court psychosocial rating scale was devised especially for the study. No pilot study on this measure was conducted, nor were reports of validity or reliability presented. Participants were mailed questionnaires, with follow-up reminders made six and nine weeks thereafter. Participants who completed and returned questionnaires were included in the study sample. Of the 112 consecutive ABI admissions, 74 (73%) returned questionnaires. No reasons for lack of completion were given by Malia et al. (1995), besides the explanation that candidates did not accept the invitation to participate. Analysis of the WOC revealed that ABI participants used four coping strategies: problem-focused, emotion-focused, avoidance, and wishful thinking. Significant correlations were found between psychosocial functioning and low scores on emotion-focused coping in the ABI (r = -0.27, $p < 0.05$) and control (r = -0.38, $p < 0.01$) groups, and low scores on avoidance coping in the ABI (r = -0.47, $p < 0.001$) and control (r = -0.61, $p < 0.001$) groups. In the ABI group, wishful thinking was also negatively and significantly associated with psychosocial functioning (r = -0.29, $p < 0.01$). Clearly, avoidance coping was the most maladaptive strategy employed by both injured and non-injured groups! Malia and colleagues (1995) interpreted the pattern of statistically significant and non-significant findings among coping strategies and psychosocial

functioning in both groups to mean that individuals with ABI make use of similar coping strategies as do non-neurologically injured individuals (Malia et al., 1995). Also, this study did not clarify whether individuals with ABI used emotion-focused coping less because they were more well-adjusted (than the control group), or whether the use of emotion-focused coping makes people feel worse (Malia et al., 1995). While Malia et al. (1995) went on to say their investigation demonstrates that it is advantageous to confront problems rather than avoid them, it is difficult to accept the implicit message of their findings showing problem-focused coping as the most adaptive strategy for psychosocial wellbeing; no significant correlations were found between problem-focused coping (either the use of or absence of) and psychosocial functioning in either the injured or control groups. What is impressive is that the robust negative relationship between avoidance coping and psychosocial functioning is consistent with the thinking that avoiding or repressing negative emotions only strengthens their impact (Kornfield, 2008, pp. 131-135). Moreover, these results imply that individuals with ABI are likely to benefit from treatment approaches such as those suggested by Moore and Stambrook (1995) where acknowledging and working through feelings of anger, depression, and anxiety are emphasized. In line with this and as described in detail earlier, MBCT turns in large part on exposure and acceptance of thoughts and feelings; in other words, *avoidance* as a coping strategy or way of being is antithetical to MBCT.

In an earlier attempt to move beyond descriptive findings and to offer new perspectives on the moderators and predictors of outcome in ABI, Moore et al. (1989) used a quantitative design to examine moderating effects of coping strategies in long-term psychosocial and emotional adjustment in ABI. This study was intended as a replication study of a previous investigation examining coping strategies utilized by patients with spinal cord injuries. Sixty-

nine adult male head-injury participants were recruited from two teaching hospitals. Data were collected from medical records (e.g., GCS) and self-report questionnaires, which were comprised of a revised Ways of Coping (WOC) questionnaire, the Profile of Mood States (POMS) Depression subscale, and the Sickness Impact Profile (SIP) Psychosocial Dimension. Participants' relatives completed the Katz Adjustment Scale (KAS-R) General Psychopathology subscale, among other measures which were not further described. Although the authors reported adapting a validation procedure (previously used in the original study) by substituting equivalent instruments, no rationale was provided for the substitutions. Thus, it remains uncertain whether the replaced instruments had increased relevance, reliability, or validity, as no detailed analysis was offered. The WOC questionnaire was subjected to cluster analysis to divide the sample into groups by coping strategies employed; a three-cluster solution was determined. Cluster 1 (Low WOC) participants made little use of any coping strategies measured by the WOC. Cluster 2 (High WOC) participants made wide and relatively indiscriminant use of multiple coping strategies. Cluster 3 (Positive Reappraisal) participants employed relatively specific coping strategies, such as positive reappraisal (an emotion-focused strategy) and social support. No significant differences were found between the clusters for age, months since injury, or GCS score. As a group, Cluster 2 (High WOC) had significantly higher depression scores on the POMS ($M = 33.59$, $SD = 14.21$), more psychosocial difficulties as indicated by the SIP, and a greater level of residual difficulties than Cluster 1 (Low WOC) (POMS $M = 24.44$, $SD = 11.22$) or Cluster 3 (Positive Reappraisal) (POMS $M = 24.05$, $SD = 7.99$). Clusters 1 and 3 were not significantly different on measures of depression, psychosocial difficulties, or physical impairments. Results were thought to corroborate the original study being replicated, which found that low use of coping strategies was associated with better adjustment than high and

indiscriminate use of coping strategies, as measured by the WOC among individuals with spinal cord injuries. Such results were also thought to be consistent with other existing studies in the field. Overall, the high use of coping strategies measured by the WOC seemed to reflect greater amounts of emotional and psychosocial difficulty, whereas limited or distinct use of such strategies was associated with improved outcomes. Overall, Cluster 3 participants, who made distinct and extensive use of positive reappraisal and social support rather than a diffuse and broad range of coping strategies, demonstrated the highest psychosocial adjustment of the three groups. Although the exclusively male sample and no indication of ethnic heterogeneity make generalizability of the findings problematic, this study nonetheless offers considerable insights into coping mechanisms following ABI.

Positive reappraisal, an emotion-focused strategy, can be conceptualized as a direct action which helps individuals get on with life in the face of adverse life events (S. Tasker, personal communication, January 4, 2011), whilst also helping the individual feel better about themselves (Moore et al., 1989). According to Moore et al. (1989), Cluster 3's positive reappraisal coping strategy most effectively reflects and incorporates Lazarus's (1976) two categories of coping: (a) actions in which one attempts to directly alter the source of stress (direct action coping), and (b) mitigatory actions in which one actively attempts to regulate distressing emotions experienced from stressful stimuli (palliative coping; Moore et al., 1989). Direct action coping strategies can help individuals gain mastery over the stressful situation, while palliative efforts may help an individual feel better about him or herself, despite chronic adverse conditions (Moore et al., 1989). Interestingly, it has been suggested that both mastery and self-enhancement efforts can include those which involve reality buffers, such as *self-deceptions* and *illusions* that may contribute to improved adjustment (Moore et al., 1989; Taylor, 1983). In keeping with this,

and given the similarity between Cluster 1 and 3 scores, Moore et al. (1989) proposed that *denial* may be an effective coping style for individuals facing long-term stressors resultant of brain injury. Denial has also been hypothesized as one of the psychological mechanisms that may account for post-injury *anosognosia* or lack of insight (Godfrey et al., 1996) or deficits in self-awareness around disability or injury (Dorland, 2007).

Deficits in self-awareness. It is widely accepted that many individuals with ABI lack insight and deny or minimize the severity of their neuropsychological symptoms (Godfrey et al., 1996; Kreutzer et al., 2010; Leathem et al., 1996; Malia et al., 1995; Noé et al., 2005; Prigatano, 2005). While disturbances in self-awareness are frequent following a severe brain injury (with estimated incidence rates of 30%, which can be temporary or permanent), incidence is lower following mild or moderate ABI (Prigatano, 2005). Often the terms *anosognosia* and *impaired self-awareness* are used interchangeably in the literature, and both refer to the psychological phenomenon where a brain injured individual does not appear to be aware of impaired neurological or neuropsychological function, which is obvious to the clinician and other reasonably attentive individuals (Prigatano, 2005). Moreover, this lack of awareness appears to be specific to individual deficits and cannot be accounted for by hyperarousal or widespread cognitive impairment (Prigatano, 2005). Godfrey et al. (1996) coined the term *Posttraumatic Insight Disorder* to account for this phenomenon; however, this term implies the requirement of traumatic experience for acquiring anosognosia, while this phenomenon has certainly been observed among generalized cases of ABI (Malia et al., 1995; Noé et al., 2005).

In a cross-sectional follow-up study, Godfrey, Partridge, Knight, and Bishara (1993) investigated adult closed-head injury (CHI) patients ($N = 66$) at either 6 months, 1 year, or 2 to 3 years post-injury, compared to a group of orthopaedic control patients. The findings were that

CHI patients assessed at 6 months post-injury exhibited deficits in self-awareness and underreported the severity of their behavioural impairments (Godfrey et al., 1993). In contrast, CHI patients in the 1 year and 2 to 3 year groups evidenced greater insight about their behavioural impairments, as well as higher levels of emotional dysfunction (Godfrey et al., 1993). Such findings suggest that the return of insight is related to an increased risk of emotional dysfunction (Godfrey et al., 1993), which supports the hypothesis that impaired awareness may in fact be a protective factor in dealing with adversity. However, it is important to note that the separation and measurement of, and clinically distinguishing between "denial" as psychological coping method versus "unawareness" as a neuropsychological impairment can be difficult (Prigatano, 2005). It is also not always clear whether self-deception and denial are reality buffers and actual coping strategies, or a result of deficits in self-awareness and therefore not coping strategies. This remains a contentious topic within the field and warrants further investigation (Prigatano, 2005).

Bechtold Kortte et al. (2003) investigated the relationship between anosognosia, denial, coping, and depression among individuals with ABI ($N = 27$). Participants were 65% male, 98% Caucasian, and 2% African American with moderate to severe impairments, as indicated by the GCS. Measures included the Clinician's Rating Scale for evaluating impaired self-awareness and denial of disability after ABI, with good reported reliability; the COPE, with satisfactory internal consistency; and the Beck Depression Inventory-II, with adequate reliability and validity. Materials were administered to participants two weeks following admission to a post-acute rehabilitation program. The results indicated that denial and anosognosia were related and co-occurred ($r = 0.60$, $p < 0.01$); avoidance coping was positively related to denial ($r = 0.54$, $p < 0.01$), but not significantly associated with anosognosia; and while there was a strong positive

relationship between avoidance coping and depression ($r = 0.53$, $p < 0.01$), no correlation between denial and depression was observed (Bechtold Kortte et al., 2003). Bechtold Kortte et al. concluded that individuals assessed as primarily in denial differ from anosognosic individuals in their use of coping strategies. Avoidant coping strategies were used more frequently by individuals assessed to be in denial of disability, and the use of avoidance strategies was associated with higher levels of clinical depression (Bechtold Kortte et al., 2003). In addition, use of process coping strategies (i.e., emotion-focused coping strategies aimed at decreasing distress, such as acceptance, acknowledgement, positive reappraisal, and approach) was associated with greater use of problem-focused coping strategies, which supports the hypothesis that individuals who engage in strategies aimed at decreasing levels of distress institute more active coping strategies (Bechtold Kortte et al., 2003). However, neither denial nor anosognosia were significantly related to use of problem-focused coping strategies (Bechtold Kortte et al., 2003). It was noted that the results did not support a direct relation between denial and depression, despite the findings that higher levels of denial were associated with greater use of avoidant coping, which in turn was related to higher levels of depression. To account for these contradictory findings, Bechtold Kortte et al. (2003) proposed that perhaps Prigatano's (1999) hypothesis that denial may also be nondefensive could be relevant. In this view, individuals who engage in denial and who institute coping strategies aimed at avoidance, may experience greater levels of depression compared to individuals who engage in denial defensively. Despite these puzzling suggestions, and although this study could not elucidate which coping style is most prominent among anosognosic individuals, it highlights differences in coping between individuals considered to be in denial and those with anosognosia. This study further reflects the therapeutic advantage of action-oriented coping strategies and the maladaptive outcomes of

avoidant coping. Undoubtedly such findings can prove useful in the development of future therapeutic and rehabilitative approaches.

Noé et al. (2005) conducted a cross-sectional comparative study as well as a longitudinal study to investigate self-awareness in ABI. The studies were intended to further the existing theoretical understanding on this topic, and also to examine the change in self-awareness during a group intervention specifically designed to foster self-awareness among individuals with ABI. In the cross-sectional study, 62 participants (36 inpatients and 26 outpatients; mean age: 35.4 years; 44 men and 18 women) were included in the sample (41 had sustained a TBI, while the remaining ABIs were due to cerebral hemorrhage, stroke, or other neurological causes). Of these 62 participants, 30 had accurate perception of their deficits (high self-awareness) and 32 had impaired perception of their deficits (low self-awareness). Mean time since injury was not provided in the study. Participants were assessed with a broad battery of cognitive, functional, and psychopathological scales, among them, the Patient Competency Rating Scale as a measure of self-awareness. Although many of the measures employed are empirically well-established, no reports of validity or reliability were provided for the broad battery of scales used with the exception of the Patient Competency Rating Scale, which had excellent test-retest reliability (0.85 – 0.97) and internal consistency (Cronbach's $\alpha = 0.91 – 0.95$).

The longitudinal study sample comprised the 36 inpatients of the cross-sectional study, 18 (50%) of who had high self-awareness of deficits. Participants in the longitudinal study were enrolled in a group program designed to improve self-awareness as part of a multidisciplinary rehabilitative program. The program included components of cognitive rehabilitation, physical therapy, occupational therapy, behavioural therapy, and social skills training, three to five days a week for approximately six months, with one day a week reserved for the self-awareness

rehabilitation program. The treatment model included ABI education, group therapy, and functional-occupational activities, as well as psychological monitoring. Specific techniques to treat impaired awareness included role-plays, personal adjustment therapy, team integration sessions, and goal and journal group. It was found that, prior to treatment, 16 participants (50%) had high self-awareness of their deficits, which increased to 27 (75%) following treatment. No significant differences were found between groups for age, chronicity, GCS, and post-traumatic amnesia.

Overall, in the longitudinal study, participants with high self-awareness of their deficits demonstrated fewer psychopathological symptoms, better neuropsychological function, and greater functional independence than those with low self-awareness. These results were corroborated by the cross-sectional study which revealed that when demographic and injury severity differences were controlled for, participants with more accurate self-awareness could be expected to have more intact cognitive, behavioural, and affective functioning, and to exhibit greater functional independence. Although no significant differences were found between groups on the Beck Depression Scale and the Zung Anxiety Scale in the cross-sectional study, the high self-awareness group showed less neuropsychiatric disturbances, as measured by the Neuropsychiatric Inventory (NPI). Moreover, the cross-sectional study showed that the low self-awareness group had greater functional impairments than the high self-awareness group on all scales of the functional battery.

It was concluded that increased deficits in self-awareness are associated with increased problems in most other aspects of functioning. Based on the findings, it was also argued that neuropsychological factors, especially memory and executive deficits, underlie deficits in awareness. Interestingly and inconsistent with other research, Noé et al. (2005) found that the

development of self-awareness was not associated with an increase in emotional distress, as assessed by mood and anxiety scales. It was surmised that perhaps any depressive symptoms that developed with increased self-awareness were resolved through rehabilitation and not present upon final assessment.

The study included several limitations, namely the heterogeneous nature of the ABI sample population, and the absence of a control group to test for spontaneous recovery and test-retest gains (Noé et al., 2005). The most pertinent limitation was the inability to measure the specific rehabilitation program implemented in the longitudinal study. Since the results were based upon an uncontrolled observational cohort, the study could not report on the efficacy of the mixed-modality rehabilitation program implemented (Noé et al., 1995), which does little to promote the advancement of rehabilitative practices and leaves considerable queries for future investigation. Nonetheless, the results are consistent with the possibility that a structured comprehensive rehabilitative program fostered increased self-awareness (Noé et al., 2005), which demonstrates that improved and recovered self-awareness is possible for this population, provided sufficient support.

Working to link this discussion on deficits in self-awareness back to coping, according to Godfrey et al.'s (1996) stress-appraisal-coping (SAC) model, since many individuals initially lack insight following ABI and deny their neuropsychological deficits, they will also fail to make appropriate efforts to implement coping skills. Similarly, this model further predicts that individuals with ABI will invoke coping responses when they begin to gain insight about their neuropsychological deficits. Although it remains uncertain whether 'denial' or 'lack of insight' or 'illusion' may act as a protective factor against adverse life events (as suggested by Godfrey et al., 1993; Moore et al., 1989; and Taylor, 1983), evidence suggests that impaired self-awareness

affects treatment outcome, length of stay in hospital, treatment compliance, and possibly the formation of a therapeutic alliance (Prigatano, 2005; Toglia & Kirk, 2000). Furthermore, impaired self-awareness has been related to reduced motivation for rehabilitation, leading to difficulties in community integration and vocational re-entry (Noé et al., 2005; Prigatano, 2005). Thus, from a rehabilitative standpoint, these findings point to the need for therapeutic interventions that address impaired self-awareness (and therefore also, denial) among this population.

Findings from Tasker's (2003) qualitative study exploring coping and psychological recovery in the chronic phase of life with a brain injury provide a good summary for this section. Five adult survivors of brain injury [2 male, 3 female; mean age = 41.4 years (range, 28-53 years)] participated in the study. Mean time from date of injury was 7.2 years (range, 3-10 years) and brain injuries ranged from moderate (GCS = 9-12) to severe (GCS ≤ 8). Coping strategies documented by Tasker were the following:

- sense of humour and capacity for playfulness
- self-caring attitude and engagement in positive self-caring body (e.g., walking, cycling, and other structured recreational exercise programs) and mind (e.g., listening to music, meditation; being in nature) activities (e.g., "Sometimes, listening to music I can drift away and feel so serene … or sometimes when it's quiet on the lake, sitting down by the lake, looking over the water and feeling the breeze, I feel comforted." p. 342)
- keeping busy to prevent having too much time to think of all the "not so nice" things that have happened (e.g., part-time academic/adult education programs; involvement in brain injury community and advocacy work)
- relationships and family support are "extremely important" (p. 343) [and] "the biggest support" (p. 343) in the healing and coping process
- connecting with fellow survivors of brain injury helps to feel less alone and more understood
- re-appraisal (e.g., "I can still learn … compensatory strategies are extremely important, I may not be able to do everything the way I did before but I can still do many things as long as I approach it in a slightly different way." p. 342)

Participants also noted that coping and hoping were important. Cognitive reappraisal and

internal LOC are clearly reflected in the statement: “seeing the advances I have made and continue to make [keeps me going]” (p. 343). Internal LOC is also present in the statement that “[it is] a determination trait, an obstinacy, something I was born with that does not allow me to sit in a heap for long” (p. 343). Overall, Tasker’s results speak to four key findings in psychological recovery in ABI: (a) internal locus of control as a coping resource, (b) capacity for active engagement; (c) relationally-enabled comfort and growth; and (d) the expressed-need to have "pain" and "dreams" listened to and heard.

In sum, problem-focused coping results in better outcomes compared to avoidant coping strategies (Malia et al., 1995), which is often associated with denial (Bechtold Kortte et al., 2003). Certainly researchers have indicated that acceptance is a feature of adaptive coping in ABI populations (Fraas & Calvert, 2009; Hofer et al., 2010; Nochi, 2000). Additionally, it seems greater use of positive reappraisal (Moore et al., 1989; Moore & Stambrook, 1992; Nochi, 2000; Tasker, 2003), self-controlling coping strategies, lower external LOC (Moore & Stambrook, 1992; Tasker, 2003), and social support (Fraas & Calvert, 2009; Godfrey et al., 1996; Hofer et al., 2010; Jacobs, 1997; Kreutzer et al., 2010; Leathem et al., 1996; Mazaux et al., 1997; Moore et al., 1989; Soo & Tate, 2009; Tasker, 2003) are associated with better outcomes following ABI. These results reflect Taylor’s (1983) theory of cognitive adaptation to threatening events (i.e., adaptation involves a search for meaning, an attempt to gain mastery over a challenge and one’s life in general, and effort to restore self-esteem); and support Moore and Stambrook’s (1995) view of using treatment approaches directed at active coping and acknowledging and working through feelings of anger, depression, and anxiety; and Kreutzer’s (2010; Kreutzer et al., 2010) well-established relationship-focused approaches. Pertinent to the present study, these results also support MBCT as a treatment option targeting psychological recovery in ABI; in particular,

factors associated with better outcomes following ABI and summarized directly above are foreshadowed in MBCTs focus on acceptance, letting go, patience, exposure, cognitive distraction, self-regulation, locus of control, reperceiving, and positive reappraisal most especially. In addition, the administration of MBCT occurs over an extended period within a setting of social support and interaction.

Considering the vast psychological implications of ABI, the psychosocial losses experienced by survivors, and the increased susceptibility to psychiatric conditions, it is clear this population requires additional psychosocial therapeutic support in the longer term or chronic living with brain injury. Evidently, the current medical model of rehabilitation does not adequately address issues related to life-long living once the acute and post-acute treatment services have been rendered (Hofer et al., 2010; Moore & Stambrook, 1995; Tasker, 2003), which necessitates increased empirical, practical, and community attention to such concerns.

Fostering Post Brain Injury Adjustment: Psychotherapeutic Interventions

Hofer et al. (2010) sought to examine whether an individualized program that supplements neuropsychological interventions with a psychotherapeutic program would be effective in treating emotional distress and fostering adjustment after ABI. Eleven participants (6 men, 5 women) with ABI who met the (DSM-IV) criteria for adjustment disorder were included in this preliminary study. A comprehensive neuropsychological examination was administered, as was the Brief Aphasia Check List, the Token Test, the Trier Coping Scales (TSK), the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I), and the Beck Depression Inventory (BDI). The GCS and The National Institutes of Health Stroke Scale (NIHSS) were used to assess injury severity and to evaluate the effect of acute cerebral infarction on various physiological functions. Treatment followed general principles of psychotherapy as outlined by

Grawe (2004; 2007; as cited in Hofer et al., 2010). Key coping targets (and theoretical mechanisms underlying change and adjustment) were similar to those included in psychotherapy for grief and loss, namely: acceptance of the loss incurred, adjustment to a life change, and redefinition of daily routines (Hofer et al., 2010). General treatment goals were to facilitate: (a) knowledge acquisition, (b) improvement of functional level, (c) achievement of the greatest possible independence level, and (d) the ability to cope with tiredness (Hofer et al., 2010). Treatment duration was approximately 50 minutes, for 30 sessions over the course of 1 to 1.5 years. Pre- and post-measure comparisons indicated that on the SCID-I measure, two participants were diagnosed with an adjustment disorder with anxiety symptoms, and nine with depressive symptoms; following treatment, no patient fulfilled the diagnostic criteria for an adjustment disorder any longer (Hofer et al., 2010). Furthermore, significant differences emerged on the BDI measure from pre- to post-therapy (BDI pre-treatment $M = 15.18$, $SD = 4.4$; post-treatment $M = 9.27$, $SD = 4.9$, $p < 0.008$) (Hofer et al., 2010). Such findings effectively reinforce the notion that psychotherapy should be an important component of neurorehabilitation (Hofer et al., 2010). However, the authors argued that it is not necessary to change the fundamental structure of existing neurorehabilitative programs. Rather, it was proposed that such interventions be modified to include the central psychotherapeutic mechanisms of change, especially the clarification of meaning and focus on emotional aspects of coping, which are not systematically represented in current neurorehabilitative programs (Hofer et al., 2010).

Undoubtedly, this study included various methodological limitations, such as the small sample size ($N = 11$). Furthermore, no rationale was provided for using individualized psychotherapy in the present study rather than a group-oriented intervention. Considering the benefit of social interaction and group programs amongst this population (Jacobs, 1997), it

remains uncertain why this method of treatment was preferential in the present study. Nonetheless, this study soundly demonstrated that it is possible to foster adjustment following ABI through rehabilitation which is supplemented with psychotherapeutic interventions. Together, Noé et al.'s (2005) study suggesting that it is possible for individuals with ABI to acquire increased self-awareness, and Hofer et al.'s (2010) investigation demonstrating increased adjustment, offer invaluable information about the rehabilitative potential for individuals with ABI. These studies present a foundation upon which to base future rehabilitative efforts, as well as considerable inspiration for therapeutic prognosis among this population.

Psychotherapeutic mechanisms of adjustment. Although Hofer et al.'s (2010) study proposed various underlying mechanisms of change and adjustment (e.g., acceptance of the loss incurred, adjustment to the life change, and redefinition of daily routines), these were largely theoretically-generated. In a qualitative study, Fraas and Calvert (2009) accessed such information more directly, through the narratives of ABI survivors. Specifically, Fraas and Calvert (2009) explored the narratives and shared themes of more well-adjusted adults with ABI in order to identify factors leading to psychological recovery and productive lifestyles after ABI. The investigation was intended to further the existing research within the field regarding the recovery process following ABI. Thirty-one adult participants (21 male, 10 female) with ABI formed a convenience sample from a community-based post-rehabilitation program. Narrative life stories were extracted from semi-structured interviews conducted by peer members of the program; thus, members interviewed members. Interviewers were provided with a list of eight questions that served as a loose framework for the interview. Questions were designed to explore participants' lives before and after their injuries, as well as long-term deficits which might affect daily functioning and recovery. Transcribed narratives were subjected to thematic analysis using

theme coding and theme grouping. Four main themes emerged from the data analysis: (a) the need for strong social supports (as indicated by 71% of participants); (b) the ability to cope with one's situation and control one's emotions (i.e., grief, coping, and agency) (98%); (c) acceptance of the injury and redefinition of self (84%); and (d) the importance of engaging in activities that foster empowerment, such as giving back to the community and becoming independent (58%). These findings were thought to reflect other established findings within the field. Undoubtedly, this investigation has offered great insight into the narratives of ABI survivors who do go on to adjust and cope post ABI, and provides invaluable information for devising therapeutic targets for this population. Considering the number of participants who volunteered to share their stories in order to promote brain injury awareness, this study further illustrates and confirms Tasker's (2003) findings of positive distraction, social support, and the importance of sharing such narratives with others who have similar experiences in an attempt to relate and to educate the community.

Similarly, in another qualitative study, Nochi (2000) examined self-narratives and coping amongst TBI survivors ($N = 10$; 8 men, 2 women). In particular, the study examined individuals who considered themselves well-adjusted to their current situations in an attempt to learn about successful coping strategies and inform future rehabilitative efforts accordingly. After establishing rapport with each informant, two or more semi-structured interviews were conducted, each lasted 45 to 60 minutes, and included open-ended questions about historical background, rehabilitation activities, present situations, and plans for the future. The interviewer paid close attention to the interviewee's thoughts and feelings about him/herself and asked participants to recall specific situations related to these thoughts and feelings. Interviews were transcribed and analyzed inductively using the grounded theory method. Coding was done by

analyzing the data for central concepts (i.e., basic units of analysis) concerning participants' perspectives on their life conditions following ABI. It is important to note that neutral and positive perspectives were focused on in the present study, while negative views were reserved for a related study and as such, were not presented. Observed concepts and themes were later verified for accuracy with individual informants.

Five common themes emerged from at least three informants (30%). The first category was termed *"the self better than others,"* which was mentioned by seven (70%) participants. In this context, participants contrasted their present selves with worse comparable alternatives; that is, this category was characterized by the notion that *"things could be worse."* The second category was termed *"the grown self,"* which was cited by six (60%) participants and referred to the idea that TBI had contributed to some positive aspect of their lives. In some cases, the new *self* was positively contrasted with participants' negative images of themselves prior to the injury. In other cases, participants indicated that they had acquired greater insight into themselves or others because of their TBI experience, which fostered an appreciation for other people and problems, and served as motivation for continued personal growth and future goals. The third category was *"the recovering self,"* which was mentioned by four (40%) participants regardless of time since injury. Within this perspective, participants presented themselves as being on their way back to their original selves. Those individuals who shared this perspective idealistically positioned their past selves in the future and used these images as a guide for further progress. The sense of approaching their *"true"* selves seemed to help individuals feel better about themselves in the present. The fourth category was termed *"the self living here and now,"* which was conveyed by four (40%) participants. In this category, it seemed that participants were trying to restore feelings of self-worth without contrasting themselves with

others or with their original selves. In some cases, this involved reconceptualising "normality" according to their new lifestyles. Participants with this perspective also exhibited efforts to focus on the present moment, for example, slogans such as *"one day at a time," "don't rush it," "take it as it comes"* were helpful for some individuals. Using such strategies, it seemed that individuals were able to cope with the disparity that existed between their present conditions and future goals associated with their past selves. The last category was termed *"the protesting self,"* as referred to by three (30%) participants. This involved a novel perspective of society and one's relationship to society -- one of oppression. In some cases, this insight served as motivation to change social environments, through volunteering, creating support groups, and advocating to "change the system."

