

**Mindfulness-based Cognitive Therapy  
for recurrent depression and anxiety**

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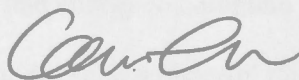
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I certify that the work in this thesis is my own original work and contains  
acknowledgements of all non-original work.



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### Abstract

Mindfulness-based Cognitive Therapy (MBCT) is a class-based manualised program designed to treat recurrent depression and prevent relapse. MBCT has been found to be effective for both symptomatic and asymptomatic patients with three or more previous episodes of depression. While research estimates that 50 - 75% of individuals with depression also experience anxiety, the role of anxiety in the MBCT treatment of recurrent depression is not clearly understood. The aim of the present study was to fill this gap in the literature in order to understand the effect that MBCT has on anxiety outcomes, and the effect that anxiety has on depression outcomes. Sixty-seven individuals with recurrent depression completed an MBCT course and were followed for up to 49 months. MBCT was found to significantly reduce levels of anxiety, both in the short and long-term. Secondly, while MBCT was effective in reducing levels of depression and depressive relapse, it was more effective for individuals who were not clinically anxious at the beginning of treatment. The results support the use of MBCT in treating individuals with recurrent depression and co-occurring anxiety, in order to reduce depressive and anxiety symptoms. Future research into ways that the MBCT protocol could be adapted to better accommodate individuals with anxiety may reduce the discrepancy between those with and without anxiety symptoms, and greatly assist the large proportion of individuals who enroll in MBCT programs and who experience both recurrent depression and anxiety.

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## **Chapter 1: Introduction**

Depression and anxiety are distressing and prevalent disorders. In the most recent National Survey of Mental Health and Wellbeing, it was found that one in five Australians had experienced an anxiety or affective disorder in the 12-month period preceding the survey, and one in three had experienced an anxiety or affective disorder in their lifetime (Australian Bureau of Statistics, 2007). The national survey reported that 32.2% of individuals with an anxiety disorder and 20.15% of those with an affective disorder experienced severe or profound disability. The burden of disease of depression and anxiety are rated one of the top causes of health loss in Australia (Begg, Vos, Barker, Stanley & Lopez, 2008), and the direct and indirect financial costs of these mental illnesses are high (Luppa, Heinrich, Angermeyer, König & Riedel-Heller, 2007; Konnopka, Leichsenring, Leibing & König, 2009). Clearly, clinically and cost effective treatment is important for these highly prevalent and debilitating disorders.

### **Depression**

Symptoms of depression include a sad mood, diminished interest in activities, significant weight loss or gain, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue, feelings of worthlessness or guilt, diminished ability to concentrate and recurrent thoughts of death (APA, 2000). The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) specifies that five or more of these symptoms must have been experienced in a two-week period for a diagnosis of Major Depressive Disorder (APA, 2000).

### **Prevalence, burden and costs of depression.**

In 1990, depression was found to be the fourth leading cause of disease burden in the world, and it was predicted that by 2020 it would be the leading cause (Murray &



Lopez, 1996). In Australia, the 12-month prevalence rate for affective disorders is reported to be 6.2% (Australian Bureau of Statistics, 2007). 4.1% of the population has been found to meet ICD-10 diagnostic criteria for a Depressive Episode, 1.3% for Dysthymia and 1.8% for Bipolar Affective Disorder (Australian Bureau of Statistics, 2007). In the United States, the 12-month prevalence rate for affective disorders is reported to be 9.5% (Kessler, Chiu, Demler & Walters, 2005). This includes 6.7% of individuals who have met DSM-IV diagnostic criteria for Major Depressive Disorder, 1.5% for Dysthymia and 2.6% for Bipolar Disorder.

It should be noted that Australia utilised the ICD-10 diagnostic criteria and the United States used the DSM-IV criteria in their national mental health surveys. While there is some controversy about the comparability of these two classification systems (First & Pincus, 1999), they are considered to be relatively similar and largely comparable (Andrews, Slade & Peters, 1999). Small differences have been reported between the ICD-10 and DSM-III-R criteria for depressive episodes, including the lower threshold for the number of symptoms necessary for an ICD-10 diagnosis (Andrews et al, 1999; Wacker, Mullejans, Klein & Battergay, 1992). Caution should therefore be taken when directly comparing national figures between Australia and the United States, however they provide an approximate indication and comparison of the prevalence rates of depression in the two nations.

The lifetime prevalence rate of affective disorders in Australia is 12.2% for males and 17.8% for females, with an average lifetime prevalence of 15% (Australian Bureau of Statistics, 2007). In Australia, 11.6% of Australians have experienced a Depressive Episode in their lifetime, 1.9% have experienced Dysthymia and 2.9% have experienced Bipolar Affective Disorder (Australian Bureau of Statistics, 2007). In the United States

the lifetime prevalence rate of affective disorders is 20.8%, including 16.6% with Major Depression, 2.5% with Dysthymia and 3.9% with Bipolar Disorders (Kessler, Berglund, Demler, Jin, Merikangas & Walters, 2005). Kruijshaar and colleagues argued that traditional methods of determining lifetime prevalence, such as the cross-sectional survey used in the above studies, were biased by recall difficulties, and instead used modeling techniques to determine prevalence rates of depression (Kruijshaar, Barendregt, Vos, De Graaf, Spijker & Andrews, 2005). They concluded that the lifetime prevalence of Major Depression in Australia was 20% for men and 30% for women.

Contributing significantly to the prevalence rates of depression worldwide are individuals who have experienced a number of depressive episodes (Segal et al, 2002). Relapse rates following a depressive episode are estimated at being between 50 and 85% (Hart, Craighead & Craighead, 2001; Judd, 1997; Mueller, Leon, Keller, Solomon, Endicott, Coryell et al, 1999; Williams, Crane, Barnhofer, Van der Does & Segal, 2006). It has been estimated that if minor or subsyndromal depressive episodes are included, the lifetime prevalence of recurrence could be as high as 100% (Judd, 1997). It is clear that recurring episodes of depression are an important issue to consider when treating individuals with depression.

Burden of disease is often measured by the Disability-Adjusted Life Year (DALY). One DALY is equivalent to one lost year of healthy life and represents the discrepancy between the current health condition and the ideal situation of an entire population living in full health into old age (Begg, Vos, Barker, Stanley & Lopez, 2008). In Australian females, anxiety and depression were found to be the top cause of health loss and in Australian males, anxiety and depression was ranked the third leading cause of health loss (Begg et al, 2008). An earlier Australian study provided more detailed

information and found that for females, 8 DALYS per 1,000 population were lost for affective disorders, and 6 DALYs per 1,000 population were lost for anxiety disorders (Mathers, Vos, Stevenson & Begg, 2001). For males, they found that 5 DALYs were lost per 1,000 population for affective disorders, and 4 DALYs for anxiety disorders (Mathers et al, 2001).

A review of world wide cost-of-illness studies revealed substantial economic consequences of depression (Luppa et al, 2007). The average annual costs per case were reported to be between US\$1,000 and US\$2,500 for direct costs, US\$2,000 to US\$3,700 for morbidity costs and US\$200 to US\$400 for mortality costs. One study in the review found that in Australia the annual direct excess cost of treatment of depression was US\$2,557 per person for Major Depression and US\$2,321 for subclinical depression (Chisholm, Diehr, Knapp, Patrick, Treglia & Simon, 2003). This study also reported indirect excess costs (calculated from days absent from work) of \$1,097 for Major Depression and \$406 for sub clinical depression. A South Australian study in the review similarly reported direct annual costs of US\$2,489 for Major Depression (Hawthorne, Cheok, Goldney & Fisher, 2003). In calculating indirect costs, they also included value of life lost due to depression as well as reduced days and days absent from work, and reported indirect costs of US\$8,368 for Major Depression per year (Hawthorne, Cheok, Goldney & Fisher, 2003).

### **Anxiety**

Anxiety disorders are a cluster of syndromes that are characterised by irrational worry and avoidance of situations that are the focus of the worry (Andrews, Creamer, Crino, Hunt, Lampe & Page, 2003). Symptoms of anxiety include various body sensations (including palpitations, tremors, sweating, gastrointestinal discomfort, diarrhea,

muscle tension, blushing, shortness of breath, dizziness, feeling faint, tingling in the extremities, tightness or pain in the chest, sweating, dry mouth, blurred vision, rapid breathing), behaviours (including avoidance, fleeing or feeling like fleeing, feeling frozen, threat monitoring, crying, screaming), and thoughts (including fear of dying, losing control or acting crazy, worrying something terrible might happen, embarrassment, irritation, shame, confused thoughts, negative self beliefs, rumination; American Psychiatric Association, 2000; Andrews et al, 2003; Orsillo & Roemer, 2005).

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) provides diagnostic information about a number of categories of anxiety disorders (American Psychiatric Association, 2000). Panic Disorder is characterised by the presence of recurrent and unexpected panic attacks, followed by persistent concern about repeated attacks, with or without agoraphobia. Specific Phobia includes clinically significant anxiety that is stimulated by exposure to a feared object or situation and often results in avoidant behaviour. Subtypes include animals, natural environment (e.g. storms, heights or water), blood injection injury (often includes a strong vasovagal response), situational (e.g. public transport, tunnels, bridges, elevators, flying, driving or enclosed spaces) and other (including fear of choking, vomiting, contracting an illness, space, loud sounds or costumed characters). Social Anxiety is characterised by clinically significant anxiety as a result of exposure to social or performance situations, often resulting in subsequent avoidance. Obsessive-Compulsive Disorder (OCD) involves recurrent obsessions (causing anxiety) and time consuming compulsions (which aim to reduce, neutralise or prevent the anxiety), that are considered excessive or unreasonable. Posttraumatic Stress Disorder (PTSD) is characterised by the re-experiencing of a previous traumatic event, with symptoms of increased arousal and avoidance of

circumstances similar to the original trauma. Generalised Anxiety Disorder (GAD) involves excessive anxiety and worry occurring more days than not, in regards to a wide number of events or activities, for a minimum of six months. Anxiety Disorder Due to a General Medical Condition involves anxiety symptoms as a direct physiological result of a general medical condition. Substance-Induced Anxiety Disorder involves anxiety symptoms as a direct physiological result of drug abuse, medication or toxin exposure. Anxiety Disorder Not Otherwise Specified involves the presence of prominent anxiety or phobic avoidance that does not meet criteria for any of the other anxiety disorders. The DSM-IV-TR includes a proposed diagnosis of Mixed Anxiety-Depressive Disorder, which is characterised by a persistent or recurrent dysphoric mood, and is accompanied by at least four of concentration or memory difficulties, sleep disturbance, fatigue or low energy, irritability, worry, being easily moved to tears, hypervigilance, anticipating the worst, hopelessness or pessimism about the future or low self esteem or feelings of worthlessness.

### **Prevalence, burden and costs of anxiety.**

The prevalence rate of anxiety disorders is approximately double the rate of depressive disorders in both Australia and the United States (Australian Bureau of Statistics, 2007; Kessler et al, 2005). In the most recent Australian national survey it was found that the 12-month prevalence rate for anxiety disorders was 14.4%, including Panic Disorder 2.6%, Agoraphobia 2.8%, Social Phobia 4.7%, GAD 2.7%, OCD 1.9% and PTSD 6.4% (Australian Bureau of Statistics, 2007). In the United States, the 12-month prevalence rate for anxiety disorders was found to be 18.1%, including Panic Disorder 2.7%, Agoraphobia (without panic) 0.8%, Social Phobia 6.8%, GAD 3.1%, OCD 1.0%,

PTSD 3.5%, Separation Anxiety Disorder 0.9% and Specific Phobia 8.7% (Kessler, Chiu, Demler & Walters, 2005).