Overall, Nochi (2000) observed that people with TBI were not only coping with their injuries through acceptance; rather, they seemed to ultimately revise their self-narratives by altering the appearance of their past, present, or future, and their environments. Arguably, this study includes several limitations. For example, it does not represent the whole spectrum of ABI, as the sample was highly selective (Nochi, 2000) and included only TBI. Additionally, no clarification of injury severity was provided, thus generalizability remains uncertain and possibly limited to TBI individuals with high self-awareness. Furthermore, Nochi's reported themes include those of considerably low endorsement rates (e.g., 30%); while there is no current standard for the number of participants who must endorse a particular theme for it to be considered a theme, Braun and Clarke (2006) suggest a theme be adopted and included if at least 60 percent (i.e., at least 6 out of 10 in the present case) of participants endorse a particular theme. Braun and Clarke suggest that a 50 percent endorsement rate would mean that while half of the individuals would include a particular theme in their story, half would not endorse that theme in

their story. This of course brings into question whether or not the theme informs us about the research question or other variables; hence, 60 percent is suggested by Braun and Clarke as a robust albeit arbitrary cut-off for what constitutes a theme in thematic analysis. Although these reported themes warrant replication with larger endorsement rates, Nochi's study provides a preliminary perspective on accomplished coping strategies following TBI. In general, Nochi's findings and participant accounts once again indicate positive reappraisal, acceptance, and present-moment awareness (mindfulness) as helpful in daily coping. Furthermore, the significance of self-empowerment became apparent in the theme *"the protesting self."* Similarly, the reader is reminded of Tasker's (2003) findings of participants' reported coping strategies including: (a) a sense of humour and capacity for playfulness; (b) self-care (both attitudinal and behavioural); (c) keeping busy or using distraction; (d) relationships and family support; (e) connecting with fellow survivors; and (f) reappraisal. Participants additionally defined their conceptions of *hope*, which included statements such as "seeing the advances I have made and continue to make," "[hope] comes from my feeling within," and "a determination trait, an obstinacy, something I was born with that does not allow me to sit in a heap for long." All of which imply an internal LOC (as particularly evident in the "I" statements). Moreover, elements of reappraisal were evident in participants' narratives, for instance, having the ability to see or focus on their advances rather than on their impairments following ABI. Jointly, Nochi (2000) and Tasker's (2003) findings reinforce important features of psychological recovery following ABI, and provide further support and insight with which to guide future rehabilitative and therapeutic interventions.

While present rehabilitative efforts may require revision or supplementation (Hofer et al., 2010), affective difficulties resulting from ABI, such as depression (Bechtold Kortte et al., 2003;

Rosenthal et al., 1998; Tacon et al., 2004), anxiety (Bechtold Kortte et al., 2003; Moore et al., 2006; Soo & Tate, 2009; Tacon et al., 2004), and impaired self-awareness (Noé et al., 2005; Prigatano, 2005), can greatly impede broad-based rehabilitation efforts (Fleming, Strong, & Ashton, 1996; Hofer et al., 2010; Prigatano, 2005); therefore it is necessary to address affective concerns in order to promote successful recovery.

In light of the growing empirical validation of mindfulness-based therapeutic interventions (Baer et al., 2005; Bowen et al., 2006; Evans et al., 2008; Ivanovski & Malhi, 2007; Kabat-Zinn, 1982; Kabat-Zinn et al., 1992; Kristeller & Hallett, 1999; Ma & Teasdale, 2004; Marlatt, 2002; Ostafin & Marlatt, 2008; Palmer & Rodger, 2009; Speca et al., 2000; Teasdale et al., 2000; Williams et al., 2008), and promising preliminary studies with mindfulness treatments among individuals with ABI (Bedard et al., 2003; 2005; 2008), I next discuss the evidence for the use of mindfulness-based psychotherapeutic interventions in brain injury.

Mindfulness-based psychotherapeutic interventions. Three studies have examined mindfulness in ABI populations. First, Bedard et al. (2003) evaluated the effectiveness of MBSR in improving quality of life among individuals with mild to moderate TBI ($N = 10$). This quantitative investigation is significant because Bedard's group attempted to ascertain the underlying effective mechanism of mindfulness, as well as advance empirical knowledge supporting rehabilitation for individuals with TBI. Second, McMillan, Robertson, Brock, and Chorlton (2002) conducted an experimental study on the effectiveness of *acceptance and commitment therapy* (ACT) as an attentional training program following TBI ($N = 130$). However, while ACT is a method of mindful concentration and relaxation training (McMillan et al., 2002), ACT does not describe its treatment in terms of mindfulness or meditation, but merely shares similar components of such practice (Baer, 2003). Third, Bedard et al. (2005) conducted a

follow-up to their previous (2003) study which used MBSR to improve the quality of life among individuals with mild to moderate TBI ($N = 7$). All three studies of mindfulness-based interventions with ABI provided encouraging evidence from which to base further interventions. Bedard et al. (2003) found that a mindfulness-based intervention (MBSR) resulted in clinically and statistically significant improvements in quality of life among individuals with mild to moderate TBI. However, the authors were unable to ascertain the underlying mechanisms of mindfulness (as described on page 9 earlier and presented again in Appendix A) that contributed to this outcome, which warrants further investigation. In their follow-up study, Bedard et al. (2005) found improvements initially observed after the (2003) intervention were maintained 12 months later, with a continued reduction of depressive symptoms and increased energy levels reported. Although the mean number of years since injury was not provided in either study, it can be inferred that participants were a least one year post-injury during the 2003 study, thus likely at least 2 years post-injury in 2005. Based on their 2005 findings, Bedard et al. suggested that perhaps the researchers could have achieved better physical and psychological outcomes by introducing MBSR earlier in the rehabilitation process. They also suggested the need to determine the extent to which participants continue using skills acquired through MBSR in order to ascertain whether booster sessions would enhance long-term effects of the intervention. In their pilot study, McMillan et al. (2002) implemented an ACT attentional training program for individuals with TBI and reported attentional improvements; however, the subsequent large-scale study was unsuccessful in replicating significant benefits among the same population. Hence, this study provides valuable insight into experimental methodology to avoid in future mindfulness-based interventions of this nature. For instance, the study utilized a highly abbreviated form of ACT training, which could have affected treatment efficacy. Furthermore,

according to the principles of mindfulness, it is not recommended that this approach be utilized as a means to an end (i.e., to increase attention); rather, it is only effective to use mindfulness in order to become mindful, and only then can one procure the associated rewards of mindfulness.

Taken together, it is evident studies investigating the use of mindfulness among individuals with ABI are extremely limited and recent. What is empirically established however, is that mindfulness-based practices foster relaxation (Baer, 2003; Garland et al., 2009; Weinstein, Brown, & Ryan, 2009), improve coping (Weinstein et al., 2009), and enhance quality of life post-intervention (Bedard et al., 2003) and at 12 months follow-up (Bedard et al., 2005).

Considering the encouraging results from the Bedard et al. studies (2003; 2005) most especially, it seems reasonable to propose that MBCT may be an effective approach for managing issues pertaining to psychosocial impairments and losses incurred by the injury, given the hypothesized underlying mechanisms of mindfulness.

Applying Mindfulness-Based Cognitive Therapy to Acquired Brain Injury

In an attempt to foster improved adjustment among individuals with ABI, Hofer et al. (2010) provided grief and loss therapy that focused on acceptance, adjustment to life change, and reappraisal, which proved to be a highly beneficial treatment. These components reflect some of the underlying mechanisms of MBCT. Furthermore, Moore and Stambrook (1995) suggested that psychotherapeutic interventions designed to break the negative cycle of self-defeating beliefs and to address issues of grief and loss, are paramount for successful recovery in this population. Accordingly, MBCT may be appropriate since it was developed to inhibit rumination, or repeated patterns of negative thoughts, among chronically depressed individuals and evidence has accrued to support this (Segal et al., 2002, pp. 39; 317). Interestingly, it has been argued that meditation reduces cognitive fixedy which might also be associated with

depressive symptoms, such as rumination (Alexander et al., 1989). This suggests meditation as an underlying mechanism of MBCT which could potentially diminish perseveration tendencies -- a well-established sequela of ABI. This also speaks to the effectiveness of MBCT in treating depression (Cahn & Polich, 2006; Finucane & Mercer, 2006; Ma & Teasdale, 2004; Teasdale et al., 2000), and anxiety (Evans et al., 2008; Finucane & Mercer, 2006; Williams et al., 2008), among other psychological conditions that are commonly implicated in ABI. Currently, empirical investigation of MBCT remains almost nonexistent in this population, which is somewhat understandable considering the recent emergence of MBCT as a validated therapeutic approach.

Mindfulness-Based Cognitive Therapy in Acquired Brain Injury: What Do We Know?

A poster session abstract for the European Congress of Psychiatry by Bedard et al. (2008) provides a brief outline of their pilot study which demonstrated significant reductions in depression using MBCT treatment in individuals with TBI meeting the criteria for major depression ($N = 20$). Participants were recruited from a rehabilitation clinic and completed the eight-week MBCT intervention. No indication of recruitment procedures, injury severity, time since injury, age, or sex was provided, thus limiting the generalizability of the findings. Measures of depression were completed at baseline and post-intervention and included the BDI-II, the PHQ-9, the HADS, the SF-36 (Mental Health subscale), and the SCL-90 (Depression subscale). The authors did not provide any further specifics as to *when* measures were completed post-intervention. All instruments indicated a statistically significant reduction in depression symptoms post-intervention ($p < 0.05$; Bedard et al., 2008). For instance, the total mean score on the BDI-II decreased from 25.2 ($SD = 9.8$) at baseline to 18.2 ($SD = 11.7$) post-intervention ($p = 0.001$). Indeed, the proportion of participants with a diagnosis of major depression was reduced

by 59% at post-intervention assessment, and it was reported that most participants indicated reductions in related symptoms (Bedard et al., 2008). It was concluded that MBCT may provide an opportunity to address depression as a debilitating aspect of TBI and could be employed as an adjunct to more traditional rehabilitative treatments, possibly increasing their success (Bedard et al., 2008). Given their encouraging findings, the authors stated further multi-site, randomized controlled trials will be conducted.

The findings from the Bedard et al. (2008) pilot study are compelling considering the extensive frequency of depression among the ABI population (Bedard et al., 2008; Rosenthal et al., 1998; Seel et al., 2010; Starkstein et al., 1988) (Bechtold Kortte, Wegener, & Chwalisz, 2003; Mazaux et al., 1997; Rosenthal, Christensen, & Ross, 1998; Seel, Macciocchi, & Kreutzer, 2010; Tacon et al., 2004). Thus, the present study seeks to extend the limited existing evidence base concerning the effectiveness of MBCT among this population. I believe MBCT is a highly appropriate intervention for the ABI population and necessary for several reasons.

Research Rationale, Purpose, and Hypotheses

Rationale

MBCT is effective in treating depression (Cahn & Polich, 2006; Finucane & Mercer, 2006; Ma & Teasdale, 2004; Teasdale et al., 2000), and anxiety (Evans et al., 2008; Williams et al., 2008), among other psychological conditions that are commonly implicated in ABI. As demonstrated in Moore and Stambrook's (1992) study, greater use of self-controlling and positive reappraisal coping strategies, and lower external LOC, is associated with better outcomes following TBI. These results have been supported by subsequent studies (Lubusko et al., 1994; Rosenthal et al., 1998). Interestingly, such evidence relates to Garland et al.'s (2009) proposed mechanism accounting for the efficacy of mindfulness, namely positive reappraisal. To

recapitulate, Garland et al. (2009) posited that mindful decentring enables the process of positive reappraisal -- or the attribution of new meaning to previously stressful events, which is thought to be a critical component of meaning-based coping and a pillar of well-being. Additionally, MBCT is thought to foster an internalized LOC (Ivanovski & Malhi, 2007; Matchim & Armer, 2007; Tacon et al., 2004). In doing so, MBCT helps promote more adaptive coping and may act as a protective factor against adversity (Baer, 2003; Weinstein et al., 1999). Furthermore, neurological studies have supported the hypothesis that mindfulness modulates neural systems involved in the cortical and subsequent cognitive, regulation of negative emotions (Modinos, Ormel, & Aleman, 2010). Indeed, it has been argued that through mindfully bringing conscious awareness and acceptance to experience in the present moment, one will be better able to use a wider, more adaptive range of coping skills (Shapiro et al., 2006). In four studies, Weinstein et al. (2009) showed that greater levels of mindfulness in college students correlated with more benign stress appraisals, less use of avoidant coping strategies, and greater use of approach coping; all of which were associated with more adaptive stress responses and increased well-being. In another study, Malia et al. (1995) found that individuals with ABI predominantly made use of four coping strategies, including problem-focused, emotion-focused, avoidance, and wishful thinking approaches. This study signifies that, despite brain damage and impaired cognition, individuals with ABI make use of similar coping styles as do non-neurologically injured subjects (Malia et al., 1995). This supports the notion that MBCT is applicable to this population, as it has fostered improved coping among various other groups. As Fraas and Calvert (2009) discovered, factors most commonly associated with successful recovery from ABI include the development of social support networks, grief and coping strategies, acceptance of the injury, redefinition of self, and empowerment. All of such factors are implicated in MBCT.

Certainly the importance of social support networks among this population have been continuously highlighted in the literature (Fraas & Calvert, 2009; Godfrey et al., 1996; Hofer et al., 2010; Jacobs, 1997; Kreutzer et al., 2010; Leathem et al., 1996; Mazaux et al. 1997; Moore et al., 1989; Soo & Tate, 2009; Tasker, 2003). Therefore, a group-oriented treatment approach, such as MBCT, seems to best accommodate these needs. Since MBCT was specifically designed as a cost-efficient treatment approach, it is exceedingly appropriate for this population, given the long-term nature of rehabilitative programs, which ostensibly causes fiscal strain (Jacobs, Blatnick, & Sandhorst, 1990).

An important additional consideration is the fact that anosognosia, or impaired self-awareness of one's deficits, is a well-established phenomenon among individuals with ABI, and can pose a significant barrier to successful rehabilitation (Fleming et al., 1996; Ownsworth & Clare, 2006). Prigatano (2005) contended that the problems of awareness and acceptance are crucial concerns that need constant rehabilitation attention among individuals with ABI. Godfrey et al. (1996) argued that there is an urgent need for further research of this nature to examine the relationship between level of insight and coping style and to identify coping styles associated with adaptive adjustment following TBI. Appropriately, mindfulness-based practice, and MBCT in particular, centres on observing one's internal and external experiences nonjudgmentally, and gradually cultivates increased self-awareness (Brown & Ryan, 2004; Jain et al., 2007; Walsh & Shapiro, 2006), which contributes to improved self-regulation (Baer et al., 2005; Brown & Ryan, 2003; Shapiro et al., 2006; Tacon et al., 2003). In turn, these processes promote enhanced coping abilities and well-being (Baer, 2003; Brown & Ryan, 2003). Furthermore, studies have demonstrated that individuals with ABI have been responsive to interventions specifically designed to increase self-awareness (Cheng & Man, 2006; Noé et al., 1995). Additionally, the

role of acceptance in mindfulness-based practice may be equally beneficial in fostering more adaptive coping (Ostafin & Marlatt, 2008; Shapiro et al., 2006).

Numerous studies have demonstrated that avoidant coping is associated with inferior outcomes (Malia et al., 1995; Weinstein et al., 2009). For instance, Malia et al. (1995) observed that low scores on emotion-focused and avoidance coping yield better psychosocial functioning among both brain-injured and non-neurologically impaired individuals. This suggests that it is therapeutically beneficial to confront problems rather than avoid them (Malia et al., 1995), which supports the idea that impaired self-awareness or 'denial' should be mitigated. Similarly, Bechtold Kortte et al. (2003) and Moore and Stambrook (1992) asserted that process coping and nondefensive strategies, such as the acceptance and acknowledgement of emotions, in individuals with ABI is associated with better physical and psychological adjustment and greater life satisfaction. Weinstein et al. (2009) found that mindful participants tend to use less avoidant coping strategies in response to stressful experiences, which supports the use of MBCT as a suitable treatment approach to this end.

Overall, it is evident further investigation is needed on the effect of MBCT on psychological recovery following ABI. Little focus is given to the longer-term chronic living and coping with ABI (Kreutzer, 2010; Tasker, 2003) and few psychotherapeutic interventions have been used and tested as appropriate supports for psychological recovery in this population (Kreutzer, 2010). Empirical research concerning the relationship between coping and adjustment outcomes in ABI are limited (Hofer et al., 2010; Malia et al., 1995; Moore et al., 1992). Similarly, there is limited empirical research exploring relationships between and among mindfulness meditation, coping, and LOC (Tacon et al., 2003), and most studies regarding the

psychosocial sequelae of ABI (Rosenthal et al., 1998) and mindfulness-based interventions (Hoppes, 2006) respectively have been characterized by descriptive studies.

Mindfulness-based practice is burgeoning in Western psychotherapy and remains a novel treatment approach, which greatly necessitates further experimental validation. The literature is virtually silent on the utility of MBCT as a specific mindfulness-based intervention in promoting psychological recovery in ABI. Accordingly, the hope for this study was to extend the present knowledge concerning the effectiveness of MBCT among individuals with ABI.

Purpose

The purpose of the present study was to explore the acceptability and effectiveness of MBCT as a group-based approach to foster psychological recovery and well-being in the chronic phase of ABI. More specifically, this study was conducted to: (a) extend Finucane and Mercer's (2006) study by applying MBCT to another population (i.e., adults with ABI); (b) corroborate the Bedard et al. (2008) investigation reporting the effectiveness of MBCT in reducing depression symptoms in people with TBI; (c) establish if empirical findings of the effectiveness of MBCT on depression (Dimidjian et al., 2010; Ma & Teasdale, 2004; Segal et al., 2002; Teasdale et al., 2000) and anxiety (Evans et al., 2008; Williams et al., 2008) in the general population and in primary care patients with active symptoms of depression and anxiety (Finucane & Mercer, 2006), extended to participants with ABI; and (d) explore the effect of MBCT treatment on measures of locus of control, satisfaction with life, self-awareness, and coping in participants with ABI.

Research Questions

Drawing from the MBCT and ABI literatures, four research questions were derived. The first question sought to investigate if ABI participants would describe and show measurable decreases in depressive and anxious symptomology as assessed from focus group data and the HADS following MBCT treatment. Next, it was important to establish if ABI participants would acquire measureable increases in internal LOC as measured by the ANSIE following the 8-week MBCT treatment. The third question sought to determine if the 8-week MBCT group would promote greater acceptance, positive reappraisal, self-regulation, or other ways of coping, and life satisfaction, as described by focus group data and measured by the Brief COPE and the SWLS respectively. Lastly, it was important to ascertain whether there would be measurable increases on SADI self-awareness scores for individuals with ABI following an 8-week MBCT treatment.

Hypotheses

Four hypotheses were derived and tested.

Hypothesis 1. While the ABI population typically demonstrates multiple concurrent psychological concerns, most prevalent are depression (Bedard et al., 2003; Rosenthal et al., 1998) and anxiety (Bechtold Kortte et al., 2003; Mazaux et al., 1997; Moore, Terryberry-Spohr, & Hope, 2006; Soo & Tate, 2009; Tacon et al., 2004). Given the empirical support for MBCT in treating anxiety (Evans et al., 2008; Williams et al., 2008), depression, and preventing symptom relapse (Dimidjian, Kleiber, & Segal, 2010; Segal et al., 2002; Teasdale et al., 2000), particularly in individuals with three or more recurrent depressive episodes (Ma & Teasdale, 2004), in the general population and in TBI samples (Bedard et al., 2008), participants will describe and show

a measurable alleviation of depression and anxiety symptoms as assessed by focus group data and the HADS following MBCT treatment.

Hypothesis 2. A sense of disempowerment often accompanies emotional adjustment difficulties such as depression (Lubusko et al., 1994; Maier & Seligman, 1976; Moore & Stambrook, 1995). It has been found that when events are uncontrollable, organisms tend to learn that their behaviour and outcomes are independent, thus leading to high external LOC, motivational deficits, and emotional disturbances -- most commonly in the form of depression and emotional withdrawal (Maier & Seligman, 1976; Moore & Stambrook, 1995). Also, LOC was associated with different quality of life (Moore & Stanbrook, 1992, 1995) and post-injury employment (Lubosko et al., 1994) outcomes in adults with TBI. Evidence suggests that mindfulness-based practice contributes to an increased internal LOC (Ivanovski & Malhi, 2007; Matchim & Armer, 2007; Tacon et al., 2004). Upon completion of the MBCT program, participants as a group will show a measureable increase in internalized LOC (operationally defined as a reduction in externalized LOC) as assessed by focus group data and the ANSIE.

Hypothesis 3. Mindfulness has been associated with acceptance (Ostafin & Marlatt, 2008; Shapiro et al., 2006), positive reappraisal (Garland et al., 2009), and improved self-regulation (Baer et al., 2005; Brown & Ryan, 2003; Shapiro et al., 2006; Tacon et al., 2003). Given these relations, it seems reasonable to think that mindfulness may be associated with improved ways of coping and an overall increase in satisfaction with life. Thus, following MBCT treatment, study participants will report measurable improvements in (a) acceptance, positive reframing, and self-regulation; (b) other ways of coping; and (c) satisfaction with life, as assessed from focus group data and the Brief COPE and SWLS respectively.

Hypothesis 4. Anosognosia, or impaired self-awareness of deficits, is highly common among individuals with ABI and can create major obstacles to successful rehabilitation (Fleming et al., 1996; Ownsworth & Clare, 2006). Mindfulness-based practice centres on observing one's internal and external experiences, including thoughts, affect, behaviour, and physical sensations in a nonjudgmental way, and gradually cultivates increased self-awareness (Jain et al., 2007; Walsh & Shapiro, 2006). Studies have demonstrated that individuals with ABI have been responsive to interventions specifically designed to increase self-awareness (Cheng & Man, 2006; Noé et al., 1995). Given these findings, MBCT treatment will result in increased self-awareness among study participants as assessed by self-report and the SADI.

Chapter 2

METHOD

Sample Characteristics

Twenty-six participants were initially enrolled in the study (18 male, 8 female). Participants were adults who had sustained a mild, moderate, or severe brain injury, as indicated by referral and consultation with affiliated staff members at The Cridge Brain Injury Program and Victoria Brain Injury Society (VBIS). Participants were considered to be in the third or post-rehabilitative phase of recovery, were at least one year post-injury, living in the community, and were 18 years of age or older (M = 57.7, SD = 12.3; range = 29–80). Participants were informed of the study through information letters posted at the centres and by recommendations from staff members. Neither I nor any of my research assistants were acquainted with participants prior to the study. Ethical approval for the study was obtained from the Human Research Ethics Board (HREB) at the University of Victoria (UVic) and from VBIS. Ethical approval from The Cridge's Brain Injury Program was conditioned upon ethical approval from UVic.

Exclusion Criteria

Participants were excluded from the study if VBIS or Cridge staff members indicated unsuitability for participation. Unsuitability included any pre-existing condition causing physical or cognitive impairment such as developmental delay, previous psychiatric illness (DSM-IV) (Bedard et al., 2003; Hofer et al., 2010; Terry, 2008); other chronically disabling concurrent pathologies such as neurodegenerative illnesses (e.g., multiple sclerosis and chronic infectious diseases; Hofer et al., 2010; Terry, 2008), or the presence of cognitive impairments or linguistic disorders that cause comprehension or communication deficits (Hofer et al., 2010).

Two participants were initially excluded from the study: one on account of severe linguistic deficits, and another due to unsuitability for group participation (i.e., anger and disruptive behaviour), as determined by staff recommendation. Three participants withdrew prior to completing Time 1 (T1) measures as a result of scheduling conflicts. Twenty-one participants completed T1 measures.

Nine participants subsequently discontinued their involvement in the study and were considered to be *dropouts* (Malec, Smigielski, DePompolo, & Thompson, 1993; Tiersky et al., 2005). *Dropouts* were defined as participants who were absent for three or more of the eight treatment group sessions. Thus, participants were required to have a minimum of 62.5% attendance rate (i.e., attend 5 of 8 treatment group meetings) in order to remain in the study and be considered *completers*. Six of the nine participants who dropped out did so due to other conflicting priorities, such as litigation, medical procedures, and family obligations. One dropout was in the process of moving and expressed that she would prefer using her own meditation exercises rather than the group's. One participant dropped out due to transportation difficulties and a stated lack of motivation to attend the group sessions. Lastly, one participant was regarded as a dropout when she had missed five sessions due to family obligations, and was excluded from the data; however, she wanted to continue attending group sessions and was welcomed to do so.

Data comparing the sample characteristics of completers and dropouts are presented in Table 1. There were no significant differences between the 12 completers and the 9 dropouts on any of the continuous demographic variables (e.g., age, age of children, age at time of ABI, years since ABI, and length of coma), the SADI (Question 1, 2, 3, and SADI Total Score), the Brief COPE, the HADS, the SWLS, or the ANSIE. Further analyses comparing the categorical

demographic variables (e.g., sex, ethnicity, relationship status at time of injury, employment status, cause of brain injury) were not possible using Chi-square tests due to small cell sizes (less than 5 data points). Therefore, with some reservation, it appears the two groups were likely homogenous and differed only in terms of study completion status.

Overall, the study sample included 12 participants (9 male, 3 female). All participants in the sample were Canadian citizens. Of these, 5 were of longstanding Canadian heritage and others were of Canadian-European (n = 2), European (n = 3), Caribbean (n = 1), and Asian (n = 1) decent. All participants identified English as their first language, except one participant whose first language was Cantonese, her second language was Japanese, and English was her third language. Cause of brain injury was attributed to assault (n = 2; 16.6%), stroke (n = 3; 25.0%), recreational accidents (n = 3; 25.0%), motor vehicle accidents (n = 2; 16.6%), acute disseminated encephalomyelitis (ADEM; n = 1; 8.3%), and aneurism (n = 1; 8.3%). Mean age at the time of injury was 44.0 years (SD = 18.07, range = 16-63). Four participants (33.3%) experienced a coma, lasting a mean duration of 13.56 days (SD = 21.83, range = 0.5-46), and three participants (25%) had experienced multiple brain injuries. No formal indicators of injury severity were on file or known by participants or staff members. Unfortunately, a clinimetric measure of brain injury severity could be completed by a staff member for three participants only, indicating moderate and severe levels of brain injury (at the time of the study; see Appendix E). One agency was unable to complete this measure due to practical and logistical constraints including that of staff workload. Thus, the present study could not report brain injury severity for 9 of 12 participants. At the time of the injury, four participants (33.3%) were single, four (33.3%) were married, three (25%) were in common-law relationships, and one (8.3%) was widowed. At the time of the study, five participants (41.6%) were single, three (25%) were married, three (25%)

were divorced or separated, and one (8.3%) was widowed. With regards to living situation, at the time of the study, four participants (33.3%) were living independently, two (16.6%) were living with their partners, two (16.6%) were living with family, one (8.3%) was living with a relative, and three (25%) were living independently with support. Prior to the study, five participants (41.6%) had had previous exposure to, or experience with, meditation. Demographic characteristics are presented in Table 1.

Research Design and Experimental Procedures

The present study sought to explore the acceptability and effectiveness of MBCT in adults with ABI. More specifically, this study was conducted to: (a) extend Finucane and Mercer's (2006) study by applying MBCT to another population (i.e., adults with ABI); (b) corroborate the Bedard et al. (2008) investigation reporting the effectiveness of MBCT in reducing depression symptoms in people with TBI; (c) establish if empirical findings of the effectiveness of MBCT on depression (Dimidjian et al., 2010; Ma & Teasdale, 2004; Segal et al., 2002; Teasdale et al., 2000) and anxiety (Evans et al., 2008; Williams et al., 2008) in the general population and in primary care patients with active symptoms of depression and anxiety (Finucane & Mercer, 2006), extended to participants with ABI; and (d) explore the effect of MBCT treatment on measures of locus of control, satisfaction with life, self-awareness, and coping in participants with ABI. Given the increased complexity of attaining objective (quantitative) measurements from this population due to frequent neurological, cognitive, and linguistic impairments, and tendencies towards deficits in self-awareness, the recommendation from Fleming et al. (1996) was adopted, thus, the present study employed a mixed methods design so as to include subjective measurements.