The lifetime prevalence rate of anxiety disorders in Australia is reported to be 20.4% for males and 32% for females, with an average lifetime prevalence of 26.3% (Australian Bureau of Statistics, 2007). This includes a lifetime prevalence rate of 5.2% for Panic Disorder, 6.0% for Agoraphobia, 10.6% for Social Phobia, 5.9% for GAD, 2.8% for OCD and 12.2% for PTSD (Australian Bureau of Statistics, 2007). In the US, the average lifetime prevalence rate for anxiety disorders is 28%, including Panic Disorder 4.7%, Agoraphobia (without panic) 1.4%, Social Phobia 12.1%, GAD 5.7%, OCD 1.6%, PTSD 6.8%, Specific Phobia 12.5% and Separation Anxiety Disorder 5.2% (Kessler, Berglund, Demler, Jin, Merikangas & Walters, 2005). As was previously noted, the national Australian study used the ICD-10 and the US study used the DSM-IV for diagnostic criteria, rendering a direct comparison between the countries difficult (First & Pincus, 1999).

The course of anxiety is often chronic, however differs significantly between anxiety disorders (Ramsawh, Raffa, Edelen, Rende & Keller, 2009). The Diagnostic and Statistical Manual of Mental Disorders (DMS-IV-TR) provides detailed information about the course of the various anxiety disorders (American Psychiatric Association, 2000). In Panic Disorder, at 6-10 years post treatment, approximately 30% of individuals are recovered, 40% have improved but remain symptomatic and 20-30% are the same or slightly worse. The course of Social Phobia is often lifelong and continuous, however may increase in severity or remit in adulthood. Specific Phobias that persist into adulthood only remit in 20% of cases. OCD usually has a chronic waxing and waning course dependent on life stress, and approximately 5% of individuals have episodic

anxiety with minimal or no symptoms between episodes. Approximately 50% of individuals with PTSD completely recover within 3 months, however many continue to experience symptoms more than 12 months after the trauma and following remission, symptom reactivation may occur in response to trauma or stress. Many individuals with GAD report experiencing anxiety all their life and the course is considered chronic, with fluctuations occurring during times of stress. Little is known about the course of Agoraphobia (without panic).

The burden of anxiety, both economically and in years lost of healthy life is substantially high (Begg et al, 2008; Konnopka, Leichsenring, Leibing & König, 2009). For females in Australia, 6 DALYs per 1,000 population were lost as a result of anxiety disorders, and 4 DALYs per 1,000 population were lost for men (Mathers et al, 2001). A review of worldwide cost-of-illness studies for anxiety disorders found that the annual direct excess cost of anxiety per case ranged from -US\$420 (for social phobia in the Netherlands) to US\$20,184 (for GAD in the United States; Konnopka et al, 2009). Indirect costs were even more discrepant, varying from -US\$301 (for social phobia in Great Britain) to US\$29,039 (for panic disorder in the United States). In the Australian study in the review, the costs were comparatively modest, with a reported a direct annual excess cost of US\$100 for social phobia and US\$967 per case for panic disorder (Rees, Richards & Smith, 1998).

### **Co-occurring Depression and Anxiety**

Depression and anxiety commonly co-occur. The highest rates of co-morbidity in mental disorders are between depressive and anxiety disorders (De Graaf, Bijl, Smit, Vollebergh & Spijker, 2002; Jacobi, Wittchen, Hölting, Höfler, Pfister, Müller et al. 2004; Jorm, 2009; Merikangas & Kalaydjian, 2007; Teesson, Slade & Mills, 2009), with the 12-

month prevalence rate of co-morbid affective and anxiety disorders in Australia at 1.1% (excluding co-morbidity with physical conditions and other mental disorders; Australian Bureau of Statistics, 2007). A recent national epidemiological survey in Australia found that more than half (58.5%) of those with a depressive disorder also met diagnostic criteria for an anxiety disorder (Teesson et al, 2009). A national study in the Netherlands found similar results, reporting that 54.3% of individuals with a mood disorder also had a co-morbid anxiety disorder (De Graaf et al, 2002). The Australian epidemiological study found that women were more likely to experience co-morbidity than men (Teesson et al, 2009), however this has not been consistently replicated in other studies (Merikangas & Kalaydjian, 2007).

Sanderson, Beck and Beck (1990) found that 41.6% of those with Major Depressive Disorder and 47.6% of those with Dysthymia also had an anxiety disorder. Their results showed that the most frequent co-morbid anxiety disorder for Major Depression was Generalised Anxiety Disorder (20.3%), and for Dysthymia was Social Phobia (27%). For individuals diagnosed with a unipolar depressive disorder, Zimmerman, McDermut and Mattia (2000) found that the most frequent co-morbid anxiety disorder was Social Phobia (diagnosed in one third of clients), followed by Panic Disorder, Specific Phobia, PTSD and GAD (each diagnosed in approximately 15% of the clients). They also found that more than half (54.2%) of those with a co-morbid anxiety disorder had two or more anxiety diagnoses (Zimmerman et al, 2000).

Similar to the aforementioned studies, Zimmerman and colleagues found that 57.4% of clients with a unipolar depressive disorder also met full DSM-IV diagnostic criteria for an anxiety disorder. However, when they included individuals with anxiety disorders that were in partial remission in their analysis, the frequency of co-morbidity



rose to 60.6%, and when they included sub threshold levels of anxiety (which they labeled anxiety not-otherwise-specified), the frequency was increased to 67.6% (Zimmerman et al, 2000). Another study found that individuals with primary unipolar depression, 75% experienced moderate to severe worry, 27% experienced panic attacks, 43% experienced moderate to severe somatic symptoms of anxiety, 35% experienced moderate to severe psychic anxiety (subjective feelings of anxiety, fearfulness or apprehension), 16% experienced moderate to severe phobias, and 5% experienced moderate to severe obsessive-compulsive features (Clayton, Grove, Coryell, Keller, Hirschfield & Fawcett, 1991). These studies highlight the overwhelming presence of anxiety in individuals experiencing depression, such that it can be expected that half will be experiencing at least one anxiety disorder (and that 50% of these will be experiencing two), and up to three quarters will be experiencing significant anxiety symptoms.

Individuals with co-occurring disorders report significantly higher disability in social and occupational functioning than those with a single disorder (Olfson, Fireman, Weissman, Leon, Sheehan, Kathol, Hoven & Farber, 1997). Teesson, Slade and Mills (2009) found that individuals with co-morbid disorders reported more severe levels of impairment, particularly individuals with anxiety. Many researchers have reported that the presence of anxiety in depressed individuals, at a symptomatic or a diagnosable level, is associated with a more severe and chronic course (e.g. Brown, Schulberg, Madonia, Shear & Houck, 1996; Clayton et al, 1991; Coryell, Endicott, Andreasen, Keller, Clayton, Hirschfield et al, 1988; Merikangas, Ries, Zhang, Avenevoli, Acharyya, Neuenschwander et al, 2003; Van Valkenburg, Akiskal, Puzantian & Rosenthal, 1984). In a 15-year prospective study with 4,547 participants it was found that co-morbid major depression and anxiety (sub-threshold or threshold level) was significantly more persistent than either

disorder individually (Merikangas et al, 2003). In a naturalistic longitudinal study, it was found that individuals with more severe co-occurring anxiety took longer to recover from the episode of major depression (Clayton et al, 1991). This research showed that individuals with low anxiety levels took 13 weeks to recover, compared with 26 weeks for those with higher levels of anxiety.

Brown and colleagues (1996) found that depressed primary care patients with a co-morbid lifetime history of Generalised Anxiety Disorder or Panic Disorder presented with significantly more psychopathology and prematurely terminated treatment more frequently than patients with a single diagnosis of major depressive disorder. They randomly assigned depressed patients to standardised interpersonal psychotherapy or pharmacotherapy (nortriptyline) and found that both treatments were effective for depressed individuals and those with co-morbid depression and Generalised Anxiety Disorder, however recovery time was significantly longer for the latter.

A number of researchers have found that individuals with co-morbid mental disorders are more likely to seek help than individuals with a single diagnosis (Australian Bureau of Statistics, 2007; Merikangas et al, 2003; Teesson et al, 2007). Results from a nationwide German Health Interview and Examination Survey found that healthcare was accessed by 76% of individuals with a co-morbid mental disorder and only 30% of individuals with a single mental disorder diagnosis (Jacobi et al, 2004). A Finnish study looking specifically at major depressive disorder and anxiety disorders found that 59% of individuals with co-morbid depression and anxiety accessed healthcare, compared to 34% of individuals with a sole diagnosis of major depression and 36% of individuals with a single diagnosis of an anxiety disorder (Hämäläinen, Isometsä, Sihvo, Pirkola & Kiviruusu, 2008). It therefore seems likely that while 50% to 75% of those with

depression experience significant anxiety, there may be a higher frequency in those who engage in therapy, such as MBCT, than in the general population. Collectively, this research highlights the importance of assessing and catering for individuals with co-occurring depression and anxiety in research and treatment planning.

### **Current Treatments for Depression and Co-occurring Anxiety**

A meta-analysis of outcome research for the treatment of depression found that Cognitive Behaviour Therapy, Interpersonal Therapy and antidepressant medication were equally effective for moderate depression (Ellis, Hickie & Smith, 2004). For mild depression, not engaging in treatment was found to be superior to supportive clinical care with psycho-education, teaching problem-solving skills or supportive counselling. For severe depression (without psychosis) initial treatment with antidepressant medication in the context of a therapeutic relationship, followed by psychological therapy for residual symptoms and risk of relapse was recommended, however, the studies examined did not reach statistical significance. Trials were rare for severe and complicated depression and accurate diagnosis, consultation with colleagues, adequate dose, support, monitoring and maintenance were recommended.

#### **Cognitive Behaviour Therapy.**

Cognitive Behaviour Therapy (CBT) treats depression by helping individuals to understand the relationship between cognitions, emotions and behaviours (Beck, 1995). Symptom reduction occurs through helping patients identify and modify automatic thoughts and behaviours, and negative thoughts are tested by examining evidence, setting up in vivo experiments, weighing advantages and disadvantages, implementing graded tasks and other intervention strategies (Young, Weinberger & Beck, 2001). The desired outcome of CBT is for individuals to view themselves and their problems more

realistically, to feel better, to change their maladaptive behavioural patterns and begin to solve their own difficulties (Young et al, 2001).

CBT aims to prevent depressive relapse through a schema-focused phase of treatment, which has an emphasis on identifying and changing underlying schemas, long-term interpersonal difficulties, the patient-therapist relationship and emotive or experiential exercises (Young et al, 2001).

The CBT treatment for anxiety is similar to that for depression, however the emphasis is somewhat different (Beck, 1995). For GAD, the emphasis is more on the reappraisal of risk in certain situations and the individual's resources for dealing with the threat, for Panic Disorder the emphasis is on testing catastrophic misinterpretations of body or mental sensations, treatment for Social Phobia emphasises anxiety management techniques and guided exposure, the emphasis for OCD is on exposure and response prevention and PTSD involves managing anxiety symptoms and recurrent distress and modifying the meaning attached to a traumatic event (Beck, 1995).

Research into the effect that symptoms of anxiety have on the outcome of CBT treatment for depression is limited (Hamilton & Dobson, 2002). However, the few studies that have explored this have found that co-morbid anxiety results in increased depression at intake and poorer outcomes in the treatment of depression (Brent, Kolko, Birmaher, Baugher, Bridge, Roth et al, 1998; Gelhart & King, 2001).

### **Interpersonal Therapy.**

Interpersonal Therapy (IPT) treats depression by addressing the conflicts and transitions in the relationships the client is engaged in, and by helping the client to build or utilise their support networks (Stuart & Robinson, 2003). The emphasis in IPT is on interpersonal rather than cognitive aspects of depression, using a biopsychosocial model

that conceptualises depression as a medical illness occurring in a social context (Ravitz, 2003).

IPT treatment concentrates on four problem areas; grief and loss, interpersonal disputes, role transitions and interpersonal sensitivity (Stuart & Robinson, 2003). Grief and loss focuses on bereavement following the death of a significant other, encouraging the client to explore both the positive and negative aspects of the relationship.

Interpersonal disputes addresses conflict in marital, family, social or work settings, focusing on poor communication and misaligned interpersonal expectations. Role transitions involve systematically exploring the positives and negatives of both old and new life roles. Interpersonal sensitivity uses the therapeutic relationship to assist clients who have difficulty forming or sustaining relationships to build social skills and networks (Ravitz, 2003). The central desired outcome of IPT is for patients to recognise and alter maladaptive interpersonal interactions (Gillies, 2001).

IPT aims to prevent depressive relapse through open-ended monthly maintenance sessions, continuing to work on the areas that were identified during the primary treatment (Gillies, 2001).

Studies have shown that IPT is less effective for individuals with co-occurring depression and anxiety, when compared to those with depression alone (Brown et al, 1996; Feske, Frank, Kupfer, Shear & Weaver, 1998; Young, Mufson & Davies, 2006). Co-morbid anxiety is associated with higher depression scores at baseline and following IPT treatment, increased overall impairment (Young et al, 2006), higher rates of attrition (Brown et al, 1996) and increased likelihood of depressive relapse (Feske et al, 1998).

**Antidepressant medication.**

Antidepressant medication is used to provide symptom reduction during the acute phase of depression and to decrease the likelihood of relapse following remission (DeRubeis, Siegle & Hollon, 2008). Older antidepressant medications include tricyclics (TCAs), tetracyclics and monoamine oxidase inhibitors (MAOIs), and are largely used only for treatment-resistant and melancholic types of depression (World Health Organization, 2004). Newer antidepressant medications are usually preferred to treat depression due to their fewer side effects and safety in overdose, and include selective serotonin reuptake inhibitors (SSRIs) and other agents that work by different mechanisms such as moclobemide, venlafaxine, mirtazapine and reboxetine (World Health Organization, 2004).

To prevent depressive relapse, the Australian and New Zealand clinical practice guidelines recommend antidepressant medication, along with psycho-education (identifying warning signs and how to respond) and considering psychosocial issues (Ellis et al, 2004). Antidepressant medication to prevent relapse usually involves the continuation of medication for at least 6 months following remission and indefinitely for individuals with a history of recurrent or chronic depression (DeRubeis et al, 2008).

In co-morbid depression and anxiety, medication that has found to be reasonably effective in reducing symptoms of both depression and anxiety includes TCIs, MAOIs, SSRIs and benzodiazepines alongside antidepressant medication (Gorman, 1996; Ninan, Rush, Crits-Christoph, Kornstein, Manber, Thase et al, 2002).

One downside of antidepressant medication is that it appears to be symptom-suppressive rather than curative, and no research to date has found that antidepressant medication reduces future risk of depressive episodes once treatment is concluded

(DeRubeis et al, 2008). Non-compliance rates in taking anti-depressant medication are high; and this is problematic as the medication is only effective as long as it is being taken (Basco & Rush, 1995). In addition, many people, such as pregnant women or those who cannot tolerate the side effects, choose not to take antidepressant medication (Ellis et al, 2004; Segal, Teasdale & Williams, 2002) and express a preference for psychosocial interventions like CBT instead (Kuyken, Taylor, Barrett, Evans, Byford, Watkins et al., 2008).

### **Treating Depressive Relapse**

Prior to the introduction of Mindfulness-based Cognitive Therapy, the best practice treatment for preventing depressive relapse was a combination of maintenance pharmacotherapy (at the same dose used to achieve remission) and psychotherapy (Kupfer, Frank, Perel, Cornes, Mallinger, Thase, McEachran et al, 1992; Teasdale et al, 2000). As previously discussed, there are inherent problems with the long-term use of antidepressant medication for some individuals.

Psychotherapies such as CBT and IPT have been found to be effective in treating acute depression and somewhat effective in reducing rates of relapse (Beck, Chapman, Forman & Beck, 2006; Gillies, 2001; Jarrett, Kraft, Doyle, Foster, Eaves & Silver, 2001; Katon, Rutter, Ludman, Von Korff, Lin, Simon et al., 2001). However, delivering long-term one on one psychotherapy to all depressed or previously depressed individuals is not always feasible, given the prevalence of depression, the stretched financial pressure on healthcare resources, the shortage of skilled clinicians, the low rate at which individuals seek out such treatment and client treatment preference (Coffman, Dimidjian & Baer, 2006; Finucane & Mercer, 2006; Scherer-Dickson, 2004; Segal et al, 2002, Segal, Teasdale & Williams, 2004).

Mindfulness-based Cognitive Therapy is a class-based treatment program designed to overcome the difficulties associated with using pharmacotherapy and long-term psychotherapy in treating depressive relapse. MBCT has been found to significantly reduce relapse, without medication and using a short-term, cost effective, group training program (with an average of three to five hours per instructor per participant), in a format that individuals who do not like talking about personal problems in group therapy would not find too threatening (Ma & Teasdale, 2004; Segal, Williams & Teasdale, 2002; Teasdale, Segal, Williams, Ridgeway, Soulsby & Lau, 2000). MBCT is the first of its kind in providing evidence that a group-based psychological intervention administered during remission is effective in reducing relapse in individuals with Major Depression (Teasdale et al, 2000). Preliminary evidence suggests the effectiveness of MBCT with individuals with co-occurring depression and anxiety (e.g. Cebolla & Miró, 2009; Finucane & Mercer, 2006), however, the evidence is limited and further research is required.

### **Origins and Theoretical Foundations of Mindfulness-based Cognitive Therapy**

Mindfulness-based Cognitive Therapy was borne out of the need for a treatment to prevent depressive relapse, that was short-term, cost-effective and did not involve medication (Teasdale et al, 2000).

In formulating depressive relapse, Teasdale and colleagues presented an Interacting Cognitive Subsystems framework, which proposed that relapse was a result of the reactivation of depressogenic cycles of thinking that were experienced during previous depressive episodes (Teasdale, 1993; Teasdale, Segal, Williams, 1995). They hypothesised that depressive relapse was triggered by what would otherwise be considered a mild or transient negative mood state. Subsequently, they concluded that an intervention



to reduce the likelihood of relapse should involve the identification and normalisation of the patterns of processing associated with mild negative mood states. Specifically, that the cycle of depressogenic thinking be interrupted, so that mild negative mood states remain mild rather than spiraling into more severe depression. They emphasised the normalisation of unhappiness or mild negative mood states, rather than their complete eradication.

### **Mindfulness-based Stress Reduction.**

In looking for a way to encourage patients to identify with their thoughts in this way, Teasdale and colleagues came across Mindfulness-based Stress Reduction (MBSR), which teaches patients (irrespective of their physical or psychological disorder) to observe rather than change their thoughts and to decenter from them (Segal et al, 2002, Teasdale et al, 2000).

MBSR was originally designed as a stress reduction and relaxation program to teach self regulation to individuals with chronic pain (Kabat-Zinn, 1982), but has since been used to effectively treat individuals with a wide variety of problems and illnesses (Kabat-Zinn, 2005<sub>a</sub>). These include psoriasis (Kabat-Zinn, Wheeler, Light, Skillings, Scharf, Copley, Hosmer & Bernhard, 1998), stress, anxiety and dysphoria in non-clinical populations (Astin, 1997; Shapiro, Schwartz & Bonner, 1998), stress and mood disturbance in cancer patients (Specia, Carlson, Goodey & Angen, 2000), fibromyalgia (Kaplan, Goldenberg & Galvin-Nadeau, 1993), relationship enhancement (Carson, Carson, Gil & Baucom, 2004) and anxiety disorders (Miller, Fletcher & Kabat-Zinn, 1995; Kabat-Zinn, Massion, Kristeller, Peterson, Fletcher, Pbert, Lenderking & Santorelli, 1992), however further research is required to definitively ascertain effectiveness in many of these (Bishop, 2002).

### **Vipassana meditation.**

Mindfulness-based Stress Reduction has its roots in the Eastern spiritual tradition of mindfulness meditation. Mindfulness is a core practice of insight meditation, which originated in Burma (Cousins, 1996) and is considered to be the oldest Buddhist meditation practice (Gunaratana, 1993). The Pali term for insight meditation is Vipassana Bhavana which means *'looking into something with clarity and precision, seeing each component as distinct and separate, and piercing all the way through so as to perceive the most fundamental reality of that thing'* (Gunaratana, 1993, p.33).

The goal of Vipassana meditation is *'to reach the perfection of all the noble and wholesome qualities latent in our subconscious mind'* (Gunaratana, 1993, p.50), through understanding the concepts of impermanence (anicca), sufferings (dukkha) and non-existence (anatta; Ospina, Bond, Karkhaneh, Tjosvold, Vandermeer, Liang et al, 2007). The Four Foundations of Mindfulness describe the focus of attention or contemplation, which can be classified into the four categories of body (Kayanupassana Satipatthana), feeling (Vedananupassana Satipatthana), thoughts (Cittanupassana Satipatthana) and mental process (Dhammanupassana Satipatthana; Sujiva, 2000). To begin with, meditators are instructed to sit motionless in a comfortable position and focus their undivided attention on the rising and falling of their breath, mindfully returning their awareness to their breath when it wanders away (Gunaratana, 1993). With increasing skill and experience, meditators are instructed to focus their attention on the other objects of contemplation in a number of various ways (Sujiva, 2000). The body scan is one technique used to focus on body sensations, where meditators are instructed to observe the sensations in various parts of the body as if they are observing them for the first time, moving their awareness continuously from their scalp down through their body to their

feet (Ospina et al, 2007). Meditators are encouraged to practice mindfulness in everyday life, including when walking, standing, lying down, sitting, eating, washing and dressing (Gunaratana, 1993).

As the state of mind of the meditator is considered paramount, the following set of attitudes for mindfulness meditation are prescribed; don't expect anything, don't strain, don't rush, don't cling to anything and don't reject anything, let go, accept everything that arises, be gentle with yourself, investigate yourself, view all problems as challenges, don't ponder and don't dwell upon contrasts (Gunaratana, 1993).

### **The clinical application of mindfulness.**

The adaptation of Buddhism to a novel environment is not a new phenomenon; it occurred in China in the first century, in the West in the 1970s (Bubna-Litic & Higgins, 2007) and more recently in mainstream Western clinical practice (e.g. Hayes, Strosahl & Wilson, 2003; Kabat-Zinn, 2005<sub>a</sub>; Linehan, 1993). While Kabat-Zinn based the Mindfulness-based Stress Reduction program on Buddhist meditation, he is clear to distinguish the program from Buddhist authority and Asian culture, believing that the program stands on its own as a means of self-enquiry, understanding and healing (Kabat-Zinn, 2005<sub>a</sub>). Kabat-Zinn describes MBSR as '*a systematic approach to developing new kinds of control and wisdom in our lives, based on our inner capacities for relaxation, paying attention, awareness and insight*' (Kabat-Zinn, 2005<sub>a</sub>, p.2).

In the clinical application of mindfulness, a consensus about its definition has yet to be reached (Duncan, Coatsworth & Greenberg, 2009). Kabat-Zinn's widely cited and accepted definition of mindfulness is '*paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally*' (2005<sub>b</sub>, p.4). This is contrasted with a blunt or restricted consciousness, divided attention, automatic behaviour and the lack of

acknowledgement of thoughts, emotions, motives or objects of perceptions (Brown & Ryan, 2003). Kabat-Zinn's definition incorporates the three components of mindfulness proposed by Shapiro and colleagues; intention (with purpose), attention (observing the operations of one's present moment experience) and attitude (the qualities one brings to the practice, including patience, compassion, non-striving, openness and non-judging; Shapiro, Carlson, Astin & Freedman, 2006).