According to Segal et al. (2002), the number of participants comprising a MBCT treatment group depends on the facilities available. The size of rooms available at both the community brain injury sites used in this study was indeed constrained. While Kabat-Zinn works with groups of 30 or larger, as a caution against smaller group classes turning into "therapy" rather than "class" mode, Segal et al. (2002) argued that including cognitive therapy likely necessitates smaller classes and included groups of 12 participants in their research on the effectiveness of MBCT. It was also important to accommodate the special needs of the study sample so as to facilitate both attention and sufficient within-group discussion without the environment becoming over-stimulating for participants. Staff also required treatment groups to be conducted at their respective community sites to ensure (a) staff presence and availability; (b) convenience for participants; and (c) participants' comfort in the setting as a function of familiarity. Finally, the staff at the two community sites advocated smaller group size (maximum of 6 participants per group) to mitigate difficulties in behaviour management implicated in working with an ABI population. Taking all of the above into account, participants were divided into three treatment groups based on which brain injury organization they attended. As such, one MBCT group was conducted at the Mary Cridge Manor, a supportive housing community-based apartment block administered by the Cridge Brain Injury Program (n = 3), and two groups at Victoria Brain Injury Society (VBIS; n = 5, n = 4). Analyses comparing treatment groups on demographic and other measures were not feasible given the small sample sizes. The present investigation thus included a sample size of 12 participants. Based on the medium to large Cohen's d effect sizes (0.77 and 1.5 for anxiety and depression, respectively) reported in the Finucane and Mercer (2006) study using a sample size of 11, a sample of 12 participants was deemed sufficient to power the study.

Quantitative data were collected pre- and post-treatment for LOC, coping, depression and anxiety symptomology, satisfaction with life, and self-awareness. *Qualitative* data were collected first to highlight participants' experience in the MBCT treatment group and the acceptability of the program to adults living with a brain injury; and second to help support, qualify, or explain quantitative findings. Quantitative instruments were administered as pre- (Time 1, T1) and post- (Time 2, T2) treatment measures. The research team was responsible for test administration. The research team included a principle investigator, two fellow graduate student RAs, and on occasion, one volunteer RA. All members of the research team were trained by the principal investigator and thesis supervisor on correct methods of administration with an emphasis on maintaining consistent test administration across participants. The research team participated in two practice test administration sessions to ensure proficiency and inter-administrator consistency. Quantitative measures were administered individually with each participant in a 1 to 1.5 hour meeting. To improve communication and facilitate ease of cognitive processing for participants, pointing charts (Appendix F) were used during the assessments to provide a visual cue for respondents. Participants were invited to complete journal entries over the 10 weeks of the MBCT program, however no participants engaged in this activity. Both group facilitators maintained ongoing field notes to track and account for possible contextual influences, homework completion, reasons for absences, other anecdotal notes, as well as practical observations and implications for counselling. One week following the completion of the 8-session (one session per week) MBCT program, qualitative data were collected from participants in a single-session video-recorded focus group format. As a group, participants were asked to discuss their experience and thoughts on their participation in the MBCT program. Focus group qualitative data were transcribed verbatim and subjected to thematic analysis.

Treatment: Mindfulness Based Cognitive Therapy

The manualized 8-week MBCT group focuses on instructing participants how to be mindful. Mindfulness is the simple practice of paying attention to what is happening in the present moment –in the mind, body, and surroundings –in a nonjudgmental, curious way. MBCT helps individuals identify common ways people try to escape difficult thoughts, feelings, and sensations, such as turning to substances, drugs, food, and other behaviours. Thus, MBCT teaches acceptance, nonjudgment, and coping strategies to deal with difficulties more effectively. As discussed and described in detail in Chapter 1, MBCT has been shown to decrease depression and symptom relapse (Dimidjian et al., 2010; Finucane & Mercer, 2006; Segal et al., 2002; Teasdale et al., 2000), particularly in individuals with a history of several depressive episodes (Ma & Teasdale, 2004; Teasdale et al., 2000), and in individuals with TBI (Bedard et al., 2008). Studies have supported the effectiveness of MBCT as a treatment for anxiety (Evans et al., 2008; Finucane & Mercer, 2006; Williams et al., 2008), and as a promoter of internalized LOC (Ivanovski & Malhi, 2007; Matchim & Armer, 2007; Tacon et al., 2004).

MBCT treatment for the present study comprised 8 weekly meetings lasting approximately 2 hours each. The study protocol however ran across 10 weeks to allow for pre- and post treatment data collection in Weeks 1 and 10. Qualitative data (as described earlier) were collected in Week 10 using a focus group format where participants discussed their experience of the MBCT treatment program. The 8 weekly MBCT group sessions were conducted across Weeks 2 to 8 following the manualized MBCT program including guided relaxation and mindfulness meditations (often through instructional CDs), group discussions, psychoeducation, and homework assignments (30-minute daily mindfulness practice using instructional CDs).

Modifications to the MBCT Program

Some slight modifications were made to the MBCT program. For instance, the mindful walking and yoga exercises were not included due to spatial restrictions and mobility limitations among the study sample. Mindful stretching was included, though participants were strongly encouraged to modify the routine in accordance with their own physical limitations such as paralysis or difficulties balancing (and therefore becoming mindful, accepting, and respectful of their own limitations while practicing safety). Finucane and Mercer's (2006) modifications to the body scan (reducing it from 40 to 30 minutes) and the guided sitting meditation (reducing it from 40 to 25 minutes) were also applied in the present study. Lastly, while the facilitators adhered to the MBCT curriculum in a consistent manner, it was necessary to remain flexible to the group needs. For example, the first group was not as receptive to receiving psychoeducation as were the subsequent two groups; therefore, this group received a slightly briefer concentration of psychoeducational materials (e.g., a more succinct overview of the depression and anxiety self-diagnosis materials).

Facilitation of the MBCT Program

Each treatment group was facilitated according to the MBCT manual provided by Segal et al. (2002), with the exception of the aforementioned modifications. The principal investigator facilitated the MBCT treatment programs in the first two study groups. As a part of practicum training in a Master's degree in Counselling Psychology, the principal investigator received prior experience facilitating an 8-week MBCT group for adults at Citizens' Counselling Centre. In accordance with Segal et al.'s (2002) recommendations, the principal investigator also maintains a strong personal mindfulness practice, as do the RAs. The third study group was facilitated by two Counselling Psychology graduate student peers and RAs, Ali Dohadwala (facilitator) and

Laura Forseth (co-facilitator). The principal investigator was responsible for training the RAs in facilitating MBCT groups for adults with ABI. Both RAs accompanied the principal investigator to sessions for the first two groups where they observed the method of implementation, studied the curriculum, and debriefed following each session. The RAs were therefore each part of one complete MBCT treatment program administered to adults with ABI prior to facilitating Group 3. The training included research meetings where the RAs were provided with a general overview of: (a) the MBCT program, and (b) appropriate modifications required in working with an ABI population, as previously described. To ensure treatment fidelity, the RA-facilitator was provided with the principal investigator's copy of the weekly curriculum outlines, complete with the program modifications. There was also regular correspondence between group facilitators including field notes regarding participant attendance, overall group impressions, and any other pertinent observations. Additionally, the research team met frequently to discuss the progress of the third group.

Measures

Demographic and Background Information

The demographic questionnaire developed for this study included traditional demographic (e.g., age, relationship status) and brain injury-specific (e.g., medications, date of ABI, cause of ABI) items. The *Demographic and Background Information* questionnaire was mostly comprised of fill-in-the-blank and check-box items, and was completed by the Research Team in one-on-one interviews with participants. (See Appendix G).

Time 1 and Time 2 Measures

The following five self-report measures were administered -- in order of presentation -- by a member of the Research Team in one-on-one interviews with participants at T1 and T2: (a) Self-Awareness of Deficits Interview (SADI); (b) Brief COPE; (c) Hospital Anxiety and Depression Scale (HADS); (d) Satisfaction With Life Scale (SWLS); and (e) Adult Nowicki-Strickland Internal-External control scale (ANSIE). Measures were administered in the same order by all interviewers to maintain consistency and accommodate possible cognitive fatigability associated with ABI. More specifically, the precise order of test administration was determined by the level of cognitive complexity involved in responding to each measure. Thus, because the SADI requires participants to articulate detailed responses for each of the three questions, the SADI was administered first. In contrast, because the ANSIE simply requires yes/no responses, it was administered last. Fidelity to test administration order was ensured since each interview package was assembled in advance, and each interviewer was provided with a list of the correct test order.

At T2, when participants had completed the five self-report measures with the interviewers, they were given a refreshment break before commencing the focus group. Qualitative data to assess the acceptability and effectiveness of MBCT for adults living with the effects of ABI were collected in the form of participants' responses and "stories" elicited from simple, open-ended scripted prompts [e.g., "In general, what did you think of the overall approach?" (Finucane & Mercer, 2006)].

Self-Awareness of Deficits Interview (SADI). The SADI is an interviewer-scored structured interview intended to obtain both qualitative and quantitative data on the respondent's level of self-awareness following brain injury (Fleming et al., 1996). It was developed based on

Fleming and Strong's (1995) model of self-awareness following ABI, and therefore addresses three areas of awareness: (1) self-awareness of deficits; (2) self-awareness of the functional implications of such deficits; and (3) the ability to set realistic goals (Fleming et al., 1996).

Interview questions were partially based on previously existing structured interviews for individuals with ABI (see Levine, Vanhorn, & Curtis, 1993, as cited in Fleming et al., 1996). Interviews include a variety of prompts and questions that can be adapted or reworded by the interviewer within the context of the interview (Fleming et al., 1996). The respondent's replies are transcribed verbatim by the interviewer during the interview, or can be recorded on audiotape for later transcription and analysis. The three indices of the SADI are rated on a 4-point scale from 0 (accurate/realistic appraisal) to 3 (very inaccurate/unrealistic appraisal), which yields a total possible score of 9, where higher scores indicate lower levels of intellectual awareness (Ownsworth, McFarland, & McD. Young, 2002).

The rating scale was designed to account for various considerations. For instance, respondents with ABI may demonstrate 'borderline' awareness where they acknowledge certain deficits (such as physical limitations) and overlook others (such as cognitive and personality changes), or they may describe limitations that others have noticed, but may not themselves be convinced such deficits exist. Additionally, a full appreciation of the functional implications of deficits may be limited by a lack of opportunity to try various activities in the acute post-injury phase (Fleming et al., 1996). Lastly, the rating scale considers modifications of pre-injury goals (to accommodate for novel impairments) to be indicative of greater self-awareness. In scoring the respondent's SADI, it is advised that the interviewer have some background knowledge on the respondent's current functional status regarding mobility, cognitive functioning, living

situation, and prognosis. Therefore, consultation with closely affiliated relatives and staff is recommended (Fleming et al., 1996).

The SADI was included in the present study because the interview is easy to administer, was developed specifically for the population of interest –and has been tested accordingly– and has sound reliability and validity (Ownsworth et al., 2000). For instance, Fleming et al. (1996) provided interrater reliability data for five independent raters of a sample of 25 TBI patients; interrater reliability was 0.78, 0.57, and 0.78 for the three subscales respectively, and an overall interrater reliability score of 0.82. While such results indicate acceptable reliability, the raters were restricted to transcribed interview observations, and it has been argued that direct interview observations result in higher reliability estimates (Bogod, Mateer, & Macdonald, 2003; Fleming et al., 1996). In a subsequent study, Fleming et al. (1998) reported slightly increased interrater reliability (0.85) ($N = 53$) for the overall SADI scores among two direct observers, which is consistent with this premise.

With regards to validity, Ownsworth et al. (2000) correlated indices of the Self-Regulation Skills Interview (SRSI) with the SADI as well as other neuropsychological measures. A three-factor solution for the SRSI and SADI revealed correlations of 0.61 (awareness), 0.28 (readiness to change), and 0.24 (strategy behaviour) (Ownsworth et al., 2000), which indicates good concurrent validity. In a following study, Ownsworth et al. (2002) again investigated the relationship between the SRSI, the SADI, and various other neuropsychological variables and found that the SADI was significantly associated with the SRSI indices of awareness (0.69), readiness to change (0.42), and strategy behaviour (0.35), as well as the Iowa Collateral Head Injury Interview (ICHII; 0.31) and the health and safety subset of the Independent Living Scales

(ILS; 0.51). Such findings provide good preliminary concurrent validity for the SADI. (See Appendix H).

Administration and scoring of the SADI in the present study. The SADI was administered by the principal investigator and RAs. All interviewers had received prior training and completed practice sessions on administering the SADI under the guidance of the thesis supervisor, Dr. Tasker. As per Fleming et al.'s (1996) recommendation, the interviewers consulted with staff members at each organization to gather background knowledge about each participant to ensure greater sensitivity and therefore accuracy, in assigning SADI scores to participants. The SADI interview sessions were audio-recorded for later use in assessing inter-rater reliability. During the interview, most prompts in each category were provided (e.g., *Does your head injury have any effect on your everyday life? In what way? Ability to live independently? Driving?*), unless the participant had already addressed such considerations. Occasionally, questions were reworded and adapted by the interviewer to facilitate comprehension. Participants' responses were briefly noted on the questionnaire to aid and support later recall of responses when each interviewer completed his or her scoring. Interviewers assigned scores for each of the 3 SADI items directly after completing the T1 and T2 interview batteries with each participant. This approach reflects the suggestion by Bogod et al. (2003) and Fleming et al. (1996) that direct interview observations result in higher reliability estimates.

Staff members at The Cridge and VBIS were asked to provide independent SADI scores for each participant given their extensive familiarity with each participant; however, staff scores were only provided for three participants due to staff workload and practical limitations within one organization.

The Brief COPE. The Brief COPE (Carver, 1997) measures the coping styles of individuals in response to stress and consists of 28 items grouped as 14 scales of 2 items each: self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioural disengagement, venting, positive reframing, planning, humour, acceptance, religion, and self-blame (Carver, 1997, 2007). Scale items were largely included in this measure as a result of high loadings on the relevant factor in the original factor analyses, and because of their overall comprehensibility and ease of communication among nonstudent populations (Carver, 1997). Such considerations make this a highly appropriate instrument for use among individuals with ABI who may experience limited or compromised cognitive capacities and variable educational experience. The scale is completed by rating each item from 1 (not doing it at all) to 4 (doing it a lot). The scale does not yield an "overall" coping score, but rather provides a general picture of various coping strategies which can be compared in relation to one another (Carver, 1997, 2007). To assess participants' dominant means of coping at T1 and T2, the ratings from the 2 items in each scale were summed to arrive at 14 scores, one for each of the 14 scales.

The Brief COPE has good internal consistency and adequate test-retest reliability (Carver, 1997). Based on a sample of community hurricane survivors, the Brief COPE was shown to have acceptable internal structure, as assessed through reliability analyses yielding scores of 0.50 or higher, which is thought to be minimally acceptable (Carver, 1997). Indeed, all scores exceeded 0.60 except for Venting, Denial, and Acceptance, which provides support for the internal reliability of the abbreviated COPE (Carver, 1997). Given that most of the items on the Brief Cope have been adopted from the original COPE, reliability and validity information about the longer version is also relevant (Meyer, 2001). It has been reported that the COPE

scales exhibit strong convergent and discriminant validity, as they correlate in expectable but nonredundant patterns with theoretically related scales, including self-esteem, hardiness, Type A, trait anxiety, and optimism (Meyer, 2001). In addition, the COPE scales are not strongly correlated with social desirability, which further supports their validity (Meyer, 2001).

The Brief COPE was selected because of its brevity and relevance to testing the effectiveness of MBCT as an intervention, and because it has been used in studies involving the population of interest (Wood & Rutterford, 2006). In addition, the Brief COPE was thought to be appropriate for the present study because it addresses concurrent difficulties common in ABI, such as substance dependence (Rosenthal et al., 1998). It also addresses other aspects of coping and adjustment which are especially pertinent to ABI, such as acceptance (Fraas & Calvert, 2009; Hofer et al., 2010; Lubusko et al. 1994; Nochi, 2000; Rosenthal et al., 1998), denial (Malia et al., 1995; Weinstein et al., 2009), and positive reframing (Hofer et al., 2010; Moore & Stambrook, 1992). Therefore, it was believed this tool would provide a comprehensive depiction of the coping strategies relevant to the study sample. (See Appendix I).

The Hospital Anxiety and Depression Scale (HADS). The HADS was designed as a self-assessment tool for use in non-psychiatric outpatient treatment facilities (Zigmond & Snaith, 1983). It contains two subscales, anxiety and depression, with seven items on each. The seven items comprising the depression subscale were largely based on assessing anhedonia, since it was argued that this psychopathological feature of depression is one which responds well to antidepressant treatment, therefore providing the most useful information to clinicians (e.g., *I still enjoy the things I used to enjoy*; Zigmond & Snaith, 1983). The 7 items comprising the anxiety subscale were based on research regarding the psychic manifestations of anxious symptoms (e.g., *I get a sort of frightened feeling as if something awful is about to happen*;

Zigmond & Snaith, 1983). Items are rated on a 4-point Likert scale from 0 (meaning the depressive/anxious items are not applicable to the respondent) to 4 (meaning the respondent greatly experiences the symptoms outlined), and then summed. For both depression and anxiety subscales, scores of 7 or less are considered non-cases, scores of 8 to 10 are doubtful cases, and scores of 11 or higher are definite cases (Zigmond & Snaith, 1983). The HADS is a well-established instrument for assessing clinically significant anxiety and depression (Zigmond & Snaith, 1983). It provides an efficient and useful means of measuring severity and has good reported validity and reliability (Zigmond & Snaith, 1983). For example, in an assessment of factor structure, discriminant validity, and internal consistency of the HADS, Bjelland, Dahl, Haug, and Neckelmann (2002) found that most factor analyses demonstrated a two factor solution in good accordance with the HADS subscales for Anxiety (HADS-A) and Depression (HADS-D). Correlations between the two subscales varied from 0.40 to 0.74 (M = 0.56); Cronbach's alpha for HADS-A varied from 0.68 to 0.93 (M = 0.83) and for HADS-D from 0.67 to 0.90 (M = 0.82; Bjelland et al., 2002). In most studies, an optimal balance between sensitivity and specificity was achieved when caseness was defined by a score of 8 or above on both subscales (Bjelland et al., 2002). Additionally, correlations between the HADS and other commonly used questionnaires were in the range 0.49 to 0.83 (Bjelland et al., 2002). In all, the HADS was found to perform well in the assessment of symptom severity and caseness of anxiety and depression in somatic, psychiatric, and primary care patients, as well as the general population (Bjelland et al., 2002). With regards to reliability, Zigmond and Snaith (1983) found that the depression subscales yielded 1% false positives and 1% false negatives, and the anxiety subscales generated 5% false positives and 1% false negatives. Spearman correlations of the subscale scores and psychiatric ratings indicated that the subscales are sufficient measures of

symptom severity (for depression, $r = 0.70$, $p < 0.001$; for anxiety, $r = 0.74$, $p < 0.001$; Zigmond & Snaith, 1983).

The HADS was chosen for the present study because (a) it is a brief multi-item questionnaire offering a detailed examination of depressive and anxious symptomology; (b) overall, it seemed to have good face validity and was both more concise and thorough than alternative measures examined; and (c) the HADS has been used among individuals with ABI in studies implementing mindfulness (Bedard et al., 2008; McMillan, Robertson, Brock, & Chorlton, 2002). (See Appendix J).

The Satisfaction with Life Scale (SWLS). The SWLS (Diener, Emmons, Larsen, & Griffin, 1985) is a well-validated measure of subjective satisfaction with life that allows participants to weigh areas of their life in terms of their personal values (Hicken, Putzke, Novack, Sherer, & Richards, 2002). Satisfaction with life is defined as an overall assessment of feelings and attitudes about one's life at a particular point in time ranging from negative to positive (Diener, 1984) and includes desire to change one's life, and satisfaction with the past and future (Diener, Suh, Lucas, & Smith, 1999). The SWLS consists of 5 statements measured on a 7-point Likert scale (0-7) (completely agree to completely disagree) (Hicken et al., 2002). The total life satisfaction score is obtained by summing the 5 items (range: 5-35) (Hicken et al., 2002). High scores are indicative of extreme life satisfaction, while low scores reflect extremely poor satisfaction with life. The SWLS has been established as a valid and reliable measure of life satisfaction (Hicken et al., 2002; Pavot, Diener, Colvin, & Sandvik, 1991). Hicken et al. (2002) reported that Cronbach's alpha (0.80 to 0.89) and test-retest reliability (0.54 to 0.83) have been in the acceptable range. Pavot and colleagues (1991) state:

> The high convergence of self- and peer-reported measures of subjective well-being and life satisfaction provide strong evidence that subjective well-being is a relatively global and stable phenomenon, not simply a momentary judgment based on fleeting influences. (1991, p. 149)

Furthermore, factor analyses carried out by Pavot et al. (1991) demonstrated a unitary factor structure for the SWLS -- a feature arguably not available with other life satisfaction measures. Though the items are broadly stated in terms of the respondent's entire life, they reveal high intercorrelation, which is desirable for an instrument designed to assess one's life (Pavot et al., 1991). The SWLS offers several other advantages. Pavot et al. (1991) contend that "it is brief, yet it offers as high or higher predictive validity than several longer measures of life satisfaction" (p. 159).

The SWLS was included in the present study because the researchers hoped to measure an increase in life satisfaction among participants following the MBCT treatment. It is a clear and concise measure that seemed appropriate for such purposes due to its brevity, content, and applicability to a wide range of age groups. In particular, the SWLS addresses acceptance (item 5; i.e. *If I could live my life over, I would change almost nothing*), which is a central component of the MBCT treatment intervention. Finally, the SWLS has also been used among the ABI population (Hicken et al., 2002; Wood & Rutterford, 2006). (See Appendix K).

Adult Nowicki-Strickland Internal-External Control Scale (ANSIE). The ANSIE (Nowicki & Strickland, 1973) was designed to assess the construct of locus of control (LOC), defined by whether an individual perceives both positive and negative event outcomes as contingent upon his behaviour (internal) or the result of others, luck or fate (external) (Finch, Kendall, Spirito, & Mikulka, 1981). The ANSIE is an adapted version of Nowicki and

Strickland's (1973) Locus of Control Scale for Children (CNS-IE; Dixon et al., 1976; Nowicki, S., personal communication, Nov. 25, 2010) and consists of 40 questions answered as either 'yes' or 'no.' The scale is scored in the external direction with possible scores ranging from 0 to 40 (Dixon et al., 1976). There are no filler questions and items are worded in both the internal and external direction (Dixon et al., 1976). With few exceptions, questions are addressed directly to the participant. Dixon et al. (1976) argued that these aspects of the scale construction appear to introduce less bias toward a particular I-E direction and less variability.

The ANSIE has adequate internal consistency. For instance, Nowicki and Duke (1974) reported split-half reliabilities in the 0.60s for college (N = 156) and community samples (N = 33) (as cited in the ANSIE Manual; Nowicki, S., personal communication, Nov. 25, 2010). They also reported test-retest reliability for college students over a six week period to be 0.83 (N = 48) (ANSIE Manual; Nowicki, S., personal communication, Nov. 25, 2010). Mink (1976) further reported a test-retest reliability over one year of r = 0.56 (N = 854) for community college students (as cited in the ANSIE Manual; Nowicki, S., personal communication, Nov. 25, 2010). With regards to discriminative validity, Nowicki and Duke investigated the relation of ANSIE scores to social desirability and found that among two samples of college students, ANSIE scores were not related to scores from a social desirability measure. The ANSIE has also been shown to have sufficient construct validity. For instance, significant correlations have been found between the ANSIE and various other measures, such as the Rotter scale, as measured in two college and community adult samples.

In a study investigating the dimensionality of the ANSIE, Finch et al. (1981) found that the ANSIE is a multidimensional instrument measuring five predominant aspects of LOC: Factor I items reflect the inability to protect oneself; Factor II items reflect a lack of social power, or

social impotence; Factor III items pertain to *superstition* or belief in *luck*; Factor IV items assess passivity, or a "why bother" attitude; and Factor V relates to the tendency to view effort as useless and the experience of unfair contingencies.

The ANSIE was thought to be exceedingly appropriate for use among individuals with ABI, given its clarity and reported reading difficulty level of no higher than fifth grade (Dixon et al., 1976). Furthermore, it has *not* been shown to correlate with intelligence or social desirability (Rohsenow & O'Leary, 1978), thus offering additional relevance to the population of interest. For the purposes of the present study, the scale was slightly modified to include only 21 items; these 21 items correspond with those on the abbreviated version of the CNS-IE for grades 7-12, as reported in Nowicki and Strickland (1973). This was done in order to accommodate the needs of individuals with ABI, such as difficulties associated with potential cognitive limitations and the tendency to tire easily among this population (Prigatano, 1999). (See Appendix L).

Focus Group: Assessing Acceptability and Effectiveness of MBCT. The focus group was conducted in the last group meeting in Week 10 following the administration of T2 measures, and was video-recorded for subsequent transcription and thematic analysis. Participants discussed their experience of the MBCT program and whether it was helpful. The focus groups were conducted with a total of 11 participants, due to the absence of one participant. As prompts, questions from the Finucane and Mercer (2006) study were used, for example, "In general, what did you think of the overall approach?" and "Has anything changed for you since you completed the course?" The principal investigator was careful to specifically address each participant during the focus group by asking if they had something to share after each question. Focus groups were audio recorded using Zoom H2 Ultra-Portable Digital Audio Recorders and captured audiovisually using Flip UltraHD Video Cameras and tripods. The video

camera was placed so that all focus group participants were visible on the screen, with the exception of one participant who preferred not to be videotaped.

Focus groups were transcribed verbatim from the audiorecording and then checked against the audiovisual recording. Following informed consent agreement, all transcripts were read again to remove participants' names to protect their confidentiality.

Reliability of SADI Scoring and Focus Group Transcribing

Reliability of SADI Scoring. Inter-rater reliability for the SADI scoring was assessed during research team meetings where the team met to complete secondary SADI scores. For example, the interviewer who completed the original T1 SADI interview with the participant provided the other two research team members with the participant's background information gathered from their direct interviewing experience with the participant, and through consultation with staff prior to completing the original T1 SADI interview. Following this, the research team listened to the audio-recording of the SADI interview. The two research team members who had not interviewed the participant then independently scored the three SADI questions.

Intraclass correlation coefficients (ICC) were calculated to determine SADI interrater scores. The ICC for SADI T1 total score was 0.51, and the ICC for SADI T2 total score was 0.65. Collapsed across Time 1 and Time 2 SADI total scores, interrater reliability was 0.58. Behavioural and clinical literatures consider interrater reliabilities between 0.40 and 0.74 to be *adequate* (Rehabilitation Institute of Chicago, 2010).

Reliability of Focus Group Transcribing. The principal investigator Anna Marson was responsible for transcribing the first two focus groups, and the RA Laura Forseth transcribed the third focus group. Each focus group was transcribed verbatim from the audio recording. To ensure transcribing reliability, the RA and principal investigator re-read and visually tracked the

transcript while watching (and listening to) the audiovisual recording of the respective focus group. This enabled the researchers to confirm the primary transcribers' accuracy in both the transcription of content and attribution of statements to participants.

Data Analyses

Quantitative Analyses

All data were thoroughly checked to ensure accuracy. Demographic data were subjected to descriptive data analyses. Simple mean and standard deviation scores for the study sample are provided in Table 1.

To test hypotheses 1 to 4, paired *t*-tests were applied to T1 and T2 anxiety and depression (HADS); locus of control (ANSIE); satisfaction with life (SWLS) and coping (Brief COPE); and self-awareness (SADI) scores to assess for measurable within-group change as a function of MBCT treatment. In the case of the Brief Cope, paired *t*-tests were applied to the computed scores for each of the 14 Brief COPE scales to assess for measurable change in coping in response to completing the MBCT treatment. All *t*-test analyses were one-tailed and evaluated at $p \leq 0.05$. All analyses were conducted using MYSTAT software.