Similarly, Williams (2008) defines the clinical application of mindfulness as '*the awareness that emerges as a by-product of cultivating three related skills:*

- a) *intentionally paying attention to moment-by-moment events as they unfold in the internal and external world,*
- b) *noticing habitual reactions to such events, often characterized by aversion or attachment (commonly resulting in rumination and avoidance),*
- c) *cultivating the ability to respond to events, and our reactions to them, with an attitude of open curiosity and compassion'* (p.721).

### **The Mindfulness-based Stress Reduction program.**

The Mindfulness-based Stress Reduction program is outlined in Kabat-Zinn's book '*Full Catastrophe Living*' (2005<sub>a</sub>). It is a group program run over an eight week period, with weekly 2 ½ - 3 hour sessions, an all day intensive during the sixth week and lengthy practical homework assignments (up to an hour each day). The groups have up to 30 participants in each, and include individuals experiencing a wide range of difficulties. The program intensively trains participants in mindfulness meditation, aiming to increase their awareness of the present moment experience. They are taught to focus their awareness on their breath, using it as an anchor to bring their attention back to the present moment whenever it diverts to thoughts or worries.

Mindfulness-based Stress Reduction helps participants achieve the aim of present moment awareness through three central practices; body scan, sitting meditation and hatha yoga. The body scan is a technique designed for developing concentration and flexibility of attention. Participants are instructed to lie down with their eyes closed, and focus their attention on various parts of their body, moving from their toes to their head. They are asked to observe the sensations as they go, directing their breath into and out of each area of the body, and intentionally letting go of each area as they move their attention from one region to the next. The body scan meditation is practiced for 45 minutes at a time, and participants are asked to undertake this exercise as homework, six days per week, for the first two weeks of the program (Kabat-Zinn, 2005<sub>a</sub>).

The sitting meditation was designed as '*a way of stopping, a way of "reminding" ourselves, of nourishing the domain of being for a change*' (Kabat-Zinn, 2005<sub>a</sub>, p.61). It is undertaken in a seated position, either on a straight-backed chair or the floor, with an upright, dignified and relaxed posture, and eyes either closed or downcast. Participants are initially asked to bring their awareness to their breath, observing the bodily movements or sensations associated with each inhalation and exhalation, and when their mind wanders they are asked to gently return their attention to the breath. Later, participants are instructed to broaden their focus of attention to body sensations in particular areas, a sense of the body as a whole, sounds, thought processes, emotions and 'choiceless awareness' (being receptive to whatever arises in the moment; e.g. body sensations, sounds, thoughts, emotions and urges). The sitting meditation is practiced from 10 to 45 minutes per sitting, and is regularly set for homework.

Hatha yoga is mindfully practiced stretches and physical postures, designed to increase body awareness in order to enhance growth, change and healing. Yoga is the

Sanskrit word for 'yoke,' which can be interpreted as unifying the body and the mind, and by arranging the body into various postures, participants change their physical orientation as well as their inner perspective (Kabat-Zinn, 2005<sub>a</sub>). Participants are slowly led through a gentle sequence of yogic postures, and are encouraged to be aware of body sensations and breath, as well as their changing physical limitations. The yoga practice lasts for 45 minutes, and is assigned for homework every second week from week three.

Additional features of the Mindfulness-based Stress Reduction course include the raisin exercise (eating a raisin with curiosity and awareness to introduce the concept of mindfulness), poetry (as an alternate way to convey the essence of mindfulness), walking meditation (focused on the body sensations while walking) and mindfulness in everyday life (bringing mindful awareness to everyday activities to increase self awareness and enjoyment of pleasant moments; Kabat-Zinn, 2005<sub>a</sub>).

As in Vipassana meditation, the attitude of the meditator in Mindfulness-based Stress Reduction is considered crucial, and the following seven attitudes are considered to be the foundations of a mindfulness practice (Kabat-Zinn, 2005<sub>a</sub>):

1. Non-judging (being an impartial witness to your own experience)
2. Patience (allowing experiences to unfold in their own time)
3. Beginner's Mind (seeing things as if for the first time)
4. Trust (trusting in yourself, your feelings and your intuition)
5. Non-striving (trying not to work towards any goals)
6. Acceptance (seeing things as they actually are in the present moment)
7. Letting go (allowing thoughts to come and go without judgment)

## **Mindfulness-based Cognitive Therapy: Theoretical Considerations and Mechanisms of Action**

In developing their treatment for the prevention of depressive relapse, Segal and colleagues (2002) were attracted to the way in which the Mindfulness-based Stress Reduction program taught generic attentional control skills. The generic nature in particular meant that individuals could practice the skills on everyday experiences when they were not depressed, and could later apply these skills to negative thoughts and feelings. They were also impressed with the research that found that participants continued to practice the skills they learnt up to 3 years after the completion of the program (Miller, Fletcher & Kabat-Zinn, 1995). Segal and colleagues saw this as particularly relevant for individuals with previous episodes of depression, who were at risk for future episodes. Additionally, they hypothesised that prolonged practice in the awareness of the present moment experience would mean that individuals were more attuned to possible signs of depressive relapse, and would detect these signs earlier, warding off possible relapse (Segal et al, 2002).

As a result, Segal, Williams and Teasdale largely based their treatment for the prevention of depressive relapse on Kabat-Zinn's Mindfulness-based Stress Reduction program (Segal et al, 2002). As cognitive therapists, they also saw strength in the way that cognitive therapy provided a method to view the links between feelings, thoughts and behaviours, and decided to draw on the tradition of cognitive therapy in two ways; firstly through teaching ways in which depressive relapse is triggered and maintained; and secondly through various cognitive therapy exercises (Crane, 2008). Subsequently, Mindfulness-based Cognitive Therapy was borne out of an integration of mindfulness and cognitive therapy.

**Cognitive reactivity.**

Mindfulness-based Cognitive Therapy has its theoretical underpinnings in Teasdale and colleagues' Interacting Cognitive Subsystems framework of depressive relapse (Teasdale, 1993; Teasdale et al, 1995). It is based on the theory that recurrent episodes of depression are triggered by mild dysphoric mood states that reawaken negative cognitive patterns and increase vulnerability to depression (Segal et al, 2002). The process of reactivation of negative thoughts by low mood has been termed 'cognitive reactivity' (Lau, Segal, & Williams, 2004; Raes, Dewulf, Van Heeringen & Williams, 2009) or 'differential activation' (Lau, Segal & Williams, 2004). In early episodes of depression, feelings of low self worth, hopelessness, failure and rejection are thought to stem from a combination of genetic vulnerability, early adversity and recent life events, resulting in negative thought patterns, emotions, bodily sensations and behaviours (Caspi, Sugden, Moffitt, Taylor, Craig, Harrington et al, 2003; Williams, 2008). Relapse is thought to be triggered by what would otherwise be considered mild or transient negative thoughts, moods or body sensations, reactivating negative patterns from previous depressive episodes (Segal et al, 2002; Williams, 2008). Cognitive strategies used to manage the low mood are thought to be counterproductive, as individuals attempt to think themselves out of their negative mood state, which results in rumination on current emotions, past negative events and the problems that will occur if they do not change (Segal et al, 2002).

A small but significant number of studies have provided evidence in support of the cognitive reactivity hypothesis (Lau et al, 2004). Early studies failed to find differences in thought processes between recovered depressed individuals and those who had never experienced depression (Hamilton & Abramson, 1983; Silverman et al., 1984; Simons et



al., 1984), however, this has since been attributed to the dynamic nature of cognitive reactivity, such that thinking in previously depressed individuals may be normal when they are not dysphoric, and differences will only be apparent when they are experiencing a mildly sad mood (Lau et al, 2004). Lau and colleagues (2004) reviewed the literature on cognitive reactivity and depressive relapse, taking into account Kraemer and colleagues' criteria for defining risk factor status and concluded that cognitive reactivity was a causal risk factor for depressive relapse (Kazdin, Offord, Kessler, Jensen & Kupfer, 1997). The criterion includes: (1) Is the factor associated with the outcome (is it a correlate)? (2) Does the factor precede the outcome (is it a risk factor)? (3) Can the factor change or be modified (is it a variable risk factor)? (4) Does manipulation of the factor change the outcome (is it a causal risk factor; Lau et al, 2004; Kraemer et al, 1997)?

In the majority of studies reviewed by Lau and colleagues, previously depressed individuals demonstrated increased accessibility and activation of distinctly depressive cognitive styles, but only when experiencing a depressed mood (e.g. Ingram et al, 1994; Ingram et al, 2000; Miranda, Gross, Persons & Hahn, 1998; Miranda & Persons, 1988; Segal, Gemar, & Williams, 1999; Teasdale and Dent, 1987). One study failed to find a relationship between a mildly depressed mood and endorsement of dysfunctional attitudes (Dykman, 1997), however this was attributed to methodological flaws during the mood induction (Ingram, Miranda, & Segal, 1998; Lau et al, 2004). From this literature, Lau and colleagues concluded that there was sufficient evidence to establish '*mood-linked cognitive reactivity as a correlate of vulnerability to depressive relapse*' (Lau et al, 2004, p. 1007).

In regards to the second criteria, a number of studies found that depressive relapse was predicted by the increased negative thoughts that occurred during a naturally or

induced sad mood (Lau et al, 2004; Lewinsohn, Allen, Seeley & Gotlib, 1999; Segal et al., 1999, Simons, Murphy, Levine, & Wetzel, 1986; Williams, 1988). A limitation of this research is that the degree to which cognitive reactivity predicted recurrence was not established, however Lau and colleagues concluded that despite this, the research satisfied the second criteria, such that cognitive reactivity could be considered a risk factor for depressive relapse (Lau et al, 2004).

While there is limited research exploring the third criteria, Segal and colleagues did demonstrate that recovered depressed individuals who had been treated with pharmacotherapy showed a significantly increased endorsement of depressive statements after a mood induction than those who had been treated with CBT (Lau et al, 2004; Segal et al 1999). This indicates that cognitive reactivity was changed by CBT, and therefore cognitive reactivity can be considered a variable risk factor (Lau et al, 2004).

Finally, only indirect support was found for the fourth criteria (e.g. Segal et al, 1999; Teasdale, Moore, Hayhurst, Pope, Williams & Segal, 2002; Watkins, Teasdale & Williams, 2003), which asks if cognitive reactivity changes subsequent risk for depressive relapse (Lau et al, 2004). However Lau and colleagues (2004) deemed the evidence sufficient to support the conclusion that cognitive reactivity is a casual risk factor for depressive relapse. Overall, these studies provide an evidence base for an underlying assumption of MBCT, that depressive relapse is triggered by cognitive reactivity (Lau et al, 2004).

### **Rumination.**

Cognitive reactivity is largely about how mood states are triggered. Of additional importance in MBCT is the way that individuals deal with their depressed mood state (Segal et al, 2002). Research has shown that people who respond to mild depressive mood

states and situations with active and distracting responses are more effective in alleviating their depressed mood, compared to those who responded with ruminative passive styles (Morrow & Nolen-Hoeksema, 1990). In an fortuitously timed study, Nolen-Hoeksema and Morrow (1991) found that individuals with a ruminative style of responding to depressed moods were more likely to be depressed and for a longer period of time after the 1989 Loma Prieta earthquake than those with a less ruminative style prior to the earthquake. Subsequent studies have reinforced these findings, showing that rumination increases the risk of developing depression (Just & Alloy, 1997; Ramel, Goldin, Carmona & McQuaid, 2004; Robinson & Alloy, 2003; Spasojevic & Alloy, 2001) and mediates other risk factors that predict number of episodes of depression, including dysfunctional attitudes, neediness, self-criticism and history of past depression (Ramel et al, 2004; Spasojevic & Alloy, 2001). Reduction in rumination accounts for decreases in maladaptive cognitions and mood symptoms, including depression and anxiety symptoms and dysfunctional beliefs relating to the need for approval (Ramel et al, 2004). Rumination is considered to be an important factor in the onset and maintenance of depression and an essential target in treating depression and preventing future episodes (Ramel et al, 2004).