Cohen's *d* was implemented as a way to assess the magnitude or clinical meaning of the differences between T1 and T2 means in terms of effect sizes (*ES*). Cohen's *d* is defined as the difference between two means divided by the common or pooled standard deviation for the data, and is independent of sample size (Becker, 2000). In the case of paired t-tests, Becker advises using the original standard deviations of T1 and T2 means to compute *d* rather than the paired *t*-test value (Cohen's $d = M_{pre} - M_{post} / SD_{pre}$; Rosenthal & Rosnow, 1991, as cited in Becker, 2000). Effect sizes are considered *small* where $d = 0.2$, *medium* where $d = 0.5$, and *large* where $d = 0.8$ (Cohen, 1988, p. 25, as cited in Becker, 2000).

Qualitative Analyses

Qualitative analyses were completed to address the question of acceptability of MBCT in adults with ABI and to help support, qualify, or explain quantitative indicators of effectiveness. As such, transcribed focus group data were read and coded largely for what participants said about their experience of MBCT and if and how they experienced it as helpful in terms of their daily experience of living with an ABI. A process of systematic categorization, thematic analysis, and credibility checking of the narrative data was employed using the combined guidelines of Braun and Clarke (2006), Burnard (1991), and Krefting (1990). The study's two overarching dependent variables, *Acceptability* and *Effectiveness* were considered as the two pre-established themes with which to read, categorize, and interpret the data. An inductive approach to thematic analysis of the data within the Acceptability theme was used to identify subthemes. In contrast, subthemes within the Effectiveness theme were identified through both theoretical and inductive approaches. A theoretical framework (using depression, anxiety, LOC, and coping as subtheme categories) was first used to read, categorize, and interpret data within the Effectiveness theme. Data within the Effectiveness theme not fitting the theoretical framework were then subjected to inductive thematic analysis.

While there is no current standard for the number of participants who must endorse a particular theme for it to be considered a trustworthy theme, Braun and Clarke (2006) implied that a theme be adopted and included if at least 60 percent of participants endorse a particular theme. Braun and Clarke suggested that a 50 percent endorsement rate would mean that while half of the individuals would include a particular theme in their story, half would not endorse that theme, which ostensibly brings into question whether or not the theme informs us about the

research question or another factor altogether. Hence, 60 percent is implied by Braun and Clarke as a robust albeit arbitrary cut-off for what constitutes a trustworthy theme in thematic analysis. That said, because 6 and 7 out of 11 participant-endorsements reflect, respectively, a 55% and 64% cut-off on either side of Braun and Clarke's 60% suggested cut-off, a 6 out of 11 (55%) endorsement rate was employed as the cut-off criterion for "themeness."

To help control for drift and to increase coding reliability or *dependability* (Krefting, 1990) and later, thematic representativeness, the principal investigator and thesis supervisor consulted to jointly categorize, discuss, and group randomly selected narrative scripts throughout the data analytic phase of the study. The process of *how* and *what* to include as themes was further discussed. At this point, a number of participants were asked to read and comment on the appropriateness of the themes derived. For instance, all the themes were summarized into concise sentences and participants were asked to verify whether the statements were true and accurate for them, which enabled simple *'yes'* or *'no'* responses. This process of *member checking* (Krefting, 1990) or using respondents to check on *validity* (Burnard, 1991) increases and assesses the external validity or *transferability* (Krefting, 1990) of qualitative findings.

Seven (63.6%) of the 11 focus group participants contributed their opinions to the deductive and inductive thematic verification process. All seven agreed with the first five statements that (a) MBCT helped them feel less depressed; (b) MBCT helped them cope with anxiety; (c) they learned from MBCT that they can do something to change the way they are thinking or feeling about a situation; (d) MBCT helped them to accept thoughts, feelings, sensations, and daily hassles the way they are; and (e) MBCT helped them handle problems and frustrations better in their lives. Two participants did not agree that (f) participating in MBCT has improved their daily lives; however, all seven participants agreed that (g) MBCT helped

them pay more attention to things and to be more aware; (h) the way the MBCT group was run was fine; (i) it was helpful for them to be part of a group in the MBCT program; and (j) they were thankful for their experience with MBCT. Overall, there were mixed sentiments with regards to the proposed modifications to the program. For instance, three participants did not agree with the suggestion to (k) make the program longer than eight weeks. Four participants did not agree that (l) MBCT should use shorter meditations (i.e. less than 30 minutes in duration); and six participants disagreed that (m) the program should reduce the amount of homework assigned. All seven participants agreed that (n) one of the most helpful aspects of the program was the focus on breathing; and (o) that they found the program to be very relaxing or calming. Three participants did not agree that (p) MBCT helped them accept the fact that they have a brain injury. To this end, some stated that they had already achieved some measure of acceptance over their injuries prior to commencing the program. They further suggested that, while MBCT did not help them accept their injuries per se, it helped foster greater acceptance of more general daily life challenges. Findings from the thematic analyses are independently reported and linked with the study's research hypotheses in Chapter 3.

Chapter 3

RESULTS

Relations among Demographic Variables and Study Variables: Within-Subject Analyses

Pearson correlations were conducted to determine whether there were any significant relations among any of the demographic and dependent (outcome) variables within the full sample ($N = 12$). Five significant relationships were found and are reported below.

Significant correlations were found between age and measures of denial (Brief COPE subscale 3; $r(11) = -0.57$, $p = 0.05$), substance use (Brief COPE subscale 4; $r(11) = -0.72$, $p = 0.01$), and behavioural disengagement (Brief COPE 7; $r(11) = -0.81$, $p = 0.002$). Thus, the older participants were, the less likely they were to use denial, substances, or behavioural disengagement as coping mechanisms. A statistically significant relationship was also found between age at the time of brain injury and humour (Brief COPE subscale 11; $r(11) = 0.59$, $p = 0.043$), meaning that the older participants were at the time of their injury, the more likely they were to adopt humour as a way of coping. Finally, number of years since injury was significantly correlated with self-awareness of functional implications of deficits (SADI item 2; $r(11) = 0.62$, $p = 0.03$).

Hypothesis Testing

To test hypotheses 1 to 4, one-tailed paired *t*-test analyses were conducted. No cases had missing data. Effect sizes (ES) were calculated using Cohen's *d*. Results are presented below in line with Creswell and Taskakkori's (2007) entreaty for mixed-methods research design to incorporate and integrate quantitative and qualitative "strands." Hypothesis testing results are presented in Tables 3-6.

QUESTION 1: ***Will participants describe and show measurable decreases in depression and anxiety symptomology as assessed from focus group data and the HADS following MBCT treatment?***

Hypothesis 1. *While the ABI population typically demonstrates multiple concurrent psychological concerns, most prevalent are depression (Bedard et al., 2003; Rosenthal et al., 1998) and anxiety (Bechtold Kortte et al., 2003; Mazaux et al., 1997; Moore, Terryberry-Spohr, & Hope, 2006; Soo & Tate, 2009; Tacon et al., 2004). Given the empirical support for MBCT in treating anxiety (Evans et al., 2008; Williams et al., 2008), depression, and preventing symptom relapse (Dimidjian, Kleiber, & Segal, 2010; Segal et al., 2002; Teasdale et al., 2000), particularly in individuals with three or more recurrent depressive episodes (Ma & Teasdale, 2004), in the general population, and in TBI samples (Bedard et al., 2008), participants will describe and show a measurable alleviation of depression and anxiety symptoms as assessed by focus group data and the HADS following MBCT treatment.*

Hypothesis 1 was partially supported. A significant difference was found between T1 and T2 scores on the HADS depression subscale ($t(11) = 2.38$, $p = 0.02$) with a close-to-medium effect size of 0.45. Thus, the quantitative findings suggest that MBCT was effective in significantly decreasing depressive symptomology. Some support (< 50%) for this finding was found within the focus group qualitative data, for example:

> The whole thing to me has been helpful because I have been struggling with depression…and other stuff, and that if I just keep remembering…all that is happening to me now does not mean that it is going to be (the) same way tomorrow or next week, so just by being able to be in this moment and being able to identify what's bothering me or what is the problem…it makes it easier to get over it…and also, sort of chase away the negative thoughts that I keep in my head. So I find this whole thing very helpful for that. (Participant 1)

As a group, the decrease on the HADS measure of anxiety approached significance ($t(11) = 1.65$, $p = 0.06$) with a small effect size ($d = 0.29$). Qualitative data suggested treatment was indeed helpful for managing anxiety (with 3 endorsements; 27.3%), as conveyed by the following quote:

> It lessens my anxiety issues. I mentioned many times I think…before I drive, I take my three minute break to just compile my thoughts so to speak. I was hoping that there would almost be a miraculous improvement in my memory, but I really didn't find it, but the anxiety level and relaxing, well yeah, I found it real beneficial. (Participant 6)

See Table 3.

QUESTION 2: ***Will participants acquire measureable increases in internal LOC as measured by the ANSIE?***

Hypothesis 2. *A sense of disempowerment often accompanies emotional adjustment difficulties such as depression (Lubusko et al., 1994; Maier & Seligman, 1976; Moore & Stambrook, 1995). It has been found that when events are uncontrollable, organisms tend to learn that their behaviour and outcomes are independent, thus leading to high external LOC, motivational deficits, and emotional disturbances -- most commonly in the form of depression and emotional withdrawal (Maier & Seligman, 1976; Moore & Stambrook, 1995). Also, LOC was associated with different quality of life (Moore & Stanbrook, 1992, 1995) and post-injury employment (Lubosko et al., 1994) outcomes in adults with TBI. Evidence suggests that mindfulness-based practice contributes to an increased internal LOC (Ivanovski & Malhi, 2007; Matchim & Armer, 2007; Tacon et al., 2004). Upon completion of the MBCT program, participants as a group will show a measureable increase in internalized LOC (operationally defined as a reduction in externalized LOC) as assessed by focus group data and the ANSIE.*

Despite an overall decrease in external LOC (*M* T1 total score = 5.67; *SD* = 2.84; *M* T2 total score = 5.25; *SD* = 2.49) reflecting a measurable but very small (*d* = 0.15) increase in internal LOC over the course of the group, this difference was not statistically significant. Thus, hypothesis 2 was not supported by quantitative data. Nonetheless, qualitative data provided by one participant in particular captures the idea of increased internal LOC:

> I think everyone should be aware of the power that you actually have over your mood and basically how you view certain situations in your life, because it is a very useful tool to have… Of course there are always going to be things that are not so easy to get on top of. I can't say I am able to conquer all my moods and troubles and thoughts, unwelcome thoughts, but with practice it will happen. The main thing is I believe now that I can do it, that's a winner already…Instead of just looking outside at the world out of your head, I can look the other way, and it's incredible; like you know, looking inside of yourself before you do something or say something or react to anything, that is really incredible. I found that amazing actually. (Participant 1)

See Table 4.

QUESTION 3: ***Will the 8-week MBCT group promote greater acceptance, positive reappraisal, self-regulation, or other ways of coping and life satisfaction, as described by focus group data and measured by the Brief COPE and the SWLS?***

Hypothesis 3. *Mindfulness has been associated with acceptance (Ostafin & Marlatt, 2008; Shapiro et al., 2006), positive reappraisal (Garland et al., 2009), and improved self-regulation (Baer et al., 2005; Brown & Ryan, 2003; Shapiro et al., 2006; Tacon et al., 2003). Given these relations, it seems reasonable to think that mindfulness may be associated with improved ways of coping and an overall increase in satisfaction with life. Thus, following MBCT treatment, study participants will report measurable improvements in (a) acceptance, positive reframing, and self-regulation; (b) other ways of coping; and (c) satisfaction with life, as assessed from focus group data and the Brief COPE and SWLS respectively.*

Hypothesis 3 was partially supported from the statistical analyses. While there was no measurable change whatsoever in acceptance (Brief COPE subscale 12; $t(11) = 0.0$, $p = 0.5$; $d = 0$), two (18.2%) participants explicitly reflected on the emergence of acceptance as a coping strategy. For instance:

> [L]earning just letting things be. There is nothing I can do to change. I think we talked about that. If I can't do anything about it then just leave it alone…Then I don't get all tense; I don't think that I have to find a solution. (Participant 4)

The analyses did, however, reveal a statistically significant increase ($t(11) = -2.35$, $p = 0.02$) and small effect size ($d = -0.21$) for positive reframing (Brief COPE subscale 9). In the present study, *self-regulation* was operationalized in terms of the Brief COPE's *active coping* subscale (subscale 2)[2] and qualitative accounts that reflected participants' awareness of thoughts, emotions, or sensations; the acknowledgement that some coping action was needed; the expression of a coping attempt; or improved coping generally. As a group, active coping increased moderately ($d = -0.55$) from T1 to T2 and this increase was statistically significant ($t(11) = -1.88$, $p = 0.04$). Qualitatively, evidence for noticeable improvement in self-regulation was identified in the statements of six of eleven (54.5%) participants; an example of which is:

> I practice…I identify my feelings before I agree to certain suggestions and that is a great benefit to me of this class…because I would just say something or react to something if I was angry, or angry enough things would just come out of my mouth but now, because… I had a chance to actually apply what I had learned to my life, and I was able to not to blow up or get myself to the point where I might say something that I don't want to say, but, ah yeah, so just working on [it] in my mind, it was enabling me to sort of step back and get over whatever I felt at that moment. Instead of blowing up, I just let it slide…So, what I mean [is], walking away from a situation I made my life better. I walked away and the situation stayed behind. (Participant 1)

[2] The Brief COPE assesses *Active Coping* through participant-ratings of the following two items: (1) *I've been concentrating my efforts on doing something about the situation I'm in*; and (2) *I've been taking action to try to make the situation better*. Items are rated on a 4-point scale where 1 = *I haven't been doing this at all* and 4 = *I've been doing this a lot.*

In response to the focus group question, *Do you feel better able to cope with problems or difficulties than before you started the program?* one participant replied, "I think I am...It's like I give myself time to kind of space out. Kind of just focus [on] breathing instead of irrationally jump[ing] to the conclusion. Kind of old habit way." (Participant 10)

In terms of other ways of coping generally, while no significant differences from T1 to T2 were found on the following 10 Brief COPE subscales, measurable differences on 8 of these 10 subscales reflected effect sizes empirically accepted as clinically meaningful albeit small (Howell, 2008): self-distraction (subscale 1; d = -0.15), substance use (subscale 4; d = -0.13), use of emotional support (subscale 5; d = -0.27), use of instrumental support (subscale 6; d = -0.21), behavioural disengagement (subscale 7; d = 0.40), venting (subscale 8; d = -0.29), planning (subscale 10; -0.42), humour (subscale 11; d = -0.21), religion (subscale 13; d = -0.27), or self-blame (subscale 14; d = 0.40). However, as a group, the use of denial (subscale 3) as a coping strategy showed a statistically significant decrease ($t(11) = 2.57$, $p = 0.01$) from T1 to T2; the effect size of which was 0.45. One qualitative excerpt that particularly denotes the message of overcoming denial *and* embracing acceptance is as follows:

> Now… my life is upside down a bit, like I don't have a life period, but now I can look at it and say well, well that's how it is and I can't change how it is. I might be able to change how it is going to be, which gives me the hope and also saves me the energy that I would have spent trying to fight how things are, because if I can accept it, then I have no fight on my hands, so I am happy to understand the difference between acceptance and giving up, giving in. I always felt that I'm not going to give in to this thing, stupid thing, but you know, as time goes by I realize I can't [fight it]. So acceptance. And, it just helps. I am a very good example because I would not take any measures to help my memory. I always said no, that's only catering to my disability. Instead of helping myself along and to help my memory, I refused, but I said no I won't do that. I am going to remember like I used to. After four years I had to realize that it's not happening and this helped me to actually accept the fact that it is not going to happen. I still haven't made notes [to assist his memory], but I will someday. (Participant 1)

There was no statistically significant or clinically meaningful difference between pre- and post-treatment measures of satisfaction with life ($t(11) = -1.22$, $p = 0.12$; $d = -0.17$). Three (27.2%) participants spoke about changes reflecting satisfaction with life; for example, Participant 2 said:

> Well, [MBCT] just helps to distract you I guess from what we were talking about automatic emotions, impulses taking over and stuff, just to concentrate on breathing, to just redirect that energy in a different way and then refocus it I guess, just to align it better I guess, be more productive. I think that works for everything. I notice a big difference even with my little guy. [Also, my] [s]chool work is going much better now, you know, a better time falling to sleep at night and stuff so, getting up better. So it is good. Everything is working good, very good.

Overall and taken together, hypothesis 3 was only partially supported by qualitative and quantitative measures.

QUESTION 4: ***Will there be measurable increases on SADI self-awareness scores for individuals with ABI following participation in an 8-week MBCT treatment group?***

Hypothesis 4. *Anosognosia, or impaired self-awareness of deficits, is highly common among individuals with ABI and can create major obstacles to successful rehabilitation (Fleming et al., 1996; Ownsworth & Clare, 2006). Mindfulness-based practice centres on observing one's internal and external experiences, including thoughts, affect, behaviour, and physical sensations in a nonjudgmental way, and gradually cultivates increased self-awareness (Jain et al., 2007; Walsh & Shapiro, 2006). Studies have demonstrated that individuals with ABI have been responsive to interventions specifically designed to increase self-awareness (Cheng & Man, 2006; Noé et al., 1995). Given these findings, MBCT treatment will result in increased self-awareness among study participants as assessed by self-report and the SADI.*

Hypothesis 4 was partly supported. Analyses yielded a statistically significant ($t(11) = 2.17$, $p = 0.03$) moderate ($d = 0.68$) increase in self-awareness of functional implications of

deficits (SADI, item 2). Interrater reliability for SADI item 2 was adequate (ICC = 0.55; Time 1 = 0.52 and Time 2 = 0.58). As a group, there were no statistically significant changes on SADI item 1 (self-awareness of deficits; $d = 0$) or SADI item 3 (ability to set realistic goals; $d = 0.37$).While not quite reaching statistical significance ($t(11) = 1.52$, $p = 0.08$) SADI Total Score improved moderately ($d = 0.44$) from T1 ($M = 2.17$; $SD = 0.67$) to T2 ($M = 1.42$; $SD = 0.45$). (SADI items are measured using a 4-point scale where 0 = accurate acknowledgment of deficits and 3 = little to no acknowledgement of deficits.) Qualitative data reflect the emergence of increased self-awareness more generally, as endorsed by eight (73%) participants, for example:

> I made a couple of notes about the benefits that I got from the course; probably one of the biggest was awareness. I really enjoyed the listening aspect where I would go off on my own and listen to the surroundings and become more appreciative, and I have got less tunnel vision than I had; [you know,] when you have blinders on. I found that I am being more aware, I am paying more attention to what is going on around me. It is hard to put into words, but even walking down the street, I don't have a set goal that I just head for, but, I pay more attention to what is happening beside me and around me. (Participant 6)
> I find this very useful basically to connect with myself if that makes any sense. I have never been a person that paid very much attention to about how I felt about things. I was too busy to worry about stuff like that but now I realize that how important it is to actually pay attention to your feelings. Well, first of all, to be aware of what really bothers me or disturbs me, makes me feel uneasy, and now I can identify those things because I have become able to identify at any given time actually how I feel. Before I never gave it a thought. Being able to sort of look back and instead of looking out from my head I am able to look in, and it makes a big difference. (Participant 1)

> For me it's like when I'm practicing the exercise right, like breathing it's [the] best time when I do exercise. I do really quite often every day. When I run, [I] focus on breathing so my mind doesn't drag me everywhere, right? When I['m] stretching, when I lie on the floor and do stretching, I always concentrate on breathing and so keep your mind really awareness. Like you are in this moment. This moment what are you doing. (Participant 10)

Qualitative Analyses Assessing Acceptability and Effectiveness of MBCT in Adults with ABI

Eleven of the twelve study participants participated in the focus groups. One participant was vacationing outside of the country and unable to attend the focus group. Focus group questions are provided in Appendix M. By way of reminder, the study's two overarching dependent variables, *Acceptability* and *Effectiveness,* were employed as the two pre-established themes with which to read, categorize, and interpret the data. While data within the Acceptability theme were subjected to an inductive approach to thematic analysis, subthemes within the Effectiveness theme were identified through theoretical and inductive approaches. A theoretical framework (using depression, anxiety, LOC, and coping as subtheme categories) was first used to read, categorize, and interpret data within the Effectiveness theme. Following this, data within the Effectiveness theme not fitting the theoretical framework were then subjected to inductive thematic analysis. In keeping with Creswell and Tashakkori's (2007) suggestion to incorporate and integrate qualitative and quantitative "strands" when reporting findings for mixed-methods research design, qualitative data fitting the theoretical framework were reported together with quantitative data in the Hypothesis Testing section above.

While there is no current standard for the number of participants who must endorse a particular theme for it to be considered a trustworthy theme, 60 percent is suggested by Braun and Clarke (2006) as a robust albeit arbitrary cut-off for what constitutes a trustworthy theme in thematic analysis. For the present study, an endorsement rate of 55% was used as the cut-off criterion for "themeness."

Acceptability of MBCT Treatment in Adults with ABI

The qualitative findings indicated that MBCT was regarded as a highly acceptable approach for individuals with ABI. There was a great deal of convergence on this theme, as it was endorsed by ten of eleven (91%) participants. Such sentiments are exemplified by the following quotes:

> I personally found that I am a skeptic about most things, I was about this [MBCT] as well, like I don't know if I want to do this hogwash, you know, I don't need this, but I am glad I joined… how you introduced this whole thing and I found it sort of was very good; made it smooth getting into it and the way it was set up step by step…I found this was very helpful…[It] was kind of easy and fun. (Participant 1)

> I am fine now that I got over feeling it was some kind of cult, or scientology or something. Now that I am over that I will practice even more. I think it is okay. I am going to pass it on to my daughter. (Participant 3)

> Well, I think the time outs, whenever we took a time out, you know took a 10 minute break or a 5 minute break, I don't mean like going for coffee but when we actually did a break and everybody meditated for a few minutes; those things I really remember because they just seemed to come at the right time…I've been hanging on to the handouts. The first couple of pages are really handy, just read them every once in a while, whatever mindfulness is about or whatever the next topic is. It is a good review. It is not intimidating…It was useful; especially CD's are good as well. (Participant 5)

> The program I think is excellent…[The] meditation where you focus on your breathing to start with…that has been very valuable…[A strength of] this program is that we spend time actually doing these exercises and getting an experience, so it is like an experiential part of the program and it sticks with me the rest of the week, and so it is like a carry-over from the sessions that we had. (Participant 8)
> [I]t kind of flew by. You know, I really thought, eight weeks, I thought oh my God, when it first started, am I going to be able to complete this thing? And yeah, it just seemed to like just fly by…[E]ven the breakdown of the sessions, what we dealt with, like barriers [and] allowing things, they are like little jewels that we can take with us and use. (Participant 4)

Another participant said he looked forward to the Friday meetings and that weekly sessions were fine for him because he "enjoyed it" (Participant 6). With regards to the mode of delivery, ten (91%) participants felt the duration of each session (2 hours) was just right. Within the data

supporting the overarching theme of Acceptability, three finer sub-themes were identified, namely: (1) *Power of the Group*; (2) *Gratitude*; and (3) *Wish-List Modifications.*

Subtheme 1: Power of the Group. Participants appeared surprised at how much they appreciated being part of a group. This subtheme was endorsed by six (of eleven; 55%) participants and is reflected in the following excerpts:

> It is like magic isn't it? It is. Being with the group, I came back today kind scattered and late but the group is 1 2 3 4 5 6 7 times more than one person is, so…there is like a dynamic there, like being in the group is sort of a magnification of what we are leaning, like we are greater as a result of being in a group than we would be if it was one-on-one for example, and, so it just magnifies the benefit, I think. Research shows that…much more powerful results can occur with groups of people rather than individually, so I think that translates into what we have experienced…Just being here is enough. Like, one time we finished up, I think it was the last time we were here, we went around the table at the end of the two hours and I heard things like "I feel high" and "I am just awestruck about what went on" and it was just like a common theme –everybody was sort of feeling sort of invigorated. Yeah, it was like we were all touched with the magic of being together. (Participant 8)

> I think as far as the meditation…I don't know about the other fellows, but myself I found it very useful when you do it in a group. I never imagined I would say that. I always hated group, group things, like anything group. But, it has really changed my mind because I don't know, it's easier to get into that frame of mind as opposed to going home and doing it by yourself…For me especially because I was so skeptical about things like that. I had thought meditation wouldn't work for me and it's bad, but then, you know, ta-da! I learned something. (Participant 1)

> The group picks it up. You actually learn as a group…Yeah, that's where it pays off I guess. You hear the group voice, it's a collective voice…It is nice to be involved with other people…It is good about getting feedback. Feedback on different situations...you think you don't understand until you hear someone else, someone else's input, someone else's feedback...[and think,] ah shoot I never thought about that. It is simple little group, but it's just enough. (Participant 5)

> Because we were in a group too, it was really quite validating, which is really important. (Participant 4)

Indeed, this *Power of the Group* sub-theme highlights the significance of MBCT as a *group* approach that fosters a sense of community and social support.

Subtheme 2: Gratitude. Within the general theme of acceptability, a further subtheme of gratitude emerged. This was endorsed by all eleven participants (100%). For instance:

> I'm very grateful for this that you let us have. It's a great help. (Participant 2)
>
> I am very happy that I joined up, very happy to meet you guys and thank you very much. (Participant 1)

Endearingly, Participant 9 remarked, "you know, even my husband noticed a difference in me since I've been doing this...My husband said that I should give *you* a thank-you card!" Such qualitative indices of gratitude help support the acceptability of the program for individuals with ABI.

Subtheme 3: Wish-List Modifications. An additional theme that emerged dealt with recommended modifications to the program in order to better accommodate ABI. Six (55%) participants thought the program was too short and that they would have enjoyed or benefited from more weekly sessions; that is, they recommended that the program be extended beyond eight sessions over eight weeks. Six (55%) participants said they were less likely to do the longer meditations on their own, and that the shorter exercises worked best for them. While one participant said that "[T]he good thing about it, we have material we can go away and keep practicing," seven (64%) participants felt it was difficult to adhere to a regular mindfulness practice and to complete the homework. While this sentiment does not reflect acceptability of the MBCT program itself, it speaks to the importance of ongoing support and maintenance programs needed for the sustainment of accrued benefits for adults with ABI.

Effectiveness of MBCT Treatment in Adults with ABI

Ten of the eleven (91%) participants endorsed the overarching prescribed theme of Effectiveness of MBCT for adults with ABI; for example:

> It might be a little dramatic, but the word I wrote down here was "life changing". Two months ago, I never envisioned myself taking time to sit back and breathe or sit back and pay attention. It was hustle, and you know a long haste makes waste and bla, bla, bla and [there] is no better term, it is life changing, it has changed my life routine. I use it regularly and find it helpful. (Participant 6)

> I found it to be very, very useful. And the group dynamic is pretty good too…I have learned stuff I didn't know before because the meditation, I find it very useful, something that I will do every day. (Participant 7)

> I thought it was really good. I think the idea of acceptance and then having ways to cope with that, and just learning ways to relax, breathing, keep it central and whole…It just helps to bring the mind, body and human spirit together as one and really deal with the outside world and anything that comes along…It's very, very helpful. (Participant 2)

Inductively Identified Effectiveness Subthemes. Two subthemes emerged from the data within the Effectiveness theme not fitting the theoretical framework: (1) *Breathing*; and (2) *Relaxing, Calming, Grounding.*

Subtheme 1: Breathing. Eight (73%) participants thought the program's focus on breathing was most helpful. Quotes from several participants are used here to illustrate endorsements considered representative of the *breathing* subtheme:

> It gives you other tools you can work with, something else, you learn how to breathe. It is all in controlling you breathing. If you can just keep yourself under control…you know especially if you are disturbing the situation yourself and, maybe you will find out, when you breathe you find out in your own breathing that it *is* me causing the problem. It is not somebody else. It is nice to be able to really narrow it down. Sometimes it is as simple as (realizing) "oh, it *is* me". (Participant 5)

> It's a good way to coping with your, you know your life. Yeah. I learned some techniques like just breathing you know? I like that. Like when you have a challenge in your life right? Don't react right away. So try to peace out for 3 minutes and just concentrate on your breathing. I think that's really helped me a lot. (Participant 10)

> [M]y best strategy or technique is to focus on my breathing, like to bring my attention to my breathing, whether I am out walking or doing something at home, or even talking on the phone, like you can't listen if you are talking, right?... So if I am paying attention to my breathing I am much more aware… Focusing on the breath is [my] favorite practice, whenever. It seems to promote awareness by not having things in the mind. (Participant 8)

> Well I notice that if I run into a little problem I just focus on my breathing and then it helps to center me, and then I can see it from other perspectives…And I find with this, it helps to just kind of slow you down, and just kind of stop, breath, okay, now I know we have a base, and you know, a secure base too, which is what we need in this kind of circumstance. (Participant 2)

Such sentiments demonstrate the benefits associated with the program's use of the breath as the central point of focus.

Subtheme 2: Relaxing, Calming, Grounding. The internal experiential qualities of a "secure base" described immediately above by Participant 2 (and which he attributed to focusing on his breathing) is in keeping with the experience of eight (73%) participants who found the program to be relaxing, calming, or grounding, as evident in the following excerpts:

> I am trying to learn to meditate and the mind wants to, it distracts me with some kind of anything at all and for some reason that is still holding fast, and it is hard not to be distracted, but the times when I can meditate and can stay in there is just great, and it just like being in a void, it is just kind of nice and calm. So I am getting more and more periods like that now and am feeling like there has been some progress. (Participant 5)

> There was a time when I couldn't settle my mind down and now I seem to be at a point where I can, I can. All the outside stuff, I can go inside like what (Participant 5) was saying, and like you know, I'm not distracted I am in there and there was a time when that wasn't happening, and so I have learned that now is my time; I have reached that point where my brain can like settle down and be in that space, so that's been very cool for me. And like I was saying, that is why I want to just take this and just dig into it. (Participant 4)

> I go to sleep when I lay on my back and concentrate on my breathing. And also the mindfulness...I don't sit down and do my [meditation] and listen to the tape, but several times during the day I'll think, "Mindfulness!" and I'll stop and smell and sense and that's very relaxing...I guess it helps me stay calm. (Participant 9)

> [I] [c]lose my eyes and visualizing there's some[thing] like by the beach the waves in and wave out just visualizing [in] my mind. Yeah. I like that. Keeping me calm. I wasn't upset, [it] wasn't [an] overwhelming kind of feeling, just peace[ful] kind of feeling. Sometimes I work with so many people. Sometimes [it] get[s] you, you know? This way you can cop[e] with older people too. Yeah. I like that. (Participant 10)

These statements reflect the inherent usefulness of mindfulness-based practice as a grounding technique, in addition to its value as a catalyst for other therapeutic purposes. Such results are elucidated in greater detail in the following section.

Chapter 4

DISCUSSION

The overarching purpose of this study was to investigate the acceptability and effectiveness of MBCT in fostering psychological recovery among adults with ABI. More specifically, this study explored the utility of MBCT as a treatment targeting depression and anxiety in adults with ABI. Given their theoretical and empirical relations with depression and anxiety, locus of control, self-awareness, and coping were also examined as potential targets of MBCT treatment. In sum, the purpose of this study was to: (a) extend Finucane and Mercer's (2006) study by applying MBCT to another population (i.e., adults with ABI); (b) corroborate the Bedard et al. (2008) investigation reporting the effectiveness of MBCT in reducing depression symptoms in people with TBI; (c) establish if empirical findings of the effectiveness of MBCT on depression (Dimidjian et al., 2010; Ma & Teasdale, 2004; Segal et al., 2002; Teasdale et al., 2000) and anxiety (Evans et al., 2008; Williams et al., 2008) in the general population and in primary care patients with active symptoms of depression and anxiety (Finucane & Mercer, 2006), extended to participants with ABI; and (d) explore the effect of MBCT treatment on measures of locus of control, satisfaction with life, self-awareness, and coping in participants with ABI. Whether or not locus of control, self-awareness, or coping are mediating factors in the improvement of depression and anxiety, was not statistically assessed. Since this population is in need of increased psychosocial therapeutic support (e.g., Kreutzer, 2010) and related clinical and empirical efforts have been limited relative to those of physical and cognitive rehabilitation, this study was conducted in an effort to establish an acceptable and effective psychosocial therapeutic treatment for individuals with ABI. Conceptually and methodologically, the present study extends the MBCT and brain injury treatment literatures.

Summary of Findings

Acceptability of MBCT Treatment in Adults with ABI

Qualitative findings supported the acceptability of MBCT as a treatment for adults with ABI. This was perhaps the most resounding message obtained from the qualitative results, as it was endorsed by all focus group attendees (11 of the 12 study participants). In general, participants greatly enjoyed the program. Participants mostly thought the subject matter was presented in a comprehensible manner and it was most encouraging to see two participants continue to refer back to past handouts. Four (36.4%) participants freely (i.e., unprompted) said they would recommend the program to others. The inherent gentleness and flexibility of the approach appears to be exceedingly appropriate for individuals recovering from brain injuries.

Another aspect supporting acceptability of the program, and one of the dominant themes that arose throughout the focus groups, was the *group approach* of MBCT. Seven (64%) participants spoke about the group setting of the treatment and there was certainly a great deal of agreement on this topic. Participant 6 declared, "well isn't that the adage of safety in numbers, you know, we have all got a common affliction and we find safety in that...We can relate to each other." Much like Finucane and Mercer's (2006) findings, for most participants, being in a group was an important normalising and validating experience. These findings support existing literature that highlights the importance of social support networks for this population (Fraas & Calvert, 2009; Godfrey et al., 1996; Hofer et al., 2010; Jacobs, 1997; Kreutzer et al., 2010; Leathem et al., 1996; Mazaux et al., 1997; Moore et al., 1989; Soo & Tate, 2009; Tasker, 2003). Therefore, a group-oriented treatment approach, such as MBCT, was found to be appropriate for and acceptable to individuals with ABI.

A further emergent theme supporting the acceptability of MBCT was that of *gratitude* among all eleven (100%) focus group participants. Some participants expressed gratitude for such academic and empirical efforts to promote knowledge, resources, and awareness within the field of brain injury, and all participants were thankful to have been offered the experience with MBCT.

A caveat and a caution however need to be noted. While the majority (72.7%) of participants experienced the program's focus on *breathing* as most beneficial, during the focus group, one participant reported the focus on breathing to be neither acceptable nor beneficial. This participant, with self-reported comorbid mental health issues including severe depression, obsessive-compulsive traits, and Tourette's Syndrome, expressed irritation with the breathing practice, saying it was uncomfortable for him to focus on the breath and physical sensations since this caused him to become increasingly aware of his muscular tics (related to his Tourettes). Despite the irritation with the breathing practice and not being particularly keen on MBCT (nor feeling especially *mindful* following the treatment cessation) generally, the participant attended most treatment sessions. This anecdotal finding however addresses the need for research to assess contraindications for the use of MBCT so as to ethically facilitate the development of screening guidelines for participation.

Overall, acceptability of MBCT as a treatment approach in ABI was overwhelmingly endorsed by both participants and staff members of the two clinical sites. In fact, the program was so well-received by staff and participants at The Cridge Brain Injury Program that MBCT has since been adopted as part of their regular community-based psychosocial rehabilitative program offerings. Although MBCT treatment was found to be highly acceptable, participants

offered a great deal of valuable feedback regarding possible program modifications to better accommodate participants with ABI.

Wish-List Modifications. The majority (55%) of participants thought the program was too short and that they would have enjoyed and benefited more had it extended beyond eight weeks. This finding parallels that reported by Finucane and Mercer (2006). Namely, the majority of *non-brain injured* participants in Finucane and Mercer's (2006) study indicated the program was too short and the need for continued support was essential.

While not reaching a majority and therefore not reported earlier as a finding, three participants (27.3%) said they would have liked the program to be *slowed down* to accommodate their needs (e.g., to aid acquisition and retention). This expressed-need is consistent with the cognitive deficits that often accompany ABI, such as difficulties with memory, concentration, acquisition, the retaining of information (Hofer, Holtforth, Frischknecht, & Znoj, 2010; Malia, Powell, & Torode, 1995; Moore, Stambrook, & Peters, 1989; Jacobs, 1997; Teasdale & Engberg, 2005; Tiersky et al., 2005), and mental fatigability (Mazaux et al., 1997). Although this need to slow the program down was only endorsed by three participants, it raises an important consideration nonetheless. Specifically, these participants recommended spending a greater amount of time on each topic by perhaps lengthening weekly material to span across multiple sessions, and to designate more group discussion to explaining the homework. Speaking to this issue of homework, seven (64%) participants admitted it was difficult completing the homework. Difficulty completing homework for the study sample was understandable given not only the daily challenges associated with ABI and related memory impairments generally, but the frequent medical or litigative appointments on their schedules. The finding of poor homework compliance in the study sample is also consistent with well-documented findings of decreased

initiation and motivation as a common affliction in this population (Jacobs, 1997; Kreutzer et al., 2010; Leathem et al., 1996; Malia et al., 1995; Teasdale & Engberg, 2005). However, it is not clear to me if initiation and/or low motivation fully explained the forgetfulness shown by participants (e.g., forgetting to *do* the exercises and/or homework, and/or attend group altogether). It is reasonable to think the modification suggested by the three participants to spend more group discussion time explaining and reviewing homework might offer the repetition and reinforcement to help facilitate retention and motivation necessary to complete homework between sessions. Another way of addressing low homework compliance may be to reduce the amount assigned per session in order to decrease memory load and to facilitate motivation and the experience of successful homework completion. Similar to the reported difficulty and low motivation regarding homework compliance, six (55%) participants reported they were less likely to do the lengthier meditations on their own, although they seemed able to follow along with longer meditations in the setting of the session. As a group, participants said the shorter exercises worked best for them. Other participant feedback conveyed a need for greater explanation of the handouts.

Effectiveness of MBCT Treatment in Adults with ABI

Hypothesis 1. The first hypothesis of this study was that participants would describe and show a measurable alleviation of depression and anxiety symptoms following MBCT treatment. Hypothesis 1 was partially supported. In terms of effect size, MBCT resulted in a small to medium decrease in active depressive symptomology that was statistically significant. This finding corroborates the findings of decreased depression reported by Finucane and Mercer (2006) and Bedard et al. (2008) in samples of primary care patients and individuals with ABI, respectively. The finding of significantly decreased depression is of great importance considering

the particularly high prevalence of depression among individuals with ABI (Bechtold Kortte et al., 2003; Bedard et al., 2003; Mazaux et al., 1997; Rosenthal et al., 1998; Seel et al., 2010; Tacon et al., 2004) and extends existing empirical knowledge about the application of MBCT. For instance, while MBCT has been shown to reduce depression among the general population (Ma & Teasedale, 2004; Teasedale et al., 2000; Williams et al., 2008) and in primary care patients (Finucane & Mercer, 2006), currently only one pilot study is known (Bedard et al., 2008) that has reported the effectiveness of MBCT for depression in adults with ABI. Also, while previous studies have emphasized that MBCT is beneficial for reducing *relapse* rates in chronically depressed samples with multiple prior episodes of depression (Ma & Teasdale, 2004; Teasdale et al., 2000), the present finding demonstrates the effectiveness of MBCT in reducing *current* depression in a sample of adults with ABI. That is, and by extension, it seems reasonable to speculate on the potential for MBCT to reduce current depression in other population subgroups.

Unlike Finucane and Mercer's (2006) finding of a significant improvement in anxiety among primary care patients, this was not the case in the present study. While anxiety showed a small pre-treatment/post-treatment decrease that approached significance ($p = 0.06$), this difference was not statistically significant. It is likely small sample size contributed to the approximation only of significance, and that a larger sample size might have afforded the power for this difference to reach statistical significance. Alternatively, this result may be understandable given that MBCT was originally created to treat depression specifically (Segal et al., 2002). However, it is interesting to note that while only one participant in the focus groups discussed the positive effect of MBCT on depression, three participants described the impact that

MBCT had played in terms of reducing and helping them to manage their anxiety. Such considerations warrant further replication studies with a larger sample size.

Hypothesis 2. The second hypothesis tested in the present study addressed whether, as a group, participants would show a measurable increase on a self-report measure of internalized LOC (operationally defined as a reduction in externalized LOC) upon completion of the MBCT program. While there was a very small decrease in pre- to post-treatment externalized LOC, this difference was not statistically significant. Qualitative results indicated that one participant appeared to have attained a greater internalized LOC. It may be possible that other psychosocial factors implicating recovery from ABI, such as level of self-awareness, may need to be in place *prior to* the recognition of one's internal resources of agency through a cognitively mediated treatment model such as MBCT; though this suggestion requires additional empirical substantiation.

Previous studies have suggested however that mindfulness-based practice contributes to an increased internal LOC (Ivanovski & Malhi, 2007; Matchim & Armer, 2007; Tacon et al., 2004). For instance, Tacon et al. (2004) found that MBSR treatment among 27 female cancer patients fostered significant improvements in internalized LOC in two of three subscales on the Multidimensional Health Locus of Control Scale (MHLC). Particularly, significant decreases were observed on the *internal* and *chance* subscales. Since higher scores are reflective of greater externality, lower scores indicate more internality. The third subscale (*powerful others*) also revealed improvement (i.e., a decrease), but this result was not statistically significant (Tacon et al., 2004). In an earlier pilot study exploring the effectiveness of MBSR as an intervention in TBI, Bedard et al. (2003) found a deterioration of internal LOC on the MHLC in the control group (composed of three dropouts), but no change in the treatment group ($N = 10$); the authors

remained unsure whether this finding represented a spontaneous deterioration effect for the control group, a statistical aberration due to small sample size, or a genuine protective factor associated with MBSR (Bedard et al., 2003). In consideration of these findings, it is plausible that the MHLC scale is a more sensitive measure of LOC than the ANSIE as used in the present study, since it includes three subscales tapping different facets of LOC. Alternatively, since Bedard et al. (2003) did not observe any statistically significant change in LOC among the TBI treatment group, and the present study only found slight but insignificant improvements, it is possible that it may be the case that it is just exceedingly difficult to either foster internalized LOC *or* to measure LOC among individuals with ABI. Taken together, further investigation of LOC among larger samples using an alternative instrument such as the MHLC is suggested.

Hypothesis 3. The third hypothesis was that study participants would report measurable improvements in (a) acceptance, positive reframing, and self-regulation; (b) other ways of coping; and (c) satisfaction with life.

Quantitatively, level of *acceptance* showed no change whatsoever following MBCT treatment. Despite this lack of change, two participants explicitly spoke about a shift in their ability to accept daily situations. For instance, for one participant this had included the acceptance of a permanent memory impairment associated with his ABI, and the acknowledgement that the use of memory aids was necessary. Given some participants' subjective reports of a shift in acceptance, the finding of no change quantitatively, either statistically or in terms of effect size, is especially interesting given the sample's statistically significant reduction in *denial* which approximated a medium effect size ($d = 0.45$). One possible explanation for this is that it may be necessary for individuals to first overcome denial and to gain awareness of or to *acknowledge* a given reality before it is possible to progress towards

attaining acceptance, as suggested by Tasker (2006). Indeed, this seems intuitive if one considers the role of emotional processing from a therapeutic standpoint. Various counselling professionals/academics have proposed that the attainment of emotional balance often requires a process of acknowledgement, understanding, and meaning-making in order to acquire greater insight (Dayton, 2008) and perhaps acceptance of difficult experiences (Kornfield, 2008, pp. 131-135).

The marked and statistically significant difference observed in *positive reframing* is indicative of enhanced coping among participants following MBCT treatment. Indeed, Garland et al. (2009) posited that positive reframing (or reappraisal) is a critical component of meaning-based coping, which has been linked with increased adjustment, resilience, and other salutary effects (Garland et al., 2009). With regards to ABI specifically, the present finding is particularly exciting since research has suggested that individuals with ABI who engage in positive reframing tend to have the highest psychosocial adjustment outcomes (Moore et al., 1989; Moore & Stambrook, 1992; Nochi, 2000; Tasker, 2003). Moreover, this result helps confirm positive reframing as a legitimate mechanism of mindfulness-based practice (Garland et al., 2009), as originally asserted by Kabat-Zinn (1982).

The reader is reminded that for the present study, *self-regulation* was operationalized as an umbrella term encompassing (a) self-ratings on the Brief COPE's *active coping* subscale and (b) qualitative accounts reflecting participants' awareness of thoughts, emotions, or sensations; the acknowledgment that some coping action was needed; the expression of coping attempts; or reports of improved coping generally. Results indicated statistically significant increases in *active coping* with a medium effect size of -0.55. An example of an item within the active coping subscale is: *"I've been taking action to try to make the situation better."* In keeping with

Bechtold Kortte et al.'s (2003) opinion that action-oriented coping is therapeutically advantageous, this finding of a statistically significant and meaningful increase in active coping denotes beneficial effects associated with MBCT treatment and supports Hypothesis 3's overarching idea of *improved coping* as a function of MBCT treatment. As an aside, because personal agency underpins active coping (e.g., Pargament et al., 1988; Thoits, 2006), this finding also suggests either the emergence or presence of an internalized LOC or sense of personal agency. Personal agency is exemplified through acts of active coping including for example, problem-solving efforts and purposeful acts (Thoits, 2006). This is consistent with the theory of learned helplessness where an assumption is that individuals must perceive a sense of personal agency in order to actively attempt to improve a situation -- most especially when the event appears uncontrollable (Maier & Seligman, 1976; Moore & Stambrook, 1995). With regards to feeling better able to self-regulate and actively cope with difficult situations, Participant 1 said the following after completing the program:

> Absolutely; in most instances yeah [I cope better]…Of course there are always going to be things that are not so easy to get on top of. I can't say I am able to conquer all my moods and troubles and thoughts, unwelcome thoughts, but with practice it will happen. The main thing is I believe now that I can do it, that's a winner already.

Such sentiments clearly illustrate an increased perception of personal agency following MBCT treatment.

Certainly, the finding of increased self-regulation following MBCT treatment was evident within the qualitative data, as this theme was explicitly endorsed by six (54.6%) participants. For instance, Participant 1 said that through this program, he had found a new way to look *inside* of himself (rather than solely looking outside to the world) to identify his own thoughts and feelings before reacting and saying something he would later regret. He said that what he learned in the MBCT program had enabled him to step back and assess what he was

feeling in the moment, which gave him greater choice or control of his responses. Participant 5 had learned to investigate his breath more closely to acquire greater insights as to how he was feeling and affecting situations, which provided information about how to further proceed. Similarly, Participant 2 said if he ran into difficulties, he just focused on his breathing, which helped to centre him and allowed him to see the situation from different perspectives and to approach challenges more effectively. These sentiments were all taken as qualitative indices of increased self-regulation in combination with participants' self-ratings on measures of active coping.

Further to self-regulation, it may be argued that positive reframing in and of itself can be considered an indication of self-regulation, depending on the level of conscious awareness and intent involved. That is, if positive reframing or reappraisal is used intentionally as a cognitive tool to consider helpful alternative perspectives when one notices the development of negative rumination, positive reframing may be an effective means of self-regulation and is in line with the tenets and postulated mechanisms of MBCT and cognitive therapies alike. The present suggestion of positive reframing being a component of self-regulation more generally is supported by Moore et al.'s (1989) assertion that positive reappraisal incorporates two categories of coping: (a) actions in which one attempts to directly alter the source of stress (direct action coping), and (b) mitigative actions in which one attempts to regulate distressing emotions experienced from stressful stimuli (palliative coping).

Given the operational definition of self-regulation used, the present study is not able to report a *direct* quantitative measure of self-regulation (the Brief COPE does not have a subscale explicitly allocated to self-regulation itself, though it may be inferred by assessing the subscales and developing a composite score to reflect self-regulation; however, this was beyond the scope

of the present study). Thus, perhaps future studies might seek to implement an instrument specifically designed to address and measure self-regulation directly.

In reference to *overall improved coping*, findings on the remaining Brief COPE subscales were spotty and mixed. As mentioned earlier, as a group, a small to medium reduction in *denial* was found and this difference was statistically significant. This finding of a meaningful and significant reduction in the use of denial as a coping mechanism is compelling. As discussed earlier, for many individuals confronting a reality, acknowledgement likely precedes acceptance. By extension, it seems reasonable to suggest a reduction in denial may precede acknowledgement of the reality however defined. In light of this view, it may be argued that MBCT effectively initiated the process of acceptance by decreasing participants' denial and perhaps (and hopefully) building readiness to acknowledge what is. Further to this, Malia et al. (2005) describe a strong negative relationship between avoidance coping -- such as denial -- and psychosocial functioning among individuals with ABI. This suggests that effective therapeutic interventions should encourage and involve the *acknowledging* and processing of difficult emotions concerning the brain injury, as proposed by Moore and Stambrook (1995). It is likely that longer-term exposure to MBCT would have provided the sample with more opportunities to process difficult emotions and perhaps therefore the opportunity to have harnessed the demonstrated reduction in denial sufficient to cultivate movement toward *acknowledgement* and perhaps, greater *acceptance*. That is, the failure to demonstrate a change in acceptance in the present study may simply reflect a more lengthy coming-to-terms process among a neurologically impaired population, which is consistent with the cognitive delays frequently associated with ABI as discussed earlier.

Older participants were statistically less likely to use denial as a coping mechanism. This is of particular interest to the present study since this relationship between age and denial could have contributed to the statistically significant reduction in the use of denial given the mean age of study participants (57.6 years). This interaction between age and denial seems understandable since older individuals would have had more time to reflect and process life experiences, and therefore, may have had greater opportunities to acquire self-insight and reduce denial. Or, older participants may have been more open to learning and practicing acceptance during the course of the treatment program. While the teasing out of the relation between age and denial requires further studies with a population of varying ages, it is more likely that the significant reduction in denial in the present study was due to the MBCT treatment as opposed to an interaction with age. After all, acceptance -- the antithesis of denial -- is a fundamental attitudinal component of mindfulness-based practice (Ostafin & Marlatt, 2008; Shapiro et al., 2006). Much of the MBCT curriculum centred on teaching participants *how* to open to difficult experiences in an accepting and nonjudgmental manner. Two participants (18.2%) explicitly acknowledged having become more accepting, while the remaining majority (91%) spoke directly to both the acceptability (91%) and effectiveness (91%) of the program, thus implying their comfort with opening to difficult thoughts and feelings as well as their agreement with MBCT's underlying tenets such as acceptance and nonjudgment, for example.

Despite the statistically significant treatment effects found on three of the Brief Cope's subscales (i.e., positive reframing, active coping, and denial), statistical significance was not reached on the other 11 subscales (one of which, *acceptance*, has been discussed above). Certainly, insufficient power was a limitation. For instance, *behavioural disengagement* and *religion* approached statistical significance with *p*-values of 0.06 and 0.055, respectively. The

finding of a measurable yet small (d = -0.27) increase in the use of religion as a coping strategy trending toward statistical significance is particularly relevant to this study because one of the subscale's two items refers to use of spirituality or meditation as a means of coping; meditation of course being a central component of MBCT. With the exception of *substance use*, pre/post-treatment differences on remaining subscales indicated favourable directionality in line with Hypothesis 3's assertion of *improved overall coping*. Specifically, small but clinically meaningful pre/post-treatment changes were found for use of *emotional support* (d = -0.27*),* *instrumental support* (d = -0.21), *behavioural disengagement* (d = 0.40), *venting* (d = -0.29), *planning* (-0.42), *humour* (d = -0.21), and *self-blame* (d = 0.40). While greater use of *self-distraction* as a coping strategy was also noted through examining pre/post-treatment means, the effect size (d = -0.15) of this change did not reach the criterion level of a "small" change ($0.20 \leq d \leq 0.50$).

At least two of these changes in coping strategies are of particular relevance for participants with ABI. First, the sample demonstrated a clinically meaningful increase in *planning* (d = -0.42). This result is especially encouraging among a population commonly afflicted with deficits in motivation, initiation, and impulsivity (Jacobs, 1997; Kreutzer et al., 2010; Leathem et al., 1996; Teasdale & Engberg, 2005). This suggests that it is possible for therapeutic approaches such as MBCT to foster increases in planning behaviours (i.e., direct action coping) among individuals with ABI. Second, a clinically meaningful decrease in *self-blame* (d = 0.40) was observed post-treatment. This is noteworthy because prior to treatment, several participants expressed feeling responsible for their injuries, for example, by living unhealthy lifestyles which may have contributed to strokes. This decrease in self-blame connotes an element of letting go, self-compassion, and indirectly, acceptance, all of which are in line with

the underlying tenets of MBCT. Such considerations help provide evidence for the use of MBCT treatment and its effectiveness among this population.

With respect to the study sample, two other changes in coping behaviours need addressing. First, a robust and statistically significant negative relationship ($r(11) = -0.81$, $p = 0.002$) was found between age and baseline levels of *behavioural disengagement* (e.g., *I've been giving up the attempt to cope*), suggesting that the older participants were, the less likely they were to engage in behavioural disengagement. Over and above or in conjunction with the limitation of small sample size, the relatively older mean age of study participants (57.6 years) may therefore have constrained statistical significance of the small ($d = 0.40$) improvement following MBCT treatment. In any case, it is evident replication studies are required with larger samples to establish if, to what degree, and in what participants, MBCT affects behavioural disengagement. Second, the older participants were at the time of their injury, the more likely they were to report using *humour* as a coping strategy as measured at baseline ($r(11) = 0.59$, $p = 0.04$). Mean age at the time of injury for the study sample was 44.0. As a group, participants showed a small ($d = -0.21$) but not statistically significant increase in the use of humour following MBCT. This suggests that a greater amount of life experience associated with increased age contributes either to greater perspective or to the appreciation of at least having lived an adult life to lesser or greater extent prior to brain injury. These findings are interesting, especially since Moore and Stambrook (1992) argued that age plays a large role in the coping strategies adopted after injury. Such considerations warrant further investigation.

The only measure that did not reveal a change for the better was *substance use*, which showed a negligent ($d = -0.13$) and not statistically significant increase over the course of treatment. In light of the relatively low use of substances reported by participants both pre- and

post-treatment, it may be argued that perhaps participants in this study did not rely on substances as a means of coping. Alternatively, it is possible that the measure implemented did not accurately assess this variable, since self-report measures allow for the inclusion of socially-desirable responses. Also, in post-hoc analyses, a statistically significant negative correlation was found between age and substance use ($r(11) = -0.72$, $p = 0.01$). Thus, the older participants were, the less likely they were to use substances as a means of coping. The relatively older mean age of the sample population (57.6 years) might further explain why substance use did not appear to be a common coping strategy among the sample population. If this is the case, it may be worthwhile for future studies to implement MBCT among younger populations to further the existing knowledge on its utility for managing substance use following brain injury.

In general, the qualitative data also offer evidence that participants did experience an improvement in overall coping. For instance, Participant 1 reported becoming better able to manage depression through MBCT by recognizing that negative moods and thoughts are transient and that by identifying his feelings, he was able to stay present in the moment and allow difficult situations to pass. Five participants indicated that MBCT offered them strategies to step back from situations and gain greater perspective and composure in order to cope with challenges more effectively. In concert, quantitative and qualitative findings reported here in terms of improved overall coping following MBCT treatment advance existing knowledge in the ABI field as there has been little prior empirical research on coping in ABI (Hofer et al., 2010; Malia et al, 1995; Moore & Stambrook, 1992). These findings speak to the effectiveness of MBCT in adults with ABI and may inform future psychosocial rehabilitative and therapeutic efforts for this group.