Rumination is a way of responding to distress that includes the repetitive and passive focus on the symptoms of distress, as well as their possible causes and consequences (Nolen-Hoeksema & Lyubomirsky, 2008). It results in a fixation on problems and the associated negative affect, without effective problem solving and taking action (Nolen-Hoeksema et al, 2008). This is in contrast with active methods of coping, as evidenced in Nolen-Hoeksema and Morrow's studies outlined above (Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1991). Active response styles

include engaging in pleasurable events that provided a sense of self-efficacy and take one's mind off the negative mood, and not the simple suppression of thoughts and feelings (Nolen-Hoeksema & Morrow, 1991).

Segal and colleagues (2002) describe a '*discrepancy monitor*' at the heart of rumination; a process that constantly monitors and evaluates the self, comparing the current situation against a desired, required, expected or feared outcome, and when it finds a discrepancy (which it will, because this is its aim), perpetuates the negative mood state (Segal et al, 2002, p.68). This conceptual, discrepancy-based method of problem solving is not a problem in itself, it is an effective means to solve many of life's problems when applied appropriately, intentionally and consciously, however it is often ineffective when applied automatically and inappropriately (for example to change unwanted emotions; Segal et al, 2002). If it is ineffective (for example when the course of action to take is not obvious or cannot occur immediately), then the mind may dwell on the discrepancy and ruminate on ways to reduce it, going over and over the issue *ad infinitum* until the discrepancy is reduced or another task becomes more immediately important and temporarily takes cognitive precedence. The discrepancy monitor is fixed on the constant monitoring and evaluation of change in the perceived discrepancy, viewing the thoughts about the discrepancy as real, rather than just mental events. It is so focused on considering the problem situation, the desired situations, possible explanations of the discrepancy and possible ways to reduce the discrepancy that the mind barely attends to the experience of the present moment. The '*full multidimensional splendor*' of the present moment is missed, and a feeling of dissatisfaction is common (Segal et al, 2002, p. 72). The discrepancy monitor is designed to help, but backfires and increases the likelihood of depressive relapse (Williams, 2008).

Support for a discrepancy mode of processing comes from research into self-discrepancy theory (Higgins, 1987; Williams, 2008). Previous research into depression and perceived discrepancies between the actual and ideal self (e.g. Strauman, Kolden, Stromquist, Davis, Kwapil, Heerey et al, 2001) has shown that such discrepancies are more pronounced in individuals with depression (Williams, 2008). Recent research found that higher levels of pre-treatment depression were associated with larger discrepancies between the actual and ideal self and that following the completion of an MBCT course, discrepancies were significantly smaller than the treatment as usual (TAU) control group (Crane, Barnhofer, Duggan, Hepburn, Fennell & Williams, 2008). Significantly, they found that discrepancies were more easily primed in previously depressed individuals than in those who had never experienced depression (Crane et al, 2008). Also, following completion of the MBCT course, they found that the more participants were able to let go of unhelpful self guides (e.g. a goal to always be in control), the less the discrepancy between the actual and ideal self became (Williams, 2008). It appears that individuals with depression or those in remission have larger discrepancies between the actual and ideal self than those who have never experienced depression, and this discrepancy is reduced following the MBCT course.

Research has found that following completion of MBSR (Ramel et al, 2004) and MBCT (Kingston et al, 2007; Mathew, Whitford, Kenny & Denson, 2010) courses, levels of both rumination and depression are reduced, providing support for the hypothesis that MBCT plays an active role in the reduction of ruminative tendencies and associated negative affect.

**‘Doing’ and ‘being’ modes of mind.**

The aim of MBCT is *‘to help individuals make a radical shift in their relationship to the thoughts, feelings, and bodily sensations that contribute to depressive relapse, and to do so through changes in understanding at a deep level’* (Segal et al, 2002, p. 65).

Segal, Williams and Teasdale propose that this shift occurs through developing an understanding, on an experiential level, of helpful and unhelpful modes of mind, and being able to recognise and move between the *‘doing’* mode and the *‘being’* mode of mind (2002, p. 70). The *‘doing’* mode is triggered by the aforementioned discrepancy monitor, which identifies differences in how things are and how we would like them to be. The detected discrepancies then automatically trigger negative emotion and subsequently launch an avalanche of habitual thoughts that are intended to decrease the disparity between the actual and the ideal. If the discrepancy is effectively eliminated by these responses, then the *‘doing’* mode of mind may be exited. However, if the discrepancy remains, then the mind continues to ruminate on the differences and dwells on ways to reduce it indefinitely, resulting in negative mood states (Segal et al, 2002).

The *‘being’* mode of mind is involved with *‘accepting’* and *‘allowing’* of what is present, in contrast with the goal orientated discrepancy-based approach of monitoring and trying to change the situation (Segal et al, 2002, p. 73). Such allowance and acceptance of the present moment eliminates the need for comparisons and opens up an opportunity for experiencing the present in its full richness, depth and entirety (Segal et al, 2002).

Whereas the *‘doing’* mode of mind is concerned with thinking about the present, past and future, the *‘being’* mode of mind is immersed in the direct experience of the present moment, and any processing that occurs is concerned only with the present experience.

Whereas the *‘doing’* mode of the mind evaluates experiences (including thoughts,

emotions and sensations) as good or bad, the 'being' mode of mind simply observes and accepts, viewing all thoughts and emotions as impermanent events in the mind, and not facts that need to be believed and acted upon. This '*decentered*' way of being means that thoughts, emotions and sensations (both pleasant and unpleasant) do not automatically trigger a habitual action in an attempt to reduce or hold on to the experience, and results in a greater ability to tolerate difficult emotional states (Segal et al, 2002, p.74). This process is known as 'decentering' or 'metacognitive awareness' and it is hypothesised that this is a central component of both cognitive therapy and mindfulness practices (Ingram & Hollon, 1986; Segal et al, 2002; Teasdale et al, 2002).

The concept of decentering or disidentifying with negative thoughts has its roots in cognitive therapy (e.g. Beck, Rush, Shaw & Emery, 1979), however, it was seen as a means to an end in changing cognitions rather than the primary mechanism of change as it is in MBCT (Lau et al, 2004; Teasdale et al, 2002). In MBCT and other mindfulness-based therapies, the ability to decenter is considered a central component; specifically, it is thought that if one identifies personally with negative thoughts and feelings, they are more likely to have a strong impact on the individual than if they were able to decenter or disidentify from the negative content and experience them in a wider context (Lau et al, 2004).

Two studies have provided indirect support for the hypothesis that the ability to decenter reduces depressed mood (Lau et al, 2004). Watkins and colleagues (2003) researched the effects that questions designed to increase a wider awareness of the context of mood had on individuals with an induced depressed mood. They found that contextual questions (such as '*how does this one moment fit into my whole life*' and '*how important will this moment appear from my deathbed*') prevented the induced depressed mood

continuing (Watkins et al, 2003, p. 462). While not providing direct support for the role of decentering in the reduction of depression, this research does support the association between increased contextual awareness and decreased depression (Lau et al, 2004). Secondly, in their research into the role of decentering in cognitive therapy and MBCT, Teasdale and colleagues (2002) found that MBCT (and cognitive therapy) increased the metacognitive awareness of negative thoughts and feelings and reduced the rate or relapse or recurrence of depression. Unfortunately, the design of the study did allow for a mediational analysis and therefore could not definitively say that metacognitive awareness was a mediator of the relapse prevention effects of MBCT (Teasdale et al, 2002).

Figure one provides a comprehensive overview of a comparison between the doing and being modes of mind (from Williams 2008, p. 729).

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### *1. Striving versus Non-striving*

Doing mode focuses on

- (a) Monitoring and striving to close the gap between ideas of where we are now and where we want to be; or
- (b) Monitoring and striving to keep as wide as possible the gap between ideas of where are now and where we fear we might end up if we do nothing.

Mindfulness focuses on letting go of such striving towards or away from such ideas.

### *2. Avoidance versus Approach*

Doing mode causes particular problems when it is motivated by avoidance of subjective experience.

Mindfulness encourages remaining open, 'turning towards' the difficult and the unpleasant.

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### 3. *Thoughts as 'real' versus Thoughts as mental events*

Doing mode uses ideas (thoughts and images) as its 'currency', taking such thoughts literally.

Mindfulness views thoughts as merely thoughts, as 'products' of the mind that arise, stay around for a while, and disperse.

### 4. *Living in the past and future versus Living in the present moment*

Doing mode solves problems by switching between memories of the past and anticipation of the future.

Mindfulness focuses on present-moment experience. Memories are recognized as memories that are arising now; future images are seen for what they are, images arising here and now.

### 5. *Indirect (conceptual) experience versus Direct (non-conceptual) experience*

Doing mind is concerned with manipulating ideas, so the subjective experience is thinking about things. It is conceptual, language-based, verbal and analytic.

In the mindful mode, the focus is on direct, sensory, experience. It is non-conceptual, intuitive, and experiential.

### 6. *Automatic versus Intentional*

Doing mind relies on habitual, over-learned routines that run off automatically.

Mindfulness involves intentionally paying attention to aspects of the self and the world.

*Figure 1. The Discrepancy-based (Doing) Mode of Mind, and its Alternative ('Being')*

*Mode That is Cultivated in Mindfulness Practice*

From Williams, J.M.G (2008). Mindfulness, depression and modes of mind. *Cognitive Therapy and Research* 32, 721-733, p 729.

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### **Mindfulness.**

Intrinsic to the ‘being’ mode and central to MBCT is the concept of mindfulness (Segal et al, 2002). Mindfulness is attention on the moment-to-moment experience, an accepting attitude towards this experience and residing in a ‘being’ mode of mind (Williams, 2008). Mindfulness acts to ‘*quiet the ego and thereby lessen the intra-and inter-personal costs that self-identification spawns*’ (Brown, Ryan & Creswell, 2007, p.211). In the MBCT course, mindfulness is encouraged through psycho-education about modes of mind, formal mindfulness meditation and informal mindfulness in daily life practices (Segal et al, 2002).

Greater levels of mindfulness has been found to be associated with lower levels of negative affect such as depression, anxiety and stress and higher levels of subjective wellbeing, such as positive affect, satisfaction with life and self actualisation (Brown & Ryan, 2003; Brown, Ryan & Creswell, 2007; Carlson & Brown, 2005; Kumar, Feldman & Hayes, 2008). Following the completion of MBSR and MBCT courses, increased levels of mindfulness have been reported and negatively related to symptom severity (e.g. Carmody, Baer, Lykins & Olendzki, 2009; Mathew et al, 2010; Raes et al, 2009). In addition, increased formal and informal mindfulness practice during and following MBSR and MBCT courses has been associated with increased levels of mindfulness and wellbeing and decreased levels of depression, anxiety and stress (Carmody & Baer, 2008; Mathew et al, 2010; Speca et al, 2000).

Raes and colleagues explored the relationship between mindfulness and cognitive reactivity in two related MBCT studies (Raes, Dewulf, Van Heeringen & Williams, 2009). They found that individuals with naturally high levels of trait mindfulness showed less

cognitive reactivity, and that the effect of MBCT on the decrease of cognitive reactivity was mediated by an increase in mindfulness skills. Taken together, these two studies point to the validity of the underlying theoretical construct of MBCT, that MBCT increases mindfulness, which in turn reduces cognitive reactivity (Raes et al, 2009).