Finally, in consideration of Hypothesis 3's contention regarding a measurable increase in *satisfaction with life*, although there was no statistically significant difference between pre- and post-treatment scores on the SWLS, three participants described an enhancement of daily life functioning following MBCT treatment. In hindsight, although the SWLS has been used in previous ABI studies (e.g., Hicken et al., 2002; Wood & Rutterford, 2006), it is possible that the SWLS is not the most appropriate measure for this population in that it poses existential and intangible questions requiring participants to contemplate the entire course of their lives (e.g., *If I could live my life over, I would change almost nothing*). This was likely unsuitable for participants in the study and perhaps more broadly, may be unsuitable for ABI participants in general where cognitive deficits such as substantial memory impairments and difficulty with abstraction (Toglia & Kirk, 2000) amongst others (Hofer, Holtforth, Frischknecht, & Znoj, 2010; Malia, Powell, & Torode, 1995; Moore, Stambrook, & Peters, 1989; Jacobs, 1997; Teasdale & Engberg, 2005; Tiersky et al., 2005), are typically the case. Indeed, some of the study participants expressed that they were unable to recall the content of a single meeting at the end of a session; thus, perhaps participants were not able to fully recall with detail or accuracy their level of satisfaction (a relatively abstract concept in and of itself) over the course of their lives. This represents a limitation of the present study. In the future, it may be more effective to measure either participants' satisfaction with, or report of hassles with, *daily life*. This information would likely be more accessible and salient to respondents, and the suggestion is supported by participants' qualitative reports regarding improvements in *daily* life. For example, Participant 2 said MBCT helped him redirect his automatic emotions to become more productive. He had noticed a difference in his life in the form of improved school work and interactions with his child, and was having an easier time falling asleep and waking in the

mornings. Given these observations, future studies may seek to use a measure of satisfaction with life that is more appropriate for the population under study and to also include a measure of satisfaction with daily life.

Hypothesis 4. The fourth hypothesis addressed whether MBCT treatment would result in increased self-awareness of deficits among study participants. As a group, participants' overall self-awareness of deficits (SADI Total score) returned a small to medium effect size ($d = 0.44$) approaching statistical significance ($p = 0.08$). No difference whatsoever was found for self-awareness of cognitive deficits and personality changes (SADI Question 1). Participants demonstrated clinically meaningful increases in the ability to set realistic goals (SADI Question 3; $d = 0.37$) and in overall self-awareness of deficits (SADI total score; $d = 0.44$); and a statistically significant improvement in self-awareness around *functional implications* of their deficits (SADI Question 2) between T1 and T2 with a medium effect size ($d = 0.68$).

On the surface, this latter finding (SADI Question 2) is consistent with the idea that respondents with ABI may demonstrate 'borderline' awareness where some deficits (such as physical limitations tapped by SADI Question 2) are acknowledged and others (such as cognitive and personality changes tapped by SADI Question 1), overlooked (Fleming et al., 1996). However, this may not necessarily be the case for the study sample. Performance of participants on the SADI was actually most surprising in that it was expected that participants would be more poorly self-aware of their deficits. Inspection of mean baseline scores shows that participants in the present study were functioning at near-accurate or near-realistic levels of self-awareness of deficits following a brain injury as measured by the SADI (see Table 6). Recall that the SADI is a structured interview comprising three questions assessing level of self-awareness following brain injury on a 4 point-scale where 0 = *accurate/realistic appraisal* and 3 = *very*

inaccurate/unrealistic appraisal (Fleming et al., 1996). A total possible score of 9 is thus yielded, where higher scores indicate lower levels of intellectual awareness (Ownsworth et al., 2002). The range of mean scores across the three items for the present sample was 0.5 to 1 (T1) and 0.25 to 0.67 (T2); mean Total scores were 2.17 (T1) and 1.42 (T2). It is important to note that a score of 0 indicates accurate/realistic appraisal of deficits following brain injury and is not a measure of "normal" intellectual functioning. That said, it seems that the level of self-awareness of the study sample was within a high-functioning range relative to their brain injury status. It is difficult to say why this group scored so well on measures of self-awareness. It is possible that the SADI scores would have looked differently had they been completed by a family member or caseworker who had greater contextual knowledge and familiarity with each participant. Interrater reliability was however adequate: collapsed across Time 1 and Time 2 SADI Total scores, interrater reliability was 0.58. Behavioural and clinical literatures consider interrater reliabilities between 0.40 and 0.74 to be *adequate* (Rehabilitation Institute of Chicago, 2010). That said, the reader is reminded that an attempt was made to have caseworkers score the SADI for each participant but that this was only possible for three participants as a result of time and work burden for caseworkers. In eyeballing the agreement between caseworker and researcher scoring of the SADI for the three participants where caseworker scoring was completed, reliability was lowest for Question 1, higher for Question 3, and showed almost complete agreement for Question 2. If nothing else, this near-complete agreement on Question 2 provides added confidence to the meaningfulness of the statistically significant finding of change for Question 2 (self-awareness of functional implications of deficits). It is certainly recommended that future studies include additional resources such as family members and caseworkers in order to increase the validity of the SADI scores.

Post-hoc analyses indicated a significant positive correlation between years since injury (M = 13.7 years) and SADI Question 2 ($r(11) = 0.62$, $p = 0.03$). Since greater scores on the SADI reflect lower levels of self-awareness, this means that the more years since participants were injured, the poorer they were in accurately appraising the functional implications of their deficits. One explanation is that earlier rehabilitative interventions result in significantly improved outcomes following ABI (and later interventions result in less optimal outcomes; Malec et al., 1993). While it is possible for this to have been the first psychosocial therapeutic intervention for at least some of the study participants, this cannot be verified as no data on prior rehabilitative interventions were collected for the study sample. Another possible explanation is that participants who have lived longer with their deficits have adjusted to, compensated for, or no longer "notice" their deficits such that they do not (or no longer) consider themselves functionally limited by their deficits. This might be in contrast with what the non-brain injured, fully physically functioning interviewer responsible for scoring the SADI perceived (or projected) in his or her scoring. Anecdotal evidence from the present study provides yet another explanation. Given the relatively older age of the sample (M = 57.6 years), participants largely belong to the generation where less accomodations (technological, therapeutic, environmental) were available to offset functional implications of physical and cognitive deficits as a result of ABI. In some cases, this might have amounted to their living life overlooking or normalizing the functional implications of their deficits.

Nonetheless, this finding of a significant positive correlation between years since injury (M = 13.7 years) and SADI Question 2 is a particularly curious finding. Despite the significant positive correlation and the fact that the average number of years since injury for the sample population was a substantial 13.7 years, this particular aspect of self-awareness (self-awareness

of functional implications of deficits) showed a statistically significant improvement following treatment. This implies that MBCT treatment was robust enough to counter this relation between years since injury and self-awareness of functional implications of deficits. If this is the case, this finding of the effectiveness of MBCT in positively shifting self-awareness around functional implications of deficits more than an average of 13 years following brain injury, is most promising for therapeutic options when, for the most part, rehabilitation is considered over.

This set of results is very encouraging because evidence suggests that impaired self-awareness negatively affects treatment outcome, treatment compliance, coping (Godfrey et al., 1996; Toglia & Kirk, 2000) and possibly the formation of a therapeutic alliance (Prigatano, 2005). Furthermore, impaired self-awareness has been related to reduced motivation for rehabilitation, leading to difficulties in community integration and vocational re-entry (Noé et al., 2005; Prigatano, 2005). Correspondingly, Noé et al. (2005) found that individuals recovering from ABI who had high levels of self-awareness demonstrated fewer psychopathological symptoms, improved neuropsychological function, and greater functional independence than those with lower self-awareness. Noé et al. (2005) further found that the development of self-awareness was not associated with an increase in emotional distress, as assessed by mood and anxiety scales. Thus, from a rehabilitative standpoint, the present findings in concert with those of Godfrey et al. (1996), Noé et al. (2005), Prigatano (2005), and Toglia and Kirk (2000), point to the need for therapeutic interventions that address impaired self-awareness (and likewise, denial) among this population and, reassuringly, that it is unlikely for improved self-awareness to lead to increased emotional distress for persons with ABI. The present findings provide further support for the utilizing of MBCT for such purposes.

Overall, MBCT treatment fostered a meaningful and statistically significant improvement in self-awareness of functional implications of deficits and a 73% endorsement of the emergence of or improvement in awareness more generally.

Effectiveness of MBCT: What (Else) Did Participants Say? Qualitative data collected in the focus groups showed that 91% of the participants agreed that MBCT had been helpful to them. Participants ardently articulated the benefits of having participated in the program, wished it would continue, and expressed a great deal of *gratitude* for this experience (a secondary theme endorsed by all eleven (100%) focus group participants). Two effectiveness subthemes were also inductively identified from within the focus group data: (a) *Breathing*; and (b) *Relaxing, Calming, Grounding.*

Eight (73%) participants thought the program's focus on *breathing* was most helpful. Notably, while this finding supports the effectiveness of MBCT, it also speaks to the *acceptability* of this program for people with ABI, since the *focus on the breath* is a central component of mindfulness practice. This is due to the fact that the breath is a constant stimulus that is ever-present and accessible throughout one's life. Thus, a focus on the breath encourages the transferability of mindfulness into one's daily activities and ongoing coping strategies. The fact that participants favoured this aspect of MBCT indicates that they effectively took a great deal from the teachings.

Similarly, eight (73%) participants found the program to be *relaxing, calming, or grounding*, which supports the effectiveness (and acceptability) of the program. Correspondingly, many participants reported routinely starting to use MBCT exercises (practices) to help them fall asleep. While this is not the overall goal of mindfulness-based practice, it represents an added beneficial effect of this treatment perhaps especially pertinent to

this population, since it is common for ABI survivors to suffer from sleep disturbances (Thaxton & Myers, 2002). In fact, relaxation therapy and meditation have been recommended to help treat sleep disturbances among those with ABI (Thaxton & Myers, 2002). Also, this thematic finding of MBCT providing a relaxing, calming, or grounding experience also suggests that MBCT may be an effective treatment to help deescalate individuals who are exceedingly prone to emotional reactivity; a common correlate of ABI (Kreutzer et al., 2010; Leathem et al., 1996; Mazaux et al., 1997). Overall, such findings help promote the empirical standing of MBCT and highlight the appropriateness and effectiveness of this approach among individuals with ABI even as long as 13 or more years post injury.

Facilitator Commentary and Take-Home Messages

In addition to the *Wish-List* feedback provided by participants themselves, the research team observed and noted the following regarding possible modifications to the MBCT program for participants with ABI based on their experiences.

Some participants had visual (and reading) deficits that should be better prepared for in future studies and implementations of MBCT in ABI treatment groups. Such considerations were accommodated for in the present study by electronically mailing visually impaired participants the homework packages so that they could make use of assistive software. Nonetheless, such forethought should be integrated more deliberately in subsequent MBCT interventions among ABI -- for instance, by providing an audiotape of the homework handouts. Also, as in most pedagogy, the use of differential sensory material when teaching (visual, tactile, kinaesthetic, etc.) seemed to aid acquisition (L. Forseth, personal communication, September 26, 2011); those who were impaired in these areas were simply instructed to make modifications to respect their own limitations, which seemed quite agreeable to the affected participants. Correspondingly, it is

important for facilitators delivering MBCT treatment to ABI populations to be proactive in programming and to adopt a flexible, compassionate approach to accommodate the range of physical, cognitive, and sensory limitations and differences among potential group members.

Taking together participant feedback and well-established findings around cognitive and motivational implications of ABI, it is recommended that the 8-week program be extended (A. Dohadwala, personal communication, November 10, 2011; L. Forseth, personal communication, September 26, 2011) and repeated consistently for this population. While participants certainly demonstrated improvements in coping, the research team shares Mathew, Whitford, Kenny, and Denson's (2010) recommendation that MBCT should frequently incorporate "booster sessions" or ongoing group practice as part of the program rather than simply as an adjunct (Segal et al., 2002) in order to support optimum outcomes, specifically for individuals with ABI.

Supporting this line of thinking is the following anecdotal case report from the principal investigator's own experience. Since the cessation of the study groups, the principal investigator was asked to facilitate a subsequent MBCT group instituted by The Cridge Brain Injury program as part of their regular programming. Interestingly, during this second group of MBCT treatment, a notable change was observed in one study participant in particular who returned for this second 8-week long MBCT program. Staff assessment of impairment severity as a result of brain injury for this participant was moderate-to-severe. This participant did not appear to improve as much as his counterparts during the course of the study, nor did he have as much to share during the focus group. However, in the second round of MBCT, he became far less disruptive and impatient, much more involved in thoughtful deliberation, and was becoming increasingly receptive to the psychoeducation components of the program. He described experiencing deeper meditations during group exercises, and extended the mindfulness practice to aspects of his daily

life. For instance, he found that when he utilizes the mindfulness breathing techniques while reading, he was able to concentrate and retain information more effectively. This participant admitted to having great difficulty with interrupting others but has since proudly reported (and demonstrated) that he has become far less interruptive. More recently, he catches himself and apologizes when he does interrupt. These observations indirectly imply an increase in self-awareness, self-regulation, and reduced impulsivity. Of course, both these anecdotal findings and the suggestion for MBCT treatment to be more drawn-out or to provide regular booster sessions for persons with ABI, seem rather intuitive when considered in light of the cognitive deficits associated with ABI; cognitive deficits necessitate greater processing time and increased exposure to new material, especially among the moderately-to-severely injured. Whether these delayed improvements in this participant are due to residual or repetition effects (or some combination of both), these findings, together with the more specific feedback of study participants, support the notion that it would be appropriate and beneficial to extend the MBCT program format for individuals with ABI.

Limitations of the Research

This study includes several limitations. Initially, a waitlist-control group (Group 3, $n = 4$) was included in the research design in order to extend upon the Finucane and Mercer (2006) study by controlling for a possible expectancy effect. However, due to (a) the degree of attrition ($n = 9$) across the two treatment groups leaving Group 1 with 3 participants and Group 2 with 5 participants; and (b) time constraints of the Master's degree program for which the present study serves as a thesis, following completion of their MBCT treatment, Group 3 was included with Group 1 and Group 2 to form an overall sample of 12 participants.

Various constraints necessitated the need to maintain small group sizes. Staff required treatment groups to be conducted at their respective community sites to ensure (a) staff presence and availability; (b) convenience for participants; and (c) participants' comfort in the setting as a function of familiarity. Spatial constriction at both community sites constrained group size to absolutely no more than 8 participants plus 2 facilitators. It was also thought that small group size would be important to accommodate special requirements associated with an ABI population (e.g., the need to facilitate both attention and sufficient within-group discussion without the environment becoming over-stimulating for participants). Additionally, the staff at the two community sites advocated smaller group size (maximum of 6 participants per group) to mitigate difficulties in behaviour management implicated in working with an ABI population. To this end, it was further recommended that the principal group facilitator be accompanied by a research assistant to serve as extra support if needed. Taking all of the above into account, participants were originally divided into two treatment groups and one waitlist-control group based on which brain injury organization they were recruited from and ultimately collapsed into the present study sample of 12 participants.

The sample size ($N = 12$) was small and while smaller than the Bedard et al. (2008) study ($N = 20$), it is slightly larger than the 11 participants comprising Finucane and Mercer's (2006) sample. The study did unfortunately experience a number of dropouts ($n = 9$) across the three small groups originally recruited to the study. Contributing to attrition were the daily challenges associated with ABI, the frequent cognitive impairments (which might cause one to *forget* to attend group), and numerous litigative and medical appointments -- not to mention the challenge mindfulness practice poses to most non-neurologically impaired students -- it is reasonable to expect a perceptible number of *dropouts* when working among an ABI population. The principal

investigator was cautioned about the likelihood of this prior to study commencement by experienced staff members.

While this study was originally intended to replicate and extend Finucane and Mercer's (2006) research, the qualitative and quantitative post-treatment measures reported here were completed one week following MBCT treatment. This limits the replication of Finucane and Mercer's study since they completed follow-up assessments 3 months after treatment. In the present study, it was not feasible to collect Time 3 (T3) data at 3 months following MBCT, given the time line of a Master's thesis and RA availability. Thus, unlike Finucane and Mercer (2006), the present study is not able to report whether the decrease in depression found at T2 was maintained across 3 months following MBCT. Had T3 data collection and analysis been plausible, perhaps a greater reduction in depression and a statistically significant improvement in anxiety might have been found. This thinking is consistent with the abovementioned anecdotal report of possible benefits associated with longer exposure to MBCT treatment for individuals with ABI. Nonetheless, these considerations warrant further investigation.

With regards to the sample characteristics, although the sample was largely comprised of males, which raises limitations for generalizability, the sample remains characteristic of the brain injury population (Dikmen et al., 2001; Moore & Stambrook, 1992; Teasdale & Engberg, 2005). That is, it would be more common to find a greater proportion of males obtaining such services within the community; therefore these results remain relevant to the population of interest.

A further limitation in the present study was the inability to ascertain the degree of brain injury severity among participants. A clinimetric measure of brain injury severity was completed by a staff member for three participants; however, one site was not able to complete this measure due to practical and logistical constraints. Thus, the present study could not report brain injury

severity for 9 of 12 participants. Similarly, as Fleming et al. (1996) suggested, it would have been helpful to include staff members' SADI ratings of participants' self-awareness of deficits from their brain injury so as to provide a clinical expert interrater comparison with researcher interview scoring. Once again, staff SADI ratings were obtained for 3 participants from one site, but it was not possible to acquire such information from the other site, due to the same practical and logistical constraints noted for the clinimetric measure of brain injury severity. It is recommended that these measures be implemented in subsequent studies to increase the generalizability, validity, and utility of such research. Likewise, caregiver reports could be utilized in future investigations, but this resource remained beyond the scope and time availability of the present Master's thesis research.

With respect to the qualitative data collected, the possibility exists that participants were unable to fully remember and articulate all their experiences of, thoughts about, and benefits obtained over the course of the program. This was suggested by several participants who said they had difficulty remembering the material towards the end of each individual session, and by the RAs who witnessed participants expressing the benefits of MBCT during weekly group meetings, yet these same participants could not recall such benefits during the focus group. Thus, it is likely only partial reports were obtained from participants during the focus group in Week 10 of each treatment group. Also, although participants were given the option to complete journal entries about their experience with mindfulness practice, this was not seen as a realistic or feasible activity given participants' numerous other obligations and daily life challenges. All of the above speak to the necessity both of adapting the materials and treatment length, and to the methodological difficulties involved in investigating this population, and why a mixed

methods design was implemented and field notes collected, as per Fleming et al.'s (1996) recommendation.

With regards to a further limitation, it could be argued that two different group facilitators (principal investigator Anna Marson facilitated Groups 1 and 2, and Ali Dohadwala facilitated Group 3) introduced some measure of disparity among treatment groups and associated outcome data. For instance, each facilitator is likely to have contributed to differential interpersonal or group dynamics, or to have had different styles of offering psychoeducational instruction, and so forth. That said, the principal investigator was as diligent and conscientious as possible in assuring fidelity of administration across the three groups. For example, the secondary group facilitator of the third group was provided with in-vivo demonstrations, explanations, and training, as well as the principal investigator's original curriculum overviews inclusive of the program modifications for his reference. Furthermore, the MBCT program is highly manualized, which helps to assure fidelity of treatment delivery. This limitation is in itself a hidden strength in that it speaks to the need for treatment fidelity to be independent of therapist/facilitator. That is, if a treatment is so dependent on the therapist/facilitator, then the practical utility of a treatment is called into question and is likely to be of little interest to the therapeutic community. Moreover, the use of various facilitators reflects the realistic application of MBCT within clinical practice. Nevertheless, despite two different facilitators, significant and clinically meaningful changes were found. This speaks to the robustness of MBCT as a treatment and serves to increase the ecological validity of this study.

Implications for Counselling

In extending the empirical support for the use of MBCT in persons with ABI, these findings help extend the scope of options available for private practitioners and community-based brain injury programs. Correspondingly, this study offers several implications for counselling.

As previously delineated, it is imperative for counsellors to maintain a compassionate and flexible demeanour when working with an ABI population. More specifically, it is important to remember and empathize with the frequently associated deficits in motivation and initiation, inhibition (Jacobs, 1997; Kreutzer et al., 2010; Leathem et al., 1996; Teasdale & Engberg, 2005), and memory (Hofer, Holtforth, Frischknecht, & Znoj, 2010; Malia, Powell, & Torode, 1995; Moore, Stambrook, & Peters, 1989; Jacobs, 1997; Teasdale & Engberg, 2005; Tiersky et al., 2005) for example, as they influence group dynamics and may affect counsellor confidence. Consistent with Segal et al.'s (2002) recommendation that MBCT facilitators maintain their own mindfulness practice, it was believed that the principal investigator's success as a facilitator of the treatment groups largely depended on a strong background in mindfulness. It enabled the principal investigator to be calm, centred, patient, and flexible in the face of much group distractibility, lack of homework completion, attrition, tardy attendance, and the occasional air of nonchalance (with regards to personal change) among a few participants. Furthermore, it allowed for questions to be answered candidly in a comprehensible manner that was easy for new (mindfulness) students to understand. Likewise, it was important to remember that progress can be gradual, especially among a neurologically impaired population, given the related daily challenges previously discussed. To this end, it was helpful to emphasize when participants incorporated mindfulness into their daily lives, as some individuals with less self-awareness

seemed unaware of their use of MBCT otherwise; it is likely this helped sustain motivation and interest as well.

It was recommended by staff members that the principal investigator be accompanied by a research assistant to each group meeting in order to provide additional support to accommodate the needs of this population. More specifically, given the high propensity for ABI survivors to be prone to emotional lability and reactivity (Kreutzer et al., 2010; Leathem et al., 1996; Mazaux et al., 1997), staff were concerned that participants might become overwhelmed, triggered, or unable to contain their emotions during the MBCT group sessions. While these were not concerns in the present study, it may be appropriate for counsellors to recognize that adults with ABI might require greater (emotional) support than other non-neurologically impaired groups, which might necessitate having additional staff on-hand for MBCT groups. This further highlights the importance of conducting recruitment through staff referral or by obtaining additional background information on participants regarding *group readiness*.

It appears that an extended MBCT program will be most appropriate for ongoing psychosocial support for persons living with ABI; further empirical and practical delineation of an extended MBCT program are therefore required. Of course, extending the 8-week MBCT program will increase the cost of implementing and running the program; however, group-based approaches remain more cost-efficient than individual therapy (Ma & Teasdale, 2004). Further, psychosocial support is greatly needed amongst this population (Kreutzer, 2010).

Conclusion

In general, this study served to replicate and extend Finucane and Mercer's (2006) findings of MBCT as an acceptable and effective treatment for depression to another clinical population, specifically ABI. Like Finucane and Mercer's (2006) research, the quantitative data

denoted significant decreases in *current* depression; however, the present data did not reveal significant decreases in anxiety. Other than the obvious difference between sample populations (primary care patients vs. adults with a brain injury), it is difficult to surmise the discrepancy between the findings of the two studies, since both had comparable sample sizes. Nevertheless, the qualitative data were similar as they indicated that MBCT was both acceptable and beneficial to the majority of participants. Like Finucane and Mercer's (2006) study, most participants believed the group was too short and thought that follow-up support was necessary. Additionally, both studies suffered from weak methodological designs, Finucane and Mercer's by design, and the present study by circumstance: both studies lacked a waitlist control group, making it impossible to exclude the possibility of an expectancy effect accounting for perhaps some portion of the benefit of MBCT.

Nonetheless, the present study succeeded in extending Finucane and Mercer's study to a different clinical population, and furthered the work documented in the Bedard et al. (2008) pilot study -- the only known study to implement MBCT in an ABI study sample to date. Particularly, findings from the present study support Bedard et al.'s (2008) finding of MBCT as an effective treatment in the reduction of active depression symptoms in an ABI population. Findings reported here demonstrate MBCT as an acceptable and effective approach for decreasing depression and denial; increasing positive-reframing, active coping, and self-regulation; and improving self-awareness of the functional implications of deficits among individuals with ABI. The encouraging results of this preliminary study warrant further replication with a waitlist-control group and a larger sample size to further assess the effectiveness of MBCT as a treatment option for this population. In sum, the present study contributes to and extends both the existing brain injury treatment and MBCT literatures.

Over and above the findings of the present study that collectively speak to the acceptability and effectiveness of MBCT in ABI, there is another justification for the use of MBCT as a treatment option in this population. Neuroplasticity has been shown to facilitate recovery from brain injury in stroke patients (Doidge, 2007) and there is evidence for increased neuroplasticity attained through meditation (Cahn & Polich, 2006; Davidson & Lutz, 2007) -- a central practice component of MBCT treatment.

Lastly and wholeheartedly, this study offered a great deal of inspiration, learning, and insight both personally and professionally. The principal investigator would like to express immense gratitude to the participants for their generous contributions to the research.

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Table 1
Demographic Variables for Completers and Dropouts

	Completers (n = 12)			Dropouts (n = 9)		
	n	Mean	SD	n	Mean	SD	Statistic
Age (years, months)	12	57.6	12.4	9	54.1	7.49	$t(19) = -0.74, p = 0.47$
Sex	12	9 (75%) males		9	6 (66%) males		Ø
Ethnicity	12			9			Ø
Canadian		5 (41.6%)			4 (44.4%)		
Canadian-European		2 (16.6%)			2 (22.2%)		
European		3 (25.0%)			2 (22.2%)		
Caribbean		1 (8.3%)					
Jewish					1 (11.1%)		
Asian		1 (8.3%)					
English first language[1]	12	11 (91.6%) yes		9	9 (100%) yes		Ø
Relationship Status at Time of Injury	12	4 (33.3%) Married		9	5 (55.6%) Married		Ø
Current Relationship Status	12	3 (25%) Married		9	3 (33.3 %) Married		Ø
Education[2]	12	4.89	1.76	9	5.42	1.78	$t(19) = -0.68, p = 0.51$
Employment Status	12			9			Ø
Volunteer		2 (16.6%)			1 (11.1%)		
Part-Time		1 (8.3%)			1 (11.1%)		
Full-Time		1 (8.3%)					
Unemployed		3 (25.0%)			4 (44.4%)		
Pension/Retired		4 (33.3%)			3 (33.3%)		
Student		1 (8.3%)					
Annual Income[3, 4]	11	2.18	0.87	6	2	1.1	$t(15) = -0.38, p = 0.71$
Children	12	10 (83.3%) yes		9	7 (77.7%) yes		Ø
Age of Children	10	28.7	13.9	7	32.56	13.8	$t(15) = 0.57, p = 0.58$

Table 1 / continued
Demographic Variables for Completers and Dropouts

	Completers (n = 12)			Dropouts (n = 9)			
	n	Mean	SD	n	Mean	SD	Statistic
Living Situation	12			9			Ø
Alone		4 (33.3%)			4 (44.4%)		
With Partner		2 (16.6%)			2 (22.2%)		
With Family		2 (16.6%)			1 (11.1%)		
With a Relative		1 (8.3%%)					
Group Home					1 (11.1%)		
Alone with Support		3 (25.0%)			1 (11.1%)		
Cause of Brain Injury	12			9			Ø
Assault		2 (16.6%)			4 (44.4%)		
Stroke		3 (25.0%)			1 (11.1%)		
Accident (Rec)[5]		3 (25.0%)					
Accident (Motor)		2 (16.6%)			3 (33.3%)		
ADEM[6]		1 (8.3%)					
Aneurism		1 (8.3%)					
Overdose[7]					1 (11.1%)		
Age at Time of ABI (years)	12	44.0	18.1	9	46.1	7.65	$t(19) = 0.3, p = 0.75$
Time Since Injury (years)	12	13.7	18.8	9	8.06	7.75	$t(19) = -0.85, p = 0.41$
Presence of a Coma	12	Yes/No ratio = 0.5		9	Yes/No ratio = 0.5		no difference
Yes		4 (33.3%)			3 (33.3%)		
No		8 (66.6%)			6 (66.6%)		
Coma Length (days)	4	13.56	21.8	3	11	6.77	$t(6) = -0.22, p = 0.83$

Table 1 / continued
Demographic Variables for Completers and Dropouts

	Completers (n = 12)			Dropouts (n = 9)		
	n	Mean	SD	n	Mean	SD	Statistic
Presence of Multiple Brain Injuries	12			9			Ø
Yes		3 (25.0%)			1 (11.1%)		
No		9 (75.0%)			8 (88.8%)		
Prior Experience with Meditation	12			9			Ø
Yes		5 (41.6%)			3 (33.3%)		
No		7 (58.3%)			6 (66.6%)		

* Statistically significant at the $p \leq .05$ level; two-tailed.