Research has shown that increases in mindfulness are associated with reductions in ruminative processing and depression scores following the completion of MBSR (Ramel et al, 2004) and MBCT (Kingston et al, 2007; Mathew, Whitford, Kenny & Denson, 2010) courses. In addition, participants who practiced mindfulness meditation more often reported less rumination at follow-up (Ramel et al, 2004). These studies support Teasdale et al's (2000) hypothesis that a mindful mode of processing is a primary therapeutic ingredient for those with ruminative depression (Mathew et al, 2010).

Shapiro and colleagues proposed a tentative theory about the mechanisms of mindfulness and hypothesised that increased mindfulness was associated with increased decentering (Shapiro et al, 2006). A study designed to test this hypothesis did not find support for this sequential model of mindfulness and decentering (Carmody, Baer, Lykins & Olendzki, 2009). Instead, it found that mindfulness and decentering were highly overlapping constructs which both increased following the completion of an MBSR course. While not supporting the intended hypothesis, this study does provide additional support for the roles of both mindfulness and decentering in the MBCT model, and suggests that further research is required to fully understand the relationship between the two constructs (Carmody et al, 2009).

Mindfulness is concerned with present moment awareness, which can be otherwise described as voluntary exposure (Brown et al, 2007). Research has suggested that avoidance and suppression of unwanted thoughts and feelings may increase emotional and

cognitive disturbance (Sloan, 2004), and voluntary exposure may both decrease the disturbance and increase adaptive behaviour (Brown et al, 2007, Felder, Zvolensky, Eifert & Spira, 2003; Levitt, Brown, Orsillo & Barlow, 2004; Sloan, 2004). While there is preliminary evidence to suggest that mindfulness results in voluntary exposure (e.g. Arch & Craske, 2006) research is yet to conclusively ascertain if exposure is an operative mechanism of mindfulness and MBCT (Brown et al, 2007).

### **Future directions for research into mechanism of action.**

While research into the mechanisms of MBCT has begun, it is still in its infancy and there is still much to be explored (Brown et al, 2007; Carmody et al, 2009). In particular, the relationship between and sequence of mindfulness and variables such as rumination, cognitive reactivity and decentering is yet to be fully understood (Carmody et al, 2009; Kumar et al, 2008; Lau et al, 2004), as is the role of experiential avoidance (Brown et al, 2007). It is clear that MBCT is a rich and complex therapy and continued research to increase the understanding of how it leads to beneficial outcomes is required (Carmody et al, 2009). A randomised control trial currently underway is dismantling MBCT, comparing MBCT with a control treatment and treatment as usual (TAU) and may provide additional information about mechanisms of action (Williams, Russell, Crane, Russell, Whitaker, Duggan, Barnhofer, Fennell, Crane & Silverton, 2010).

### **Mindfulness-based Cognitive Therapy as a Treatment for Depression: Treatment Outline**

The Mindfulness-based Cognitive Therapy program is a class-based eight-week program (Segal et al, 2002). There are up to 12 participants in each group who meet on a weekly basis for two hours each session. The program is described as class-based, rather than group-based, as this best describes the atmosphere and learning environment of the

program (Coelho, Canter & Ernst, 2007). The program is described in detail in ‘*Mindfulness-based Cognitive Therapy for Depression*’ (Segal et al, 2002) and is outlined in the method section of this thesis. MBCT includes the three core practices of Mindfulness-based Stress Reduction, namely the body scan, sitting meditation and hatha yoga, as well as the raisin exercise, walking meditation and informal mindfulness practices (e.g. mindfulness in daily life). It additionally includes the three-minute breathing space exercise, the practice of bringing difficulties to mind during the sitting meditation, cognitive therapy exercises, pleasure and mastery activities and relapse prevention action plans.

### **Three-minute breathing space.**

The three-minute breathing space, or ‘*minimeditation*’ was designed as a way to generalise the learnings from the formal practices through to daily life (Segal et al, 2002, p.173). There are three steps to the three-minute breathing space. The first is recognising and bringing awareness to the present moment through attending to the internal experiences of thoughts, emotions and bodily sensations. The second is focusing on the breath in order to bring the scattered mind to rest on a single object, and the third step involves expanding the field of awareness to include the breath and the body as a whole.

### **Bringing difficulties to mind.**

During the 40-minute sitting meditation in the fifth week, participants are asked to intentionally bring a difficult or troubling thought or situation to mind. They are instructed to investigate the physical manifestation of the difficulty by noticing the body sensations that arise and are requested to note any tendency to try to resist or push away the difficult feelings. Participants are asked to breathe into the parts of body that house the most intense sensations on the inhalation, and to breath a sense of ‘*opening*’ and

'softening' on the exhalation, 'letting go of aversion' (Segal et al, 2002, p.226). The aim of this exercise is to practice an attitude of acceptance and allowing rather than avoidance of difficult emotions. One consequence of this exercise is the realisation that it is possible to name the difficulty, face it and work with it, and that avoidance is therefore unnecessary and maladaptive (Baer & Krietemeyer, 2006).

### **Cognitive Therapy exercises.**

There are three central cognitive therapy exercises that are utilised in Mindfulness-based Cognitive Therapy (Baer & Krietemeyer, 2006). These are the thoughts and feelings exercise, automatic thoughts exercise and the moods, thoughts and alternative viewpoint exercise. While cognitive therapy is an integral part of MBCT, the exercises do not focus on changing thoughts (such as identifying cognitive distortions, finding evidence for and against thoughts or finding rational alternative thoughts) as found in traditional cognitive therapy (Baer & Krietemeyer, 2006; Segal et al, 2002). Indeed contemporary researchers are questioning the value of challenging thoughts in CBT (e.g. Hayes, 2004; Lawson, 2005; Segal et al, 2002), and a review of CBT component studies concluded that challenging cognitions did not add value to therapy, nor increase the effectiveness of CBT treatments, nor conclusively result in symptomatic change (Longmore & Worrell, 2007). In MBCT, participants are instead encouraged to be aware, welcoming and allowing of their cognitions.

MBCT additionally differs from traditional cognitive therapy as it empowers clients to relate to their experiences mindfully in the present moment, giving them the responsibility of managing their own difficulties and distress, rather than explicitly helping them to solve their problems as is the technique in cognitive therapy (Segal et al, 2002). The intention of the thoughts and feelings exercise is to communicate that 'our

*emotions are consequences of a situation plus an interpretation*' (Segal et al, 2002, p. 143). Participants are asked to imagine a scenario where they smile and wave at someone they know across the street and that this person does not acknowledge them. They are asked to observe and then share with the group their thoughts, emotions and body sensations, thus generating a broad range of potential responses to the situation. This is designed to illustrate the ABC model, such that a situation (A) leads to a thought (B), which in turn leads to an emotion (C). Participants are taught that thoughts often occur automatically and without awareness and to prevent depressive relapse, awareness of negative thoughts and their impact on mood is vital. Psycho-education is provided about depression and automatic negative thoughts and participants are encouraged to complete an 'Automatic Thoughts Questionnaire'. This questionnaire asks participants to rate the frequency and degree of belief in thirty negative thoughts, including '*I feel like I'm up against the world*' and '*I'm worthless*' (Segal et al, 2002, p.204). The aim of this exercise is to learn to recognise typical patterns of depressive thinking and to view these thoughts not as facts, but as a symptom of depression. The moods, thoughts and alternative viewpoint exercise involves providing participants with two scenarios and asking them to record their thoughts following each situation. In the first scenario the participant is asked to imagine that they are feeling down because they just had a quarrel with a colleague and afterwards another colleague rushes off saying they cannot talk. In the second scenario, the participant is asked to imagine that they are feeling happy because they have just been praised for their work and in the same manner as scenario one, they later see a colleague rushing off saying they cannot talk. The aim of the exercise is to demonstrate the way that our thoughts are influenced by our moods and that because our thoughts fluctuate so readily, they cannot be taken as fact.

In the second last week, the pleasure and mastery activity is introduced (Segal et al, 2002). Participants are taught about the role that taking action can play in combating depressive relapse and are asked to develop lists of activities that are either pleasurable or provide a sense of mastery. They are encouraged to reference these lists later in times of low mood.

### **Relapse prevention plans.**

In the final two sessions, participants are encouraged to develop relapse prevention action plans (Segal et al, 2002). This involves making a list of signs of depressive relapse, then developing a plan of action when these symptoms develop. The first step in the action plan is to take a breathing space, the second is to utilise one of the practices they found helpful in the past and the third step is to take action, particularly an action that gives a sense of pleasure or mastery.

### **Empirical Support for MBCT as a Treatment for Depression**

Strong empirical support for Mindfulness-based Cognitive Therapy for reducing depressive relapse has come from two randomised clinical trials (Coffman et al, 2006). In the first study, Teasdale and colleagues evaluated MBCT with 145 patients who had recovered from a depressive episode and were currently in recovery or remission (Teasdale et al, 2000). Participants were randomised to either treatment as usual (TAU) or MBCT and TAU and depressive relapse was assessed at regular intervals over a 52-week period. The time investment was less than five hours of instructor time per participant.

MBCT was found to significantly reduce the likelihood of relapse for participants who had experienced three or more previous episodes of depression, but not for those with two episodes or less. Of those with three or more previous episodes of depression, 37% of



patients who were in the MBCT and TAU group relapsed, compared to 78% of those in the TAU only group (Teasdale et al, 2000).

When the characteristics of the participants with three or more previous episodes were compared with those with two or less episodes, they found that individuals with three or more episodes were older when they participated in the study and were younger when they experienced their first depressive episode. The authors concluded that these groups were two distinct populations, rather than younger and older samples from the same population. Given the theoretical background of MBCT, that depression is reactivated by dysphoria more readily in those with multiple previous episodes than those without, the authors concluded that MBCT disrupted the reactivation of depression in times of potential relapse. As depression was more likely to be activated by environmental events rather than by dysphoric mood states in those with 2 previous episodes of depression or less, it makes sense that MBCT was not effective in preventing relapse in this group (Teasdale et al, 2000).

In the second study, Ma and Teasdale evaluated MBCT with 75 patients who had recovered from an episode of depression, randomising patients to either TAU or MBCT and TAU (2004). They replicated Teasdale and colleagues' earlier findings, reporting that of those patients with 3 or more previous episodes of depression, 36% in the MBCT and TAU group relapsed, compared to 78% of participants in the TAU only group. MBCT was not significantly more effective in reducing relapse than TAU in individuals with two or less previous episodes of depression. The time investment was less than three hours of instructor time per participant.

Supporting conclusions from Teasdale and colleagues' earlier study (2000), MBCT was found to be most effective in reducing depressive relapse not preceded by

significant life events (Ma and Teasdale, 2004). Interestingly, relapse triggered by life events occurred predominately in the population with two or less previous episodes of depression. Additional differences between the two groups were that those with three or more previous episodes reported early first onset of depression and more adversity in childhood (in terms of indifference and abuse), supporting the hypothesis that the groups represent two distinct populations, rather than the same population at different stages of their '*depressive career*' (p.38). The authors suggested that while the results indicate that MBCT may be contraindicated for those with two or less previous episodes of depression, the group may not actually be indicative of all individuals with two or less previous episodes and the results may be different with an alternative selection criteria.

The authors reported that the results of their study placed MBCT in the category of a "probably efficacious" treatment as outlined by the American Psychological Association, as its effectiveness had been shown in two randomised controlled trials (Ma and Teasdale, 2004).

Williams, Russell and Russell (2008) later combined and reanalysed the data from the two above studies and concluded that MBCT reduced the relapse rate within 12 months from 70% to 39%, increased the average amount of time that individuals relapsed by a minimum of 18 weeks, and decreased depression scores on the Beck Depression Inventory by 4.7 points (statistically significant at the 0.1% level). These studies and more are outlined in table 1.