Ø Some cells had less than 5 data points and therefore insufficient to complete $\underline{X}^2$ tests.

[1] Cantonese was first language for one of the *completers*.

[2] 1 = Less than Grade 7, 2 = Junior High School, 3 = Partial High School, 4 = High School, 5 = Partial College or at least 1-year specialized training, 6 = College or university graduate, and 7 = Graduate or professional training (MA, MSc., MD, MBA, PhD).

[3] 1 = $5, 000 to $9, 999, 2 = $10,000 to $24,999, 3 = $25,000 to $49,999, 4 = $50,000 or more.

[4] Four participants were excluded during the analysis because they responded "N.A." for annual income.

[5] Recreational accident (i.e., bicycle and tobogganing accidents).

[6] Acute disseminated encephalomyelitis.

[7] General anaesthetic overdose.

Table 2
Time 1 Study Variables for Completers and Dropouts

	Completers (n = 12)			Dropouts (n = 9)			
	n	Mean	SD	n	Mean	SD	Statistic
Self Awareness of Deficits Interview (SADI)							
SADI Question 1	12	0.67	0.65	9	0.22	0.44	$t(19) = -1.76, p = 0.09$
SADI Question 2	12	1.00	0.74	9	0.56	0.73	$t(19) = -1.37, p = 0.19$
SADI Question 3	12	0.50	0.67	9	0.33	0.50	$t(19) = -0.62, p = 0.54$
SADI Overall Total	12	2.17	1.70	9	1.11	1.27	$t(19) = -1.56, p = 0.14$
Brief COPE							
Self-Distraction	12	5.42	1.62	9	6.22	0.97	$t(19) = 1.32, p = 0.20$
Active Coping	12	6.25	1.22	9	6.78	1.39	$t(19) = 0.93, p = 0.37$
Denial	12	2.83	1.12	9	2.56	1.67	$t(19) = -0.46, p = 0.65$
Substance Use	12	2.25	0.62	9	3.00	2.00	$t(19) = 1.23, p = 0.23$
Emotional Support	12	6.33	1.56	9	5.22	1.86	$t(19) = -1.49, p = 0.15$
Instrumental Support	12	6.25	1.22	9	5.00	2.00	$t(19) = -1.78, p = 0.09$
Behavioural Disengagement	12	3.00	1.65	9	2.67	0.87	$t(19) = -0.55, p = 0.59$
Venting	12	4.50	1.73	9	5.11	1.17	$t(19) = 0.91, p = 0.37$
Positive Reframing	12	6.17	1.59	9	6.78	1.39	$t(19) = 0.92, p = 0.37$
Planning	12	6.92	1.00	9	6.78	1.40	$t(19) = -0.27, p = 0.79$
Humour	12	5.17	2.73	9	6.33	1.73	$t(19) = 1.12, p = 0.28$
Acceptance	12	7.3	1.29	9	7.33	0.71	$t(19) = 0.18, p = 0.86$
Religion	12	5.17	2.17	9	4.44	1.94	$t(19) = -0.79, p = 0.44$
Self-Blame	12	4.58	1.24	9	4.11	1.45	$t(19) = -0.80, p = 0.43$

Table 2 / continued
Time 1 Study Variables for Completers and Dropouts

	Completers (n = 12)			Dropouts (n = 9)			
	n	Mean	SD	n	Mean	SD	Statistic
Hospital Anxiety and Depression Scale (HADS)							
Anxiety Total	12	7.00	3.98	9	8.89	3.76	$t(19) = 1.10, p = 0.28$
Depression Total	12	7.08	3.18	9	8.56	2.92	$t(19) = 1.09, p = 0.29$
Satisfaction With Life Scale (SWLS)							
SWLS Total	12	19.17	9.79	9	17.67	7.67	$t(19) = -0.38, p = 0.71$
Adult Nowicki-Strickland Internal-External Control Scale (ANSIE)							
ANSIE Total[1]	12	5.67	2.84	9	6.89	4.14	$t(19) = 0.80, p = 0.43$

* Statistically significant at the $p \leq .05$ level; two-tailed.

[1] Scored in the external direction (i.e. the higher the score, the greater the degree of external locus of control).

Table 3

Hypothesis 1 : Participants will show a significant alleviation of anxious and depressive symptoms as measured by the HADS[1] following MBCT treatment.

	Time 1			Time 2				
	n	Mean	SD	n	Mean	SD	Statistic	Subjective Endorsement[2]
HADS Anxiety	12	7	3.98	12	5.83	3.04	$t(11) = 1.65, p = 0.06$ $d = 0.29$	27.30%
HADS Depression	12	7.08	3.18	12	5.67	3.03	$t(11) = 2.38, p = 0.018$* $d = 0.45$	9.10%

* Statistically significant at the $p \leq .05$ level; one-tailed.

[1] Items are rated on a 4-point Likert scale from 0 (meaning the depressive/anxious items are not applicable to the respondent) to 4 (meaning the the respondent greatly experiences the symptoms outlined), and then summed. For both depression and anxiety subscales, scores of 7 or less are considered non-cases, scores of 8 to 10 are doubtful cases, and scores of 11 or higher are definite cases (Zigmond & Snaith, 1983).

[2] Eleven participants were included in the focus group at T2 as one participants was out of the country on vacation.

Table 4

Hypothesis 2: Upon completion of the MBCT program, participants will show significant increases on self-report measures of internalized LOC, as measured by the ANSIE[1].

	Time 1			Time 2				
	n	Mean	SD	n	Mean	SD	Statistic	Subjective Endorsement[2]
ANSIE	12	5.67	2.84	12	5.25	2.49	$t(11) = 0.86, p = 0.20$ $d = 0.15$	27.30%

* Statistically significant at the $p \leq .05$ level;one-tailed.

[1] The ANSIE is scored in the external direction with possible scores ranging from 0 to 40 (Dixon et al., 1976), meaning higher scores indicate greater external LOC.

[2] Eleven participants were included in the focus group at T2 as one participants was out of the country on vacation.

Table 5

Hypothesis 3 : Following MBCT treatment, study participants will report measurable improvements in (a) acceptance, positive reframing, and self-regulation; (b) other ways of coping; and (c) satisfaction with life as assessed from focus group data and the Brief COPE[1] and SWLS[2] respectively.

	Time 1			Time 2				
	n	Mean	SD	n	Mean	SD	Statistic	Subjective Endorsement[3]
Acceptance, Positive Reframing & Self-Regulation[4]								
Acceptance[5]	12	7.25	1.29	12	7.25	1.23	$t(11) = 0.0, p = 0.50$ $d = 0$	18.20%
Positive reframing[5]	12	6.17	1.59	12	6.50	1.51	$t(11) = -2.35, p = 0.02$* $d = -0.21$	0%
Self-regulation[5]	12	6.25	1.23	12	6.92	1.17	$t(11) = -1.88, p = 0.04$* $d = -0.55$	54.5%
Other Ways of Coping								
Denial[5]	12	2.83	1.12	12	2.33	0.65	$t(11) = 2.57, p = 0.01$* $d = 0.45$	9.1%
Satisfaction with Life (SWLS)	12	19.17	9.79	12	20.83	9.12	$t(11) = -1.22, p = 0.12$ $d = -0.17$	27.2%

* Statistically significant at the $p \leq .05$ level; one-tailed.

[1] The Brief COPE does not yield an "overall" coping score, but rather provides a general picture of various coping strategies which can be compared in in relation to one another (Carver, 1997, 2007). To assess participants' dominant means of coping at T1 and T2, I summed ratings from the 2 items in each scale to arrive at 14 scores, one for each of the 14 scales.

[2] The *Satisfaction With Life Scale* (SWLS) total score is obtained by summing the 5 items (range: 5-35) (Hicken et al., 2002). High scores indicate extremely high satisfaction with life while low scores reflect poor satisfaction with life.

[3] Eleven participants were included in the focus group at T2 as one participants was out of the country on vacation.

[4] *Self-regulation* was operationalized as *active coping* (subscale 2, Brief Cope) and qualitative accounts reflecting participants' awareness of thoughts, emotions, or sensations; the acknowledgement that some coping action was needed; the expression of a coping attempt; or improved coping generally.

[5] As measured by the Brief COPE. (No other meaningful differences were found on any of the other Brief COPE subscales).

Table 6

Hypothesis 4 : MBCT treatment will result in increased self-awareness among study participants as measured by the SADI[1].

	Time 1			Time 2				
	n	Mean	SD	n	Mean	SD	Statistic	Subjective Endorsement[2]
SADI Question 1	12	0.67	0.65	12	0.67	0.49	$t(11) = 0.0, p = 1.00$ $d = 0$	
SADI Question 2	12	1	0.74	12	0.5	0.67	$t(11) = 2.17, p < 0.05$* $d = 0.68$	
SADI Question 3	12	0.5	0.67	12	0.25	0.45	$t(11) = 1.0, p = 0.34$ $d = 0.37$	
SADI Total Score	12	2.17	1.7	12	1.42	1	$t(11) = 1.52, p = 0.08$ $d = 0.44$	73%+

* Statistically significant at the $p \leq .05$ level; one-tailed.

[1] Questions 1-3 of the *Self Awareness of Deficits Interview* (SADI) are rated on a 4-point scale from 0 (accurate appraisal) to 3 (very inaccurate appraisal), yielding a total possible score of 9, higher scores indicating lower levels of intellectual awareness (Ownsworth, McFarland, & Young, 2002).

[2] Eleven participants were included in the focus group at T2 as one participants was out of the country on vacation.

+ Subjective endorsements were made with regards to self-awareness generally.

Figure 1. A graphic representation of the verbatim transcription from the focus groups. The size of the word indicates its frequency, with larger words representing those used more often.

Appendix A

Glossary

Acceptance is a fundamental attitude of mindfulness (Ostafin & Marlatt, 2008; Shapiro et al., 2006). Although mindfulness practice does not explicitly strive for change, change may be an indirect benefit of such training in acceptance. Mindfulness teaches acceptance; it does not encourage resignation in that action and change are embodied within this approach. Indeed, it is thought that acceptance enables change processes to occur (Hayes, 2002; Williams et al., 2006). How might acceptance function as a coping mechanism and possibly as an agent of change? Baer (2003; 2006) and Shapiro and colleagues (2006) suggest that acceptance, combined with awareness, observation, and nonjudgment, breaks down reactive and automatic responses that might otherwise prevent change from occurring. It is possible that dampened automatic responses in the face of acceptance allow for greater personal transformation and growth. Hayes (2002) argued that acceptance and cognitive defusion naturally lead to action because they loosen rigidly held scripts and rules and open up forms of logically and creatively considered reality-based action-oriented options. In effect, it appears that acceptance and mindfulness interrupt automatic cognitive and behavioural responses and, in doing so, undermine the rigid cognitive and behavioural regulatory effects of unnecessary self-rules, and make way for adaptive self-regulation, coping responses, and possibly even, change. Such thinking has been continuously reinforced by mindfulness theorists (Baer, 2003; Palmer & Rodger, 2009; Shapiro, et al., 2006). Recently, Ostafin and Marlatt (2008) indicated that acceptance also acts as a moderator of automatic motivations (such as the desire for alcohol consumption) and resultant unhealthy, dangerous behaviours (such as hazardous drinking).

This suggestion of acceptance as a moderator variable is consistent with Brown and Ryan's finding that participants who scored higher on a mindfulness measure reported significantly greater self-regulated affect and behaviour (as cited in Shapiro et al., 2006), and with the Tacon et al. (2003) finding of significant decreases in reactive coping style among female heart disease patients following an eight week MBSR program. Tacon and colleagues interpreted their finding to indicate the acquisition of novel coping styles such as acceptance and lowered automatic responses to difficulties following MBSR treatment (Tacon et al., 2003). More recently, Shapiro et al. (2006) proposed that, "through consciously (intention) bringing awareness (attention) and acceptance (attitude) to experience in the present moment, we will be better able to use a wider, more adaptive range of coping skills" (parentheses in the original, p. 380). Overall, empirical findings support the notion that acceptance acts as a coping mechanism and as means of change in and of itself.

Acquired brain injury (ABI) is the result of a physical, functional, or metabolic change to the integrity of the brain occurring after birth (Fraas & Calvert, 2009) and is not due to congenital, hereditary, or degenerative causes such as Parkinson's or Alzheimer's (Brain Injury Association of America, 2010). The causes of ABI can include trauma, vascular disruption, stroke, infectious disease, and tumour.

Cognitive change. The practice of mindfulness is believed to foster changes in thought patterns or in attitudes about one's thoughts (Baer, 2003; Garland et al., 2009). For example, nonjudgmental observation of painful anxiety-provoking thoughts may lead to the understanding that they are *"*just thoughts*"* rather than veridical reflections of reality. Thus, with practice, such

thoughts do not necessitate escape or avoidance behaviours (Baer, 2003; Kingston et al., 2007; Shapiro et al., 2006). Therefore, in conjunction with exposure to aversive stimuli, mindfulness may promote *cognitive change* by a "turning down" or attenuation of negative appraisals of events (Weinstein et al., 2009).

Cognitive distraction refers to the intentional or unintentional occupation of attentional resources from a task at hand. With regards to *cognitive distraction* in MBCT, it is believed that depression relapse develops through automatic reactivation patterns of negative thinking reinforced through feedback loops that continuously regenerate. If left unchecked, such processes can lead to more severe and persistent sadness which perpetuates the cycle of depressive symptomology. MBCT was developed to inhibit such reactive feedback loops (Kenny, 2008; Ma & Teasdale, 2004; Michalak et al., 2008; Segal et al., 2002, p. 39), in part, by occupying scarce attentional resources (through mindfulness practice) that might otherwise support rumination (Segal et al., 2002, p. 39). In doing so, mindfulness skills help redirect attention to more constructive cognitive and behavioural patterns by means of *cognitive distraction* (Garland et al., 2009).

Exposure. Mindfulness practice is partially based on traditional meditation rituals which involve extended periods of motionless sitting and therefore *exposure* to resulting muscle and joint pain. Mindfulness practitioners often encourage students to resist the urge to shift their position to relieve discomfort, but instead, to focus on the pain and assume a nonjudgmental attitude toward the sensations, thoughts, and feelings that arise (Baer, 2003). This training is believed to reduce the distress associated with pain. Research has demonstrated that prolonged exposure to painful sensations, in the absence of catastrophic consequences, may lead to desensitization and a reduction in emotional reactivity (Baer, 2003; Weinstein et al., 2009). Similar principles may be applied to withstanding painful emotional states. According to this theory, if mindfulness fosters more objectively informed responding, then situations can be viewed in more benign or neutral terms (Weinstein et al., 2009). Thus, mindfulness skills may improve the ability to tolerate negative emotional states and to cope with them more effectively.

Locus of control (LOC) is defined by whether an individual perceives both positive and negative event outcomes as being contingent upon his or her behaviour (internal) or as the result of others, luck or fate (external) (Chubb & Fertman, 1997; Finch, Kendall, Spirito & Mikulka, 1981; Moore & Stambrook, 1995). This construct is of particular interest because LOC orientation is thought to be closely tied to coping style (Moore & Stambrook, 1995). It is also reasonable to suggest that increases in internal LOC will support increases in agency and empowerment.

There is some evidence suggesting that mindfulness contributes to an increased internal locus of control (LOC; Ivanovski & Malhi, 2007; Matchim & Armer, 2007; Tacon et al., 2004). In a study investigating the relationship between mindfulness and LOC, Tacon et al. (2004) used MBSR among 27 female cancer patients and found significant improvements in internalized loci of control in two of three subscales on the Multidimensional Health Locus of Control Scale (MHLC; internal and chance). The third subscale (powerful others) also revealed improvements; however, these results were not statistically significant (Tacon et al., 2004). In a review of the psychological and neurophysiological literature pertaining to MM, Ivanovski and Malhi (2007) reported on a study in India which offered a traditional 10-day Vipassana Meditation (VM)

course among an incarcerated population. Various benefits were observed, including a more internalized alcohol-related LOC. In a pilot study, Bedard et al. (2003) evaluated the effectiveness of MBSR in improving quality of life among individuals with mild to moderate TBI ($N = 10$). Here, the authors noted a deterioration of internal LOC on the MHLC among the control group, but no change in the treatment group, thus they remained unsure whether such findings represented a spontaneous deterioration effect for the control group, a statistical aberration due to sample size, or a genuine protective factor associated with the MBSR intervention (Bedard et al., 2003). In sum, although preliminary studies have investigated the effect of mindfulness on LOC, evidence remains limited regarding the correlation between mindfulness interventions generally and MBCT in particular, and improved internal LOC.

Mindfulness meditation (MM), a central component of all mindfulness practice, is rooted in Buddhist *Vipassana* or *insight* meditation (Palmer & Rodger, 2009). MM cultivates a moment-to-moment awareness hinged on non-judgment and acceptance that serves to focus the mind to better recognize and assimilate one's perceptions of self and environment (Jain et al., 2007). This is generally accomplished by focusing one's attention on a singular continuous stimulus, such as the breath. Mindfulness practice centres on observing and becoming aware of internal and external experiences without attempting to alter them (Jain et al., 2007). Such awareness ideally extends beyond formal meditation practice into daily life and promotes detached observation of thoughts and emotions, thereby discouraging automatic reactive responses and increasing peace of mind. These teachings in MM are the foundation of all mindfulness interventions generally, and of MBCT specifically.

Positive reappraisal is an emotion-focused process whereby stressful events are reconstrued as benign, valuable, or beneficial (Garland et al., 2009). It has been proposed that the cognitive shifting and mindful decentring afforded by mindfulness practice facilitates this process of attributing new meaning to previously stressful events (Garland et al., 2009). Other researchers have made similar assertions that an underlying mechanism of mindfulness practice is cognitive reappraisal (Kabat-Zinn, 1982). Once a state of conscious awareness is attained, one may reframe his or her circumstances more effectively, thus leading to a cognitive reappraisal. This construct has been termed *positive reappraisal* because researchers found this process often leads individuals to reframe adverse circumstances in meaningful ways which instil hope and resilience (Garland et al., 2009).

According to Garland et al. (2009), positive reappraisal is a critical component of meaning-based coping, which enables individuals to adapt successfully to life stressors. Research has demonstrated that this ability to benefit from adversity is associated with improved resilience and health outcomes (Garland et al., 2009). Intriguingly, researchers have demonstrated that the regulation of negative emotion through reappraisal induces increased prefrontal activity and decreases amygdala activity (Modinos et al., 2010). More specifically, Modinos et al. (2010) demonstrated that individual differences in the tendency to be mindful predicted activity in neural regions underlying reappraisal, with prefrontal cortex activation increasing with more mindfulness. Interestingly, this prefrontal activation was inversely correlated with the amygdala response to negative scenes, which supports its role in down-regulating emotion-generating cortical regions (Modinos et al., 2010). Such findings suggest that mindfulness may modulate neural systems involved in the cognitive control of negative emotion (Modinos et al., 2010). Although this study has various limitations, such as exclusively investigating a female sample, it

provides preliminary support for the hypothesis that reappraisal is an underlying mechanism of mindfulness, and additionally offers a neurological perspective for how mindfulness appears to foster self-regulation. These findings are interesting but controversial nonetheless in that they are new findings and require more empirical support.

Relaxation is not the ultimate goal of mindfulness practice, however it often results from various meditation techniques (Baer, 2003; Garland et al., 2009). With increased awareness, participants may utilize mindfulness skills that induce relaxation as a coping strategy for difficult situations. Furthermore, relaxation often helps one decentre from triggering thoughts or emotions, and obtain an objective *breathing space*, before reassessing the situation mindfully. In this way, mindfulness and relaxation are often complimentary processes. A significant difference however between MBCT and other relaxation techniques, such as progressive muscle relaxation, is that MBCT simply involves noticing bodily sensations. Whereas progressive muscle relaxation requires tensing and relaxing various muscle groups, MBCT does not focus on altering one's physical state but rather on acceptance and nonstriving.

Reperceiving has been defined as a process of rotating one's consciousness, so that what was previously perceived as 'subjective' becomes 'objective' (Shapiro et al., 2006). Reperceiving is thought to foster an objectification of, or disidentification from, one's mental contents (Garland et al., 2009). In turn, this mental shift from content-entangled consciousness to a decentered observer-participant (or arm's length) consciousness instigates several direct change mechanisms, such as self-regulation; values clarification; cognitive, emotional, and behavioural flexibility; and exposure (Garland et al., 2009). Indeed, the ability to reperceive or to shift perspective has been recognized by developmental psychologists as a fundamental component of development and growth across the lifespan (Shapiro et al., 2006). Therefore, if reperceiving is in fact a mechanism of mindfulness, as it is hypothesized to be, mindfulness practice is simply a continuation of a naturally occurring human developmental process where one gains an increasing capacity for objectivity about one's internal experience (Shapiro et al., 2006).

Satisfaction with life (SWL) is defined as an overall assessment of feelings and attitudes about one's life at a particular point in time ranging from negative to positive (Diener, 1984) and includes the desire to change one's life, and satisfaction with the past and future (Diener, Suh, Lucas, & Smith, 1999).

Self-regulation and coping in mindfulness practice help individuals to stop operating on *"automatic pilot"* (Brown & Ryan, 2003; Palmer & Rodger, 2009; Shapiro et al., 2006); that is, mindfulness allows one to become more aware of one's automatic tendencies, gradually learn to identify such patterns, and subsequently take a momentary objective *breathing space* in order to assess the situation and available coping strategies. Thus, mindfulness helps foster informed and self-endorsed behavioural regulation, which has long been associated with increased well-being (Brown & Ryan, 2003) and coping (Baer, 2003; Weinstein et al., 2009). Such increased awareness helps bring unconscious processes to the forefront, thereby allowing normally repressed needs or emotions to be consciously explored and regulated through mindfulness; indeed research suggests that automatic processing often limits consideration of options which would be more congruent with one's needs and values (Brown & Ryan, 2003; Shapiro et al.,

2006). In MBCT, participants are taught how to integrate mindfulness into daily practice, thus enabling self-regulation and coping across various contexts.

In addition, recent evidence (Weinstein et al., 2009) supports the role of *dispositional or trait* mindfulness in coping with stressful events. Weinstein et al.'s (2009) study was comprised of four studies using laboratory-based, longitudinal, and daily diary designs to examine the role of trait mindfulness on appraisals of coping with stressful experiences (e.g., lab-based social evaluation tasks, midterm and final examinations) among college students (*N*s = 65-141), and the associated consequences on well-being. Measures included the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) to measure dispositional or trait mindfulness, the COPE (Carver, Scheier, & Weintraub, 1989) questionnaire to assess coping orientation, and well-being was evaluated using the Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988) to assess affect over the past month, and the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Results demonstrated that trait mindfulness mediates adaptive stress processing, especially by contributing to more benign appraisals of stressful events and adaptive coping which is considered to be fundamental underpinnings of mental health and well-being. It might be that both trait mindfulness and practice-based mindfulness enables one to notice early "warning signs" of imminent negative symptomology and to self-regulate accordingly before the symptoms escalate.

Traumatic brain injury (TBI) is a sub-category of ABI associated with cortical damage occurring from primary and secondary acute injuries. Primary injury involves blunt trauma and rotational forces occurring at the time of trauma, whereas secondary injuries arise afterwards, and include damage due to intracranial pressure, hypoxia, neural damage due to blood-neuron contact, and central nervous system effects of other organ system damage (Moore & Stambrook, 1995). While primary injuries remain beyond the control of medical treatment teams, limiting the extent of secondary damage forms the basis of neurosurgical treatment following TBI (Moore & Stambrook, 1995). TBI most often occurs among young male adults (Dikmen et al., 2001; Moore & Stambrook, 1992; Teasdale & Engberg, 2005), children, and adolescents (Sosin, Sniezek, & Thurman, 1996; Teasell et al., 2007), given their increased proclivity towards risky behaviours. Among adult males, motor vehicle accidents, assaults, and gunshot wounds account for the large gender discrepancy in sustained TBIs (Moore et al., 2006). Despite this distinct delineation of TBI, by definition and a growing consensus, any TBI may be categorized as an ABI (Brain Injury Association of America, 2010; Brain Injury Network, 2010).

Appendix B

Raisin Exercise

Note: at least 10 second pauses between phrases; deliver instructions in matter of fact way, at a slow but deliberate pace.

I'm going to come around and give each of you a few objects.

Now I would like you to focus on one of the objects and imagine that you have never seen anything like it before. Imagine you have just this moment landed from another planet and you have never seen anything like it in your life.

Taking one of these objects in your hand or between your fingers and thumb.

Paying attention to seeing it.

Looking at it carefully, as if you had never seen such a thing before

Turning it over between your fingers.

Exploring its texture between your fingers.

Examining the highlights where the light shines… the darker hollows and folds.

Letting your eyes explore every part of it, as if you had never seen such a thing before.

And if, while you are doing this, any thoughts come to mind about "what a strange thing we are doing" or "what is the point of this" or "I don't like these," then just noting them as thoughts and bringing your awareness back to the object.

And now smelling the object, taking it and holding it beneath your nose, and with each in-breath, carefully noticing the smell of it.

And now taking another look at it.

And now slowly taking the object to your mouth, maybe noticing how your hand and arm know exactly where to put it, perhaps noticing your mouth watering as it comes up.

And then gently placing the object in the mouth, noticing how it is "received," without biting it, just exploring the sensations of having it in your mouth.

And when you are ready, very consciously taking a bit into it and noticing the tastes that it releases.

Slowly chewing it… noticing the saliva in the mouth… the change in consistency of the object.

Then, when you feel ready to swallow, seeing if you can first detect the intention to swallow as it comes up, so that even this is experienced consciously before you actually swallow it.

Finally, seeing if you can follow the sensations of swallowing it, sensing it moving down to your stomach, and also realizing that your body is now exactly one raisin heavier.

Discussion

Remember to embody genuine curiosity and inquiry about people's experience; do not rush for a premature explanation of what is going on. Ask as many open-ended questions as possible!

Responding to Questions:

- normally eating is automatic – not paying attention
- paying attention changes the experience ones have – intensifies it, sensory experience is different than intellectual
- frustration/dislike – emphasize importance of noticing these reactions

Follow Up Questions:

Does anyone want to say anything about their experience while eating?

Did anyone notice anything different from the way you usually eat?

What was the difference?

Any other comments before we move on?

Bringing it together:

- WE'RE NOT AWARE OF WHAT'S GOING ON A LOT OF THE TIME.
  This simple exercise illustrates how a lot of the time we are not getting our moments worth, we are not paying attention to what is happening.

  All the textures, color, tastes, just disappear in one big mouthful.

  We aren't really there for it.

- IF WE CAN BRING AWARENESS WE BECOME AWARE OF ASPECTS OF LIFE THAT OTHERWISE PASS US BY, BOTH THE GOOD AND THE BAD.
  MISSING OUT ON THE GOOD MEANS LIFE ISN'T AS RICH AS IT MIGHT BE; MISSING OUT ON THE BAD MEANS THAT WE'RE NOT IN POSITION TO ACTUALLY TAKE SKILLFUL ACTION OURSELVES. DEPRESSION/ANXIETY CAN CREEP UP ON US WHEN OUR MINDS ARE ELSEWHERE.

  This exercise also shows what happens when we bring awareness to experiences.

  It's different than the way we normally eat raisins – and then our awareness allows us to notice any sense of irritation or urgency or doubt like "what on earth are we doing?" So it's all good noticing.

- This exercise is a good of example of what we will be doing here. We will practice bringing awareness to our everyday activities, so that we know what is going on and can actually change the nature of the experience. If you are fully aware of thoughts, feelings and sensations in the body, in the sense that you may have glimpsed at in the raisin exercise, you can actually change the experience; you have got more choices, more freedom.

- WE ARE TRAINING AWARENESS
  At the moment this is just theoretical; we need to have more and more experience of honing our awareness, so that you can see, eventually, in what way it is going to help. At the moment the connection between slowly eating a raisin and protecting yourself against depression and anxiety in the future may not be obvious. But the first step, and what we are doing in the first part of the program, is training awareness.

- WE CANNOT CONTROL WHAT COMES INTO THE MIND BUT WE CAN CONTROL WHAT WE DO NEXT. This group is all about being able to move to a place of awareness from which we can choose what the next step is, rather than run off the old habits of mind.