Four studies have investigated the effectiveness of Mindfulness-based Cognitive Therapy with currently depressed treatment resistant clients. Kenny and Williams (2006) conducted a nonrandomised study with 46 patients with treatment resistant depression who participated in a MBCT course along with asymptomatic patients. Treatment

followed Segal, Williams and Teasdale's MBCT treatment protocol (2002). Kenny and Williams found that MBCT was acceptable for the treatment resistant population, that there were low drop out rates and that a significant number of participants returned to normal or near normal mood levels following completion of the course.

Kingston and colleagues conducted a preliminary study to evaluate the effectiveness of Mindfulness-based Cognitive Therapy in reducing residual symptoms in patients with recurrent depression (Kingston, Dooley, Bates, Lawlor & Malone, 2007). With 19 participants consecutively allocated to either MBCT or TAU, they found that in the MBCT group, residual symptoms significantly decreased following completion of the course and clinical gains were maintained at follow-up (1 month). Kingston and colleagues cited previous studies that hypothesised that rumination was important in the vulnerability to depression and assisted in the avoidance of emotion, and that mindfulness provided desensitisation to conditioned responses and therefore reduced avoidance behaviour (Baer, 2003; Borkovec, Roemer & Kinyon, 1995; Nolen-Hoeksema, 1991). Kingston and colleagues thus attributed their findings to the mediating effect of mindfulness on rumination (Kingston et al, 2007).

Eisendrath and colleagues completed a nonrandomised pilot study with 51 participants with treatment-resistant depression, defined as those who had not recovered from depression after at least two courses of antidepressant treatment (Eisendrath, Delucchi, Bitner, Fenimore, Smit, & McLane, 2008). The program was modified to suit the actively depressed population, however the modifications were not outlined in the published report. They found significant decreases in both depression and anxiety levels following completion of the MBCT course, and found no evidence to suggest that individuals with severe active depression had difficulty learning MBCT. The authors

concluded that MBCT was effective in reducing both depression and co-morbid anxiety in treatment resistant populations. Neither of the above studies investigated the long-term effects of MBCT on the actively depressed treatment resistant population.

Mathew and colleagues (2010) completed a nonrandomised study investigating the long-term effects of MBCT on depressive relapse on both symptomatic and asymptomatic patients, up to 34 months after the completion of the course. Treatment followed Segal, Williams and Teasdale's MBCT treatment protocol (2002). They found a significant decrease in depression scores following completion of the MBCT course and stability in this decrease for up to 24 months afterwards. From 25 months onward they found that the gains were no longer maintained, however the increased levels of depression were within the mild range of the Beck Depression Inventory (BDI-II). Interestingly, their research also found that lower levels of depression were associated with treatment variables such as booster sessions and ongoing mindfulness practice (Mathew et al, 2010).

Despite the preliminary nature of these studies and the subsequent methodological limitations, together they suggest the immediate and relatively long-term effectiveness of MBCT for patients with active treatment resistant depression. Kenny and Williams (2006) hypothesised that the reason for the effectiveness of MBCT with symptomatic treatment resistant patients (in addition to asymptomatic patients with a history of depressive relapse) was that the cognitive processes that increase an individual's vulnerability to future episodes (rumination and high cognitive reactivity to low mood) are identical to those that maintain depression.

Barnhofer and colleagues evaluated the effect of MBCT on prefrontal  $\alpha$ -asymmetry in resting electroencephalogram (EEG), a biological indicator of affective style, in patients with a history of suicidal depression (Barnhofer, Duggan, Crane,

Hepburn, Fennell & Williams, 2007). The MBCT protocol was adapted to focus on suicidal depression. The 22 participants were randomly assigned to either MBCT or TAU. While individuals in the MBCT group showed no significant change following treatment, the TAU group showed significant deterioration toward decreased relative left-frontal activation (an indication of a decrease in positive affective style). They concluded that MBCT is an appropriate treatment to assist patients who are high risk for suicidal depression to maintain a balanced pattern of baseline emotion-related brain activation.

Kuyken and colleagues conducted a randomised controlled trial for patients who had recovered from depression and were still taking antidepressant medication (Kuyken et al., 2008). The 123 participants were allocated to either maintenance treatment with antidepressant medication (m-ADM) or to MBCT and assistance in tapering/discontinuing antidepressant medication (MBCT). They found that in the 15-month follow-up period, the relapse rates were comparable, with a trend towards better outcomes for the MBCT group, such that 47% of those in the MBCT group relapsed, compared to 60% in the m-ADM group. Overall, they found that MBCT was somewhat more effective than m-ADM in reducing residual symptoms of depression and psychiatric co-morbidity and in improving physical and psychological quality of life. In addition, 75% of those in the MBCT group were assisted to cease their antidepressant medication completely and no difference was found in the average annual cost for the two treatment types. These results suggest that MBCT is comparable or possibly even favourable to maintenance antidepressant medication in preventing depressive relapse in recovered patients, at no additional financial cost.

At the time of writing, Williams and colleagues were conducting a 12 month randomised controlled trial comparing Mindfulness-based Cognitive Therapy with a

control psychological treatment and TAU (Williams et al, 2010). Participants include those with a history of recurrent depression and suicidality, and the MBCT treatment was adapted for this population. The control treatment, Cognitive Psycho-Education (CPE), is reported to be identical in its content to MBCT, however does not include the meditation component or the focus on experiencing the present moment. The research will therefore explore the effectiveness of MBCT as compared with the CPE treatment, as well as exploring the added benefits of the meditation component in MBCT in treating individuals with a history of depression. This research is a first of its kind in comparing MBCT with another active psychological treatment and is novel in its dismantling of MBCT by removing the meditation component in the CPE treatment.

Table 1

*MBCT for depression studies*

Study	n	Target population	Follow-up period	Changes to MBCT protocol?	Findings
Barnhofer et al (2007)	22	<p>Previous episode of MD with suicidal ideation</p> <p>In recovery for at least 8 weeks, with no more than 1 core symptom and 1 other symptom of depression</p> <p>No current alcohol or substance misuse, eating disorder, OCD, schizophrenia, mania or habitual self-harming.</p> <p>Right handed.</p>	None	Yes	<p>Significant pre to post deterioration toward decreased relative left-frontal activation in TAU group (<math>p=0.0001</math>) and no significant change in MBCT group (<math>p=0.918</math>).</p>

Eisendrath et al (2008)	51	Current MDD. >2 unsuccessful ADM treatments.	None	Yes	MBCT acceptable and effective in reducing depression (BDI-II pre to post decrease of 9.35, $p<0.0001$ ) and anxiety (BAI pre to post decrease of 3.6, $p=0.004$ ) in patients with active TRD.
Kenny & Williams (2006)	46	Current MDD, BPAD, Depressed phase or Dysthymia. If MDD, >3 previous episodes or chronic course >1 year related to rumination.	None	No	MBCT acceptable and effective in reducing depression for patients with active TRD (BDI-II pre to post decrease of 10.4, $p<0.0001$ ). Low drop out rate.
Kingston et al (2007)	19	Recurrent MDD with >3 previous episodes. Residual depressive symptoms.	1 month	No	Significant difference in BDI-II scores following MBCT compared to TAU (9.76, $p<0.05$ ). Depression significantly decreased following MBCT (BDI-II pre to post



Author (Year)	N	Inclusion Criteria	Duration	Exclusion Criteria	Outcomes
Kuyken et al (2008)	123	>3 previous episodes of MD. Full or partial remission for 6 months Current m-ADM. No organic brain damage, current/past psychosis, Bipolar Disorder, persistent antisocial behaviour or persistent self-injury. No concurrent psychotherapy.	15 months	No	decrease of 18.00, $p<0.05$ ) and at FU (pre to FU decrease of 12.92, $p<0.05$ ). No significant difference in relapse rates between MBCT and m-ADM group and m-ADM group (47% relapse in MBCT group, 60% in the m-ADM group, $p=0.21$ ). 75% in MBCT group ceased m-ADM completely. No difference in the average annual cost between groups.
Ma & Teasdale (2004)	75	History of recurrent MD (no mania, schizophrenia, OCD, substance abuse, eating	52 weeks	No	For >3 depressive episodes, significant reduction in relapse (36% MBCT vs 78% TAU).

		sessions.			
Mathew et al (2010)	39	Current MDD, BPAD, depressed phase or Dysthymia. >3 previous episodes or chronic course. >1 year related to rumination.	1 to 34 months	No	<p>Group 1 (1-12 months FU): BDI-II pre to post decrease of 9.79, post to FU decrease of 3.00 (p=0.002).</p> <p>Group 2 (13-24 months FU): BDI-II pre to post decrease of 9.41, post to FU decrease of 2.42 (p=0.001).</p> <p>Group 3 (25-34 months): BDI-II pre to post decrease of 5.92, post to FU increase of 2.61 (p=0.04).</p> <p>Reduction of depression pre to post and maintained for up to 24 months.</p> <p>Depression at FU decreased with booster sessions and ongoing mindfulness practice.</p>
Teasdale et al (2000)	145	History of recurrent MD (no mania, schizophrenia, OCD,	52 weeks	No	For >3 depressive episodes, significant reduction in relapse (37% MBCT vs

substance abuse, eating disorders, OMD, PDD, BPD, dysthymia before 20 years).  
 >2 episodes in the past 5 years & at least 1 in the past 2 years.  
 No current depression symptoms.  
 History of ADM (not current).  
 No more than 4 previous CBT sessions.  
 No frequent current psychotherapy, yoga or meditation.

78% TAU).  
 For <2 episodes, no significant reduction in relapse.

Williams et al (2008)

220 Reanalysis of Teasdale et al (2000) and Ma & Teasdale (2004).

52 weeks No

For >3 depressive episodes, significant reduction in relapse (39% MBCT vs 70% TAU within 12 months) and average amount of time to relapse

					increased by 18 weeks and BDI-II score decreased by 4.7 points (p=0.001).
Williams et al (2010)	300	History or recurrent MD with >3 previous episodes. Currently in remission. No history of schizophrenia, schizoaffective disorder, bipolar I disorder, current severe substance abuse, OMD, PDD, a primary diagnosis of OCD or eating disorder, or regular self harm. No current CBT or frequent counselling.	12 months	Yes	Study currently in progress. Compares MBCT for recurrent depression and suicidality with an active control (CPE).

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ADM = antidepressant medication; BDI-II = Beck Depression Inventory; BPAD = Bipolar Affective Disorder; BPD = Borderline Personality Disorder; CBT = Cognitive Behaviour Therapy; CPE = Cognitive Psycho-Education; FU = follow-up; m-ADM = maintenance antidepressant medication; MBCT = Mindfulness-based Cognitive Therapy; MD = Major Depression; MDD = Major Depressive Disorder; OCD = Obsessive-Compulsive Disorder; OMD = Organic Mental Disorder; PDD = Pervasive Developmental Disorder; TAU = treatment as usual; TRD = treatment resistant depression

### **Future directions for research.**

Research into Mindfulness-based Cognitive Therapy for current and recurrent depression is still in its infancy (Coelho, Canter and Ernst, 2007; Williams, 2008), yet studies are gathering momentum and new research into transportability and generalisability are emerging (Raes et al, 2009; Williams, Russell & Russell, 2008). One area of study that has yet to be fully explored is the effect of Mindfulness-based Cognitive Therapy on those participants who experience anxiety as well as recurrent depression. The aim of this research is to examine the effectiveness of MBCT with this population.

### **MBCT as a Treatment for Anxiety: Theoretical and Conceptual Considerations**

Mindfulness-based therapies are increasingly being used to treat anxiety (e.g. Craigie et al, 2008; Dalrymple & Herbert, 2007; Kabat-Zinn, Massion, Kristeller, Peterson, Fletcher & Pbert, 1992; Miller, Fletcher & Kabat-Zinn, 1995; Orsillo, Roemer & Barlow, 2003; Roemer & Orsillo, 2007), and this literature provides a rich source of information about the relationship between anxiety and mindfulness. Teasdale, Segal & Williams (2003) warned against applying mindfulness as a generic technique to any disorder without conceptualising how it may address the factors that maintain the disorder in question. Since this cautioning, there has been accumulating evidence for the application of MBCT for a wide variety of psychiatric conditions, including anxiety, such that MBCT may now be considered a '*trans-diagnostic therapeutic tool*' (Williams et al, 2008, p. 278).