Appendix C
The Body Scan

(Adapted from Bieling, Antony, & Beck, 2003, p. 133)

To begin the body scan, simply start by lying down on a comfortable surface, like a mat, sofa, or bed. Using breathing, allow your attention to become centred and focused on the sensations of lying down, like the contact of your body with the surface below and the force of gravity acting on you.

The next step is to bring you attention to a certain part of your body. We'll start with the toes of your left foot.

Focus on the feelings and sensations in those toes –their temperature, whatever the toes are touching, whatever it is that you feel. This may take a few minutes.

Once this is done, take a breath in, and then, as you breathe out, imagine the air moving down through your leg, into your foot, and out through your toes.

This idea of breathing out through your toes often seems a bit odd the first time you try. The idea is to visualize, but also try to feel the breath moving out of that part of the body. If you notice tension in any particular part of the body, breathing out through that part of the body may be useful in noticing, accepting, and then letting that part of the body relax.

Once you have tried several exhalations through the toes of your left foot, you can move on to do the same thing with the rest of your left foot.

Then, continue to scan each part of the body.

In each case, bring attention to that part of the body, feel whatever sensations, tensions, or even thoughts come from that part of the body, and then breathe those feelings out of the body.

1. Toes of left foot
2. Rest of left foot
3. Left calf
4. Left thigh
5. Toes of right foot
6. Rest of right foot
7. Right calf
8. Right thigh
9. Lower abdomen
10. Chest
11. Left shoulder
12. Left bicep

13. Left forearm

14. Left hand, including breathing out through the fingers

15. Right shoulder

16. Right bicep

17. Right forearm

18. Right hand, including breathing out through the fingers

19. Neck

20. Mouth and jaw

21. Eyes and forehead

22. Top of the head

At the end of the body scan, visualize and feel yourself breathing through the top of your head. This may seem like a whale breathing through its blowhole. The breath comes into the lungs, and on each exhalation, the air flows freely through your whole body and then out. Spend a few minutes doing this before the end of the exercise.

Appendix D

Sitting Meditation: Mindfulness of the Breath and Body (30 minutes)

1) Practice mindfulness of breath for 10 min.:

Let's begin the practice with the intention to make this a regular practice of being with yourself fully in a space and time where you will be free from interruptions. This is a time to set aside the constant doing that we normally engage in and to come into a state of non-doing, of simply being and of becoming aware of our own being. This practice may seem to have the effect of slowing time down simply because it is not our usual habit to stay fully connected with each moment as it happens in the present. (45s)

Mindfulness of Breath

1) This practice of non doing begins with simply allowing your body to become comfortable by assuming a posture that embodies dignity and alertness either sitting on the floor on a cushion or in a straight backed chair - and making whatever adjustments you feel you need to make - some people find it helpful to straighten the neck over the spine, tuck the chin slightly and relax the shoulders to help correct the posture to a strong, relaxed and dignified position. And now gently closing the eyes if that is comfortable for you (1:40)
2) And once you feel settled, turn your attention to the fact that you are breathing - becoming aware of the movement of the breath as it goes into and out of the body. Simply allow your mind to rest in your breath. No need to attempt to deepen or alter your breath in any way – it is simply about allowing yourself to fully experience each breath, resting your mind on its movements and sensations. (2:15)
3) You may like to focus on the chest as it rises and falls with each breath or deep down in the belly with the sensations of the abdominal wall as it expands with the in-breath and contracts gently with the out-breath. Wherever the breath is observed in the body as it comes and goes, this observation roots us to the present moment, not trying to accomplish anything but just simply being with the breathing as it is in each moment. (3:00) (PAUSE – 30 seconds to 3:30)
4) Giving full attention to the duration of each in-breath and to each out-breath as they follow in succession, in a never ending flow. Being a passenger to the breath. (3:45) (PAUSE) (30 seconds to 4:15)
5) At times you will likely notice the mind wander to thoughts of the future, worries or anticipation, and thoughts of the past, memories - this is a normal occurrence and there is no need to try to control it. The idea is simply to notice your attention is no longer with your breathing and without judging or criticizing yourself, intentionally and with gentleness simply redirecting your attention back to your breathing wherever it happens to be and just observing it again - moving up close to your breathing and riding the wave of each breath, fully conscious of the duration of each breath - the rise and fall and the sensations that arise with its path from moment to moment. It does not matter how many times the mind wanders - all that matters is that you continue to return your focus to the breath, to the belly or the chest, wherever your observation point is, and doing this every time you notice the mind has wandered and allowing yourself to fully experience the sensations of the breath just exactly as they are from moment to moment. 5:40 (PAUSE) (1min/ 6:40).
6) No need to allow thoughts to disturb or frustrate you – let them be background noise much like the sound of a car outside. Just let them be, let them pass and have the breath

as the primary object of your focus. Allow your mind to rest in your breath and let go of any judgments that arise towards your breath, yourself, your thoughts or the practice – notice that the breath continues to come and go – it is always present for you to connect with, like the waves on the shore, it's never ending. So just be with the breath and let it happen. 7:40 (LONG PAUSE) 1 min (8:40)

7) And every time you find that your mind has wandered off the breath, just be aware of it as soon as you can, and bring your mind back to your chest or belly, back to the present moment, to the observation and flow of the breathing The breath can help you remain present and help to attune you to the state of relaxed awareness and stillness that is always available to you 9:00 (PAUSE) 1 min/10
8) **As you observe your breathing, you may become aware of some physical sensations in the body such as tension, or heat, that may even be quite intense at times. As you sit with your breath, intentionally allow your awareness of the breath to expand now to include a sense of the physical sensations throughout the whole body. While maintaining awareness of the movement of the breath in the background, change your main focus so that you become aware of the body as a whole and of the sensations of the body as they move and shift. Perhaps you will sense the movement of the breath through the body as a whole, like the whole body is breathing. If you do not have that sense, that's okay too. Just allow your experience to happen. 10:55**
9) So with your breath coming and going in the background and the wider sense of the body as whole, moving with and being moved by the breath, you may choose to include awareness of the more local, particular sensations in the body – such as places where the body comes into contact with the chair or cushion, or whatever you are seated on – sensations of touch, pressure or contact of the feet or knees with the floor – you might even notice the hands where they rest on the thighs as you sit in a position with an erect posture, your head balanced on your neck, sitting with dignity. So as you expand your awareness to include not only your breathing but also your body as a whole to include any feelings and sensations that arise in each moment, and being with whatever happens without judging or reacting to it – just being totally present with whatever your feelings are and with your breath and with a sense of the body as a complete, dignified whole. 13:25 (PAUSE) 1:30/15min
10) And whenever your mind wanders as minds have a tendency to do – away from the breath and the physical sensations – bring it back to your body and the experience you are having in this moment – not doing anything or going anywhere, just sitting with full awareness of the present, of the breath and the body together. (small pause) If your mind wanders 100 times, then bring it back 100 times and you will have done what you need to do. 15:45 (PAUSE) 1 min/16:45
11) As best you can, take each moment as it comes and keep things simple, with lightness and friendly curiosity towards yourself, and allow yourself to experience the sensations throughout your body as they are arising in the here and now. From moment to moment, being fully with yourself. The breath can be a starting point to return to anytime you find

    yourself distracted or lost in thought – it does not matter how long you lose your focus or what has distracted you – the breath is always there for you to return to. 17:00
12) You may notice that some strong or uncomfortable sensations in the back or knees or shoulders and there may be moments where your awareness repeatedly jumps to these

sensations and away from the intended focus on the breath and the body as a whole. This type of experience is normal and happens to many of us. Now if it is actually painful in a way that you feel is not good for you then please trust your judgment and your own connection with your body and adjust yourself physically. This can be done with mindfulness by simply being aware of the intention to move before you actually move, so that even this movement is done with awareness and is not just an automatic reaction to the strong sensations in the body. 18:00

13) If on the other hand, the experience is simply unpleasant or uncomfortable for you, see if you can stay with it a little bit longer to explore your reactions to it. Engage with it by directing your awareness and focus into the specific area of the body wherever you notice the strong sensations, and totally experiencing what your body is saying to you right here and right now and breathing with whatever is happening. And getting very specific with your observations. You can direct the breath into whatever part of the body is experiencing the intensity and explore the sensations with gentle, wise attention. Noting to yourself 'What exactly do the sensations feel like?' (pause) 'Precisely where are they located?' (pause) 'Do they shift over time in intensity or location?' (pause) 'This is not about thinking about what you are experiencing or labelling it but simply allowing yourself to connect with what is actually there. Use the breath to bring awareness into these intense areas – breathing into whatever sensations are arising, watching the breath travel down and directing it into whatever area is calling your attention just as we do in the body scan. 20 min (PAUSE) 1 min/21
14) You may find it very challenging to focus during these times and to resist automatic reactions to discomfort – simply observing them is one way to stay connected to the present, to the practice. Does whatever is happening in your body bring up anger or anxiety? These are normal reactions that many of us experience during practice – this is not necessarily an easy practice. And it's not at all about what you are experiencing physically or emotionally, but it's really about how you are connecting with whatever you are experiencing in the moment. So it's about noticing what you are feeling and then expanding the awareness to include your reactions to it. (pause) Are you tensing up in response to a particular sensation you find unpleasant? How is your breathing being affected by it – are you restricting your breathing in response, shortening it or tightening in the throat?

See if you can become aware of these reactions and then soften them a little bit by just staying with whatever is happening, reassuring yourself that it is ok, and using the breath to focus your awareness into the area of discomfort, opening to it a little bit more and softening instead of bracing and reacting so that even in the intensity you may find stillness and acceptance. Softening the throat, the chest, the belly, the hips, the shoulders, the neck, whatever places that you tend to automatically tense to resist your experience 23:30 (short pause) 23:45.

15) Staying aware in these moments and not checking out, not fleeing from it is very different from our usual habit of constantly trying to manage our experience by clinging to what we perceive is good and pushing away anything that is the slightest bit difficult or unpleasant. And watching what happens in moments where the practice is uncomfortable gives us the opportunity to learn about how we escape when things get tough in our lives

too. (pause) So noticing now the breath, the body, the way we are holding our experience and just allowing the stillness and the silence and all that is (24:45) (PAUSE) 30sec/25:25

16) Whatever I flee from pursues me, whatever I embrace transforms me - Jennifer Blackwell. 25:30 (PAUSE) 1 min/26:30
17) Checking in to see where your awareness has taken you, gently returning it back to the breath, to the body as a whole, to the sensations of the body. No need to judge – simply redirect your focus and begin anew again. Reconnecting with the here and now by returning your attention to the breath or to the sense of the body as a whole. 27:00 (PAUSE) 10 sec 27:10
18) And once you have refocused you can once again expand your awareness to include the body as a whole, or a sense of sensations throughout the body. And just resting in the stillness, in the awareness of the present moment, resting in being – enjoying this break from doing or striving. There is nowhere to be or go. Here is all. Now is all. 27:30 (PAUSE) 1:30/ 29:00
19) And as we come to the end of the practice, taking this time to congratulate yourself for investing in the practice – giving your attention and caring to yourself in this way. Deepening your ability to be present with yourself, with your ever-changing experience and nourishing yourself with stillness and non-doing. This may not have been an easy practice for you today – you will find some days are just like that – but each time you practice you are connecting with a powerful intention to awaken to the true nature of your being and transform your relationship with yourself, with life. 30s / 29:30 (pause 10 seconds)
20) From Li Po:

    The birds have vanished into the sky,
    and now the last cloud drains away.
    We sit together, the mountain and me,
    until only the mountain remains.

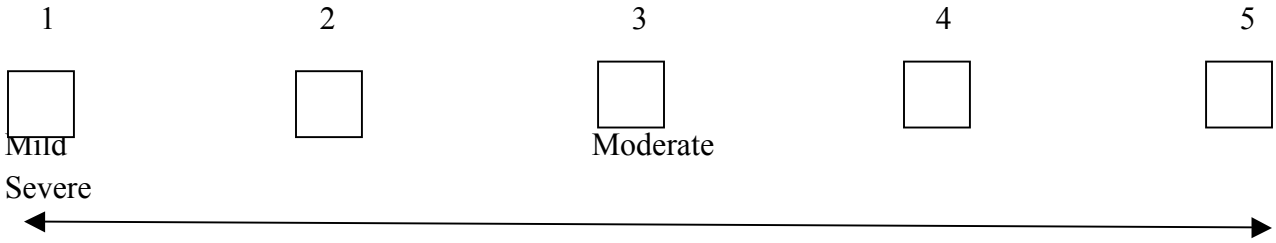
21) Soaking in the stillness, the energy of your being and when it feels natural for you to do so, open your eyes and engage mindfully with the rest of your day.

Appendix E

Clinimetric Measure of Brain Injury Severity

(as indicated by clinical experts)

Because we don't have documentation recording each participant's level of brain injury severity, it would be immensely helpful if you would be able to provide your clinical opinion about each participant's level of brain injury (i.e., mild, moderate, severe). Simply provide a score (from 1-5) beside each listed participant that most accurately reflects your opinion on the level of brain injury the participant has. This will help us to report a more accurate description of the sample used in this study and consider implications based on injury severity.



Please consider the following aspects of functioning when making your rating:

- Emotional functioning
- Social functioning
- Adaptive behaviour (daily living tasks, independence)
- Behaviour (acting out or behavioural control)
- Cognition (memory, concentration, attention, decision-making, planning etc.)
- Communication (effective self-expression and understanding of communication)

Participants' Ratings:

(name)	(rating)

Please feel free to provide comments (optional):

_____

_____

_____

_____

Appendix F

Pointing Charts for use with the Brief COPE and SWLS

Note: Each pointing chart is designed to fit a full 8.5 x 11 page

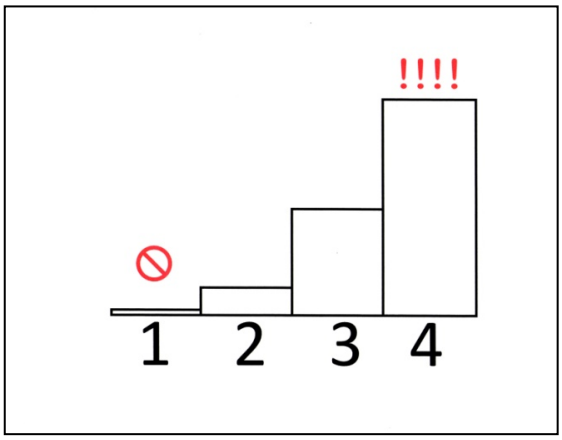


Figure 1 Pointing Chart for the Brief COPE

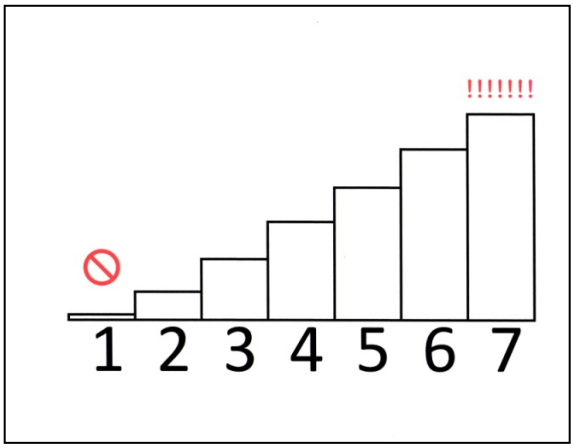


Figure 2 Pointing Chart for the SWLS

Appendix G

PARTICIPANT DEMOGRAPHIC INFORMATION

The following questions are required to describe the individuals participating in this study as a group. No individual will be identified in any report of this study.

1. Your date of birth: _____ your age: _____ (years)

2. Your gender: (please circle one)

   1 Male
   2 Female
   3 Transgendered

3. Your ethnic or cultural background: _____

4. What language do you speak at home? (please circle one)

   1 English as first language
   2 Other language as first language; please specify _____
   3 English as second language
   4 Other language as second language; please specify _____

5. Your relationship status **AT the time of your brain injury**: (please circle one)
   1 single
   2 married
   3 common-law
   4 divorced/separated

6. Your relationship status **NOW:** (please check one)

   1 single
   2 married
   3 common-law
   4 divorced/separated

7. What is the highest level of education that you have completed? (please circle one)

   1 less than 7^{th} grade
   2 junior high school (9^{th} grade)
   3 partial high school (10^{th} or 11^{th} grade)
   4 high school graduate
   5 partial college (at least 1 yr. or specialized training)
   6 standard college or university graduate

7 graduate professional training (MA, MSc, MD, MBA, PhD)

8. Your current employment status: (please circle one)

   volunteer part-time full-time unemployed other:_____

9. Income: (please circle one)

   $5,000-$9,999 $10,000-$24,999 $25,000-$49,999 $50,000 or more other:_____

10. Do you have any children? If so, what are your children's ages **NOW**? _____

11. Who do you live with? _____

12. Your religion/spiritual orientation: _____

13. The date of your brain injury: _____

14. What caused your brain injury?

    _____

15. Your age at the time of your brain injury? _____ (years)

16. What was your Glasgow Coma Scale (GCS) score: _____

17. Who confirmed your GCS? _____

18. Are you currently on medication? (Please specify)

_____

19. Have you ever participated in a *mindfulness* group before? _____

    Please explain: _____

Should you wish to do so, please note any other comments in the space provided below:

Thank you for taking the time to complete this survey.

Appendix H

Self-Awareness of Deficits Interview

1. Self-awareness of deficits

Are you any different now compared to what you were like before your accident? In what way? Do you feel that anything about you, or your abilities has changed?

Do people who know you well notice that anything is different about you since the accident? What might they notice?

What do you see as your problems, if any, resulting from your injury? What is the main thing you need to work on/would like to get better?

Researcher Rating ☐ Staff Rating ☐

Prompts

Physical abilities (e.g. movement of arms and legs, balance, vision, endurance)?
Memory/confusion?
Concentration?
Problem-solving, decision-making, organizing and planning things?
Controlling behaviour?
Communication?
Getting along with other people?
Has your personality changed?
Are there any other problems that I haven't mentioned?

2. Self-awareness of functional implications of deficits

Does your head injury have any effect on your everyday life? In what way?

Prompts

Ability to live independently?
Managing finances?
Look after family/manage home?
Driving?
Work/study?
Leisure/social life
Are there any other areas of life which you feel have changed/may change?

Researcher ☐ Staff ☐

3. Ability to set realistic goals

What do you hope to achieve in the next 6 months? Do you have any goals? What are they?

In 6 months time, what do you think you will be doing? Where do you think you will be?

Do you think your head injury will still be having an effect on your life in 6 months time?

If yes: how?
If no: are you sure?

Researcher ☐ Staff ☐

Scoring

(ratings are from 0-3; no partial scores are assigned)

1. ***Self-awareness of deficits***

0 Cognitive/psychological problems (where relevant) reported by the patient/client in response to general questioning, or readily acknowledged in response to specific questioning.
1 Some cognitive/psychological problems reported, but others denied or minimized.
Patient/client may have a tendency to focus on relatively minor physical changes (e.g. scars) and acknowledge cognitive/psychological problems only on specific questioning about deficits.
2 Physical deficits only acknowledged; denies, minimizes or is unsure of cognitive/ psychological changes.
Patient/client may recognize problems that occurred at an earlier stage but denies existence of persisting deficits, or may state that other people think there are deficits, but he/she does not think so.
3 No acknowledgement of deficits (other than obvious physical deficits) can be obtained, or patient/client will only acknowledge problems that have been imposed on him/her, e.g. not allowed to drive, not allowed to drink alcohol.

2. ***Self-awareness of functional implications of deficits***

0 Patient/client accurately describes current functional status (in independent living, work/study, leisure, home management, driving), and specifies how his/her head injury problems limit function where relevant, and/or any compensatory measures adopted to overcome problems.
1 Some functional implications reported following questions or examples of problems in independent living, work, driving, leisure, etc. Patient/client may not be sure of other likely functional problems, e.g. is unable to say because he/she has not tried an activity yet.
2 Patient/client may acknowledge some functional implications of deficits but minimizes the importance of identified problems. Other likely functional implications may be actively denied by the patient/client.
3 Little acknowledgement of functional consequences can be obtained; the patient/client will not acknowledge problems: except that he/she is not allowed to perform certain tasks. He/she may actively ignore medical advice and may not engage in risk-taking behaviours, e.g. drinking, driving.

3. ***Ability to set realistic goals***

0 Patient/client sets reasonably realistic goals, and (where relevant) identifies that the head injury will probably continue to have an impact on some areas of functioning, i.e. goals for the future have been modified in some way since the injury.
1 Patient/client sets goals which are somewhat unrealistic, or is unable to specify a goal, but recognizes that he/she may still have problems in some areas of function in the future, i.e. sees that goals for the future may need some modification, even if he/she has not yet done so.
2 Patient/client sets unrealistic goals, or is unable to specify a goal, and does not know how he/she will be functioning in 6 months time, but hopes he/she will return to pre-trauma, i.e. no modification of goals has occurred.
3 Patient/client expects without uncertainty that in 6 months time he/she will be functioning at pre-trauma level (or at a higher level).

Appendix I

Brief COPE

These items deal with ways you've been coping with the stress in your life since your brain injury. There are many ways to try to deal with problems and different people deal with things in different ways. These items ask what you've been doing to cope. I want to know to how much or how frequently you've been doing these things. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Use these response choices. Make your answers as true FOR YOU as you can.

1 = I haven't been doing this at all
2 = I've been doing this a little bit
3 = I've been doing this a medium amount
4 = I've been doing this a lot

1. I've been turning to work or other activities to take my mind off things.
2. I've been concentrating my efforts on doing something about the situation I'm in.
3. I've been saying to myself "this isn't real."
4. I've been using alcohol or other drugs to make myself feel better.
5. I've been getting emotional support from others.
6. I've been giving up trying to deal with it.
7. I've been taking action to try to make the situation better.
8. I've been refusing to believe that it has happened.
9. I've been saying things to let my unpleasant feelings escape.
10. I've been getting help and advice from other people.
11. I've been using alcohol or other drugs to help me get through it.
12. I've been trying to see it in a different light, to make it seem more positive.
13. I've been criticizing myself.
14. I've been trying to come up with a strategy about what to do.
15. I've been getting comfort and understanding from someone.
16. I've been giving up the attempt to cope.
17. I've been looking for something good in what is happening.
18. I've been making jokes about it.
19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
20. I've been accepting the reality of the fact that it has happened.
21. I've been expressing my negative feelings.
22. I've been trying to find comfort in my religion or spiritual beliefs.
23. I've been trying to get advice or help from other people about what to do.
24. I've been learning to live with it.
25. I've been thinking hard about what steps to take.
26. I've been blaming myself for things that happened.
27. I've been praying or meditating.
28. I've been making fun of the situation.

Appendix J
The Hospital Anxiety and Depression Scale (HADS)

This questionnaire is designed to help the researchers know how you feel. Ignore the numbers printed on the left of the questionnaire. Read each item and underline the reply which comes closest to how you have been feeling in the past week. Don't take too long over your replies; your immediate reaction to each item will probably be more accurate than a long thought out response.

	A	I feel tense or 'wound up':
	3	Most of the time
	2	A lot of the time
	1	From time to time, occasionally
	0	Not at all
D		I still enjoy the things I used to enjoy:
0		Definitely as much
1		Not quite so much
2		Only a little
3		Hardly at all
	A	I get a sort of frightened feeling as if something awful is about to happen:
	3	Very definitely and quite badly
	2	Yes, but not too badly
	1	A little, but it doesn't worry me
	0	Not at all
D		I can laugh and see the funny side of things:
0		As much as I always could
1		Not quite so much now
2		Definitely not so much now
3		Not at all

		FOLD HERE
	A	
	3	
	2	
	1	
	0	
D		
3		
2		
1		
0		
	A	
	0	
	1	
	2	
	3	
D		
3		
2		
1		
0		
	A	
	0	
	1	
	2	
	3	
D		
3		
2		
1		
0		

Worrying thoughts go through my mind:
- A great deal of the time
- A lot of the time
- From time to time but not too often
- Only occasionally

I feel cheerful:
- Not at all
- Not often
- Sometimes
- Most of the time

I can sit at ease and feel relaxed:
- Definitely
- Usually
- Not often
- Not at all

I feel as if I am slowed down:
- Nearly all the time
- Very often
- Sometimes
- Not at all

I get a sort of frightened feeling like 'butterflies' in the stomach:
- Not at all
- Occasionally
- Quite often
- Very often

I have lost interest in my appearance:
- Definitely
- I don't take so much care as I should
- I may not take quite as much care
- I take just as much care as ever

	A	I feel restless as if I have to be on the move:
	3	Very much indeed
	2	Quite a lot
	1	Not very much
	0	Not at all
D		I look forward with enjoyment to things:
0		As much as ever I did
1		Rather less than I used to
2		Definitely less than I used to
3		Hardly at all
	A	I get sudden feelings of panic:
	3	Very often indeed
	2	Quite often
	1	Not very often
	0	Not at all
D		I can enjoy a good book or radio or TV programme:
0		Often
1		Sometimes
2		Not often
3		Very seldom

FOLD HERE

Now check you have answered all questions

FOR HOSPITAL USE ONLY

D (8 - 10) ----------

A (8 - 10) ----------

Appendix K

Satisfaction With Life Scale (SWLS)

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disgree
- 3 - Slightly disagree
- 2 - Disgree
- 1 - Strongly disgree

____ In most ways my life is close to my ideal.

____ The conditions of my life are excellent.

____ I am satisfied with my life.

____ So far I have gotten the important things I want in life.

____ If I could live my life over, I would change almost nothing.

Appendix L
The Adult Nowicki-Strickland Internal-External Control Scale (ANSIE)

(As modified for the present study)

Form C

Please answer YES or NO for each question

___ ___ 1. Do you believe that most problems will solve themselves if you don't fool with them?

___ ___ 5. Are you often blamed for things that just aren't your fault?
___ ___ 7. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?
___ ___ 9. Do you feel that most of the time parents listen to what their children have to say?
___ ___ 11. When you get criticized, does it usually seem it's for no good reason at all?
___ ___ 12. Most of the time do you find it hard to change a friend's (mind) opinion?
___ ___ 14. Do you feel that it is nearly impossible to change your parents' mind about anything?
___ ___ 16. Do you feel that when you do something wrong there's very little you can do to make it right?
___ ___ 17. Do you believe that most people are just born good at sports?
___ ___ 19. Do you feel that one of the best ways to handle most problems is just not to think about them?
___ ___ 23. Do you feel that when a person your age is angry with you, there's little you can do to stop him or her?
___ ___ 27. Have you ever felt that when people were angry with you, it was usually for no reason at all?
___ ___ 28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today?
___ ___ 29. Do you believe that when bad things are going to happen they just are going to happen no matter what you do to try to stop them?
___ ___ 31. Most of the time, do you find it useless to try to get your own way at home?
___ ___ 33. Do you feel that when somebody your age wants to be your enemy, there's little you can do to change matters?
___ ___ 35. Do you usually feel that you have little to say about what you get to eat at home?
___ ___ 36. Do you feel that when someone doesn't like you there's little you can do about it?
___ ___ 37. Do you usually feel that it is almost useless to try in school because most other students are just plain smarter than you are?

___ ___ 38. Are you the kind of person that believes that planning ahead makes things turn out better?

___ ___ 39. Most of the time, do you feel that you have little to say about what your family decides to do?

Appendix M

Focus Group Questions

Adapted from Finucane and Mercer (2006)

1. Participants overall impressions – "In general what did you think of the program?"

2. The course techniques/methods/materials – "What aspects of the program did you find helpful?", "What aspects of the program did you find difficult/unhelpful?"

3. The format of the course – "What did you think about the length of the program?" “Was 8 weeks too long, too short, or about right?” “What about the group meetings each week, were they too long, too short, or about right?”

4. Ongoing mindfulness practice – "Are there any exercises we did that you continue to use?”

5. Coping skills – "Do you feel better able to cope with problems or difficulties or frustrations than before you started the program?", "Has anything changed for you since you completed the program?"

6. General – “Is there anything else you think is important for us to know?”