### **Rumination.**

In the MBCT model, rumination is considered to be a central feature of depression and a core mechanism of change (Segal et al, 2002). Increasingly, research has found that

rumination in individuals with depression is decreased following the completion of MBCT and MBSR courses (Kingston, Dooley, Bates, Lawlor & Malone, 2007; Mathew et al, 2010; Ramel et al, 2004). Rumination is also present in many other psychological disorders (Sauer & Baer, 2010), including anxiety (Harvey, Watkins, Mansell & Shafran, 2004; Nolen-Hoeksema, Wisco & Lyubomirsky, 2008). Rumination is the repetitive and passive focus on the symptoms, causes and consequences of distress, without effective problem solving and action (Nolen-Hoeksema et al, 2008). For example, someone with social anxiety may selectively retrieve negative information about how they are seen by others, then ruminate on how to behave appropriately, their inability to behave in this way and how they are perceived as socially inadequate (Harvey et al, 2004). Thus this maintains the experience of anxiety and may result in avoidance or social engagement in a way that is coloured by negative predictions (Harvey et al, 2004). Ramel and colleagues (2004) found that following the completion of an MBSR course, decreases in rumination were accounted for by reductions in both depression and anxiety and they highlighted previous research that showed that depressive rumination and worry (a central feature of anxiety) were moderately correlated ( $r=.46$ ; Fresco, Frankel, Mennin, Turk & Heimberg, 2002). It would not be surprising if the mindful observation of ruminative thoughts, as is practiced in MBCT and MBSR, is beneficial in reducing rumination and subsequently pathology in individuals experiencing anxiety (Sauer & Baer, 2010).

### **Dysfunctional attitudes.**

Dysfunctional attitudes is another core feature of recurrent depression that is addressed in MBCT (Segal et al, 2002). While rumination is associated with the process of the mind, dysfunctional attitudes reflect the content, which is characterised by negative, rigid and extreme assumptions and beliefs about self worth (Ramel et al, 2004).

Participants learn to identify, observe, reflect and subsequently distance themselves from their negative assumptions throughout the MBCT course. Dysfunctional attitudes are also a core feature of anxiety (Andrews et al, 2003). While depression is characterised more by assumptions of hopelessness, low self worth and negative thoughts involving loss and failure, anxiety is characterised more by thoughts of anticipated harm and danger (Clark, Beck & Bonnie, 1990). Dysfunctional attitudes are a central feature of both disorders and some overlap between the two exists (Barlow, Allen & Choate, 2004; MacLeod & Byrne, 1996). It is therefore anticipated that MBCT would be effective in treating the dysfunctional assumptions present in anxiety as well as depression and therefore would be effective in reducing symptoms of anxiety.

#### **Avoidance and exposure.**

The tendency to avoid and escape from fear and anxiety is characteristic of most individuals with anxiety (Eifert & Forsyth, 2005). Researchers have recently been investigating the role of experiential avoidance as a key factor in creating and maintaining anxiety (e.g. Gratz, Tull & Wagner, 2005; Hayes, Strosahl, Wilson, Bissett, Pistorello, Toarmino et al, 2004; Orsillo, Roemer, Lerner & Tull, 2004; Roemer & Orsillo, 2002). Experiential avoidance is defined as *'the phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences (e.g. bodily sensations, emotions, thoughts, memories, images, behavioral predispositions) and takes steps to alter the form or frequency of these experiences or the contexts that occasion them, even when these forms of avoidance can cause behavioral harm'* (Hayes et al, 2004, p.554). For example, someone with agoraphobia is not avoiding public places per se, but is actually avoiding the thoughts, feelings and sensations associated with the panic they feel in a public place (Eifert & Forsyth, 2005). The fear is not of the situation or object in itself,

but rather a fear and avoidance of the personal psychological and emotional experience (Eifert & Forsyth, 2005). Inherent in mindfulness is acceptance of and exposure to the present experience, whether pleasant, neutral or aversive. Mindfulness-based therapies, including MBCT, target experiential avoidance by encouraging individuals to accept and to stay with, rather than move away from difficult thoughts, feelings and sensations (Segal et al, 2002). This is known as experiential acceptance (Orsillo et al, 2004). Mindfulness-based Cognitive Therapy was designed to reduce the avoidance of unwanted inner experiences (Segal et al, 2002), which given the central role of experiential avoidance in anxiety, may be just as relevant for the treatment of anxiety as it is for depression (Levitt et al, 2004; Feldner et al, 2002; Roemer, Salters-Pedneault & Orsillo, 2006).

### **Worry.**

Worry is another central feature of anxiety, particularly of Generalised Anxiety Disorder (American Psychiatric Association, 2000; Andrews et al, 2003). Anxiety and worry are by nature future orientated mood states (Eifert & Forsyth, 2005; Orsillo et al, 2004; Borkovec & Sharpless, 2004). Chronic worriers repeatedly think about the numerous potential future catastrophes, which generate further anxiety, increased attentional bias toward threat and *'precludes responding to present-moment contingencies by diverting attention from what is currently happening'* (Orsillo et al, 2004, p.84). This avoidant function of worry coincides with the concept of experiential avoidance, as worry seems to reduce anxiety in the short-term, but is an ineffective long-term strategy as it interferes with emotional processing and prevents the recognition of adaptive information provided by emotional states (Roemer et al, 2006). Mindfulness therapies, including MBCT provide explicit strategies for increasing non-judgmental awareness of the present moment, which may enhance in the treatment of anxiety (Orsillo et al, 2004).



**Habitual and rigid responding.**

Orsillo and colleagues (2004) highlighted the habitual and rigid nature of anxious responding and attentional biases for threat. They assert that mindfulness therapies encourage a broader awareness of internal and external cues and a more flexible way of responding adaptively to the environment. An example of this is the stance of beginner's mind, which explicitly counteracts the tendency to see things as they have previously been perceived and allows for a novel and flexible response to old stimuli. When participants in the MBCT course are given a raisin and asked to observe, feel, smell and eat the raisin slowly, mindfully and as if they had never seen a raisin before, they are being introduced to the concept of beginner's mind and flexibility in their responses to well known experiences (Segal et al, 2002). It is likely that encouraging cognitive and behavioural flexibility in this way is also effective in treating anxiety.

**Relaxation.**

While participants often report that mindfulness meditation is relaxing, the authors of MBCT make a very clear distinction between meditation and relaxation, describing relaxation as a happy byproduct rather than a goal of mindfulness meditation (Segal et al, 2002). In addition, during periods of nonjudgmental observation of current states, which may include autonomic arousal, racing thoughts and muscle tension, relaxation is unlikely to occur (Baer, 2003). Even so, participants report that mindfulness meditation is frequently relaxing (Segal et al, 2002) and research has shown that meditation often does result in a relaxed state (Baer, 2003).

Relaxation, including progressive muscle relaxation, autogenic training, applied relaxation and meditation, has been found to effectively reduce clinical and subclinical levels of anxiety and the more time spent practicing the relaxation techniques, the greater

the benefit (Eppley, Abrams & Shear, 1989; Manzoni, Pagnini, Castelnovo & Molinari, 2008). Relaxation is a widely accepted and practiced component of treatment for anxiety disorders, especially Panic Disorder, Agoraphobia and Specific Phobias (Andrews et al, 2003). Relaxation may therefore be a beneficial side effect of mindfulness meditation that has a significant impact on reducing levels of anxiety.

### **Cognitive reactivity and selective attentional bias.**

Cognitive reactivity is a central component of MBCT for depression. Recurrent episodes of depression are thought to be triggered by mild sad mood states, that reawaken negative cognitive patterns and increase vulnerability to depression (Segal et al, 2002). While the terms 'cognitive reactivity' or 'differential activation' are not explicitly used in the anxiety literature, research into the emotional stroop task suggests a similar mechanism known as 'selective attentional bias' (Williams, Mathews & MacLeod, 1996).

The emotional stroop task assesses selective attentional bias by asking participants to name the colour of the ink of various printed words. Delays in the response times to the colour naming of threatening versus neutral words are consistently reported in anxious individuals, reflecting a tendency to selectively process threat cues (Stewart, Samoluk & MacDonald, 1999).

One study investigating cognitive bias in state and trait anxiety using a version of the emotional stroop task, found that when state anxiety was low, participants performed equally well, irrespective of their level of trait anxiety (MacLeod & Rutherford, 1992). However when state anxiety was high (before a major exam), participants with high trait anxiety experienced increased response interference to negative words associated with the impending examination, and those with low trait anxiety did not. Another study using the emotional stroop task found that experimentally induced stress (solving difficult or

insolvable anagrams) was not mediated by increases in state anxiety (Mogg, Mathews, Bird & MacGregor-Morris, 1990), however this null effect may have been a result of insufficient power (Williams et al, 1996). The study did find however, that irrespective of induced stress, participants with high trait anxiety experienced high cognitive bias to threatening words, and the authors concluded that in anxiety prone individuals, cognitive representations of threat are easily activated by danger relevant cues. Williams and colleagues reviewed these studies and concluded high trait anxiety was associated with increased rumination on negative content (hence the interference), that selective attentional bias towards threat cues is an anxiety-maintaining factor, that trait anxiety requires activation by current situations or emotions to show cognitive bias, and that this bias is more likely to occur when the current circumstances have had the opportunity to 'incubate' (e.g. anticipating an important exam) compared to short-term current emotional disturbance (e.g. failing at an experimental task; 1996, p. 7). Just as depressive cognitions are activated in individuals with previous episodes of depression during a mild dysphoric mood state, this research shows that anxious cognitions are activated in individuals with high trait anxiety while experiencing periods of state anxiety. Therefore it follows that selective attentional bias in those with high trait anxiety would be reduced following MBCT in a similar way that cognitive reactivity is reduced in individuals with multiple previous episodes of depression.

### **Summary of theoretical and conceptual considerations for MBCT and anxiety.**

Current research lends support for a conceptual goodness-of-fit between mindfulness and anxiety. Mindfulness-based Cognitive Therapy addresses rumination, dysfunctional attitudes, experiential avoidance, worry and rigidity of response to stimuli

and all of which are central features of anxiety. It also incidentally induces relaxation in many participants, which is a part of the traditional CBT treatment for anxiety disorders. In addition, MBCT may also reduce selective attentional bias towards threat cues in individuals with high trait anxiety in periods of high state anxiety, in a similar way that it reduces cognitive reactivity to dysphoric mood states in individuals with multiple previous episodes of depression. Taking all this information into consideration, it makes theoretical and conceptual sense that MBCT would be effective in treating symptoms of anxiety.

### **MBCT as a Treatment for Anxiety Disorders: Empirical Support**

In 2008, Evans and colleagues conducted a small study exploring the acceptability and effectiveness of MBCT with individuals with Generalised Anxiety Disorder (GAD; Evans, Ferrando, Findler, Stowell, Smart & Haglin, 2008). Individuals with co-morbid current depression were excluded from the study due to concerns about their ability to sustain concentration. The sessions were based on Segal, Williams and Teasdale's MBCT treatment program (2002), however adherence to the treatment protocol was not specified.

The results showed a statistically and clinically significant reduction in levels of anxiety, worry, tension and depression, and a trend towards an increase in mindfulness in day-to-day life. The authors obtained qualitative information from the participants, and several reported that they felt better and had received something of "*lasting value*" from the course (p. 720). Due to the very small sample size, lack of control group and exclusion of individuals with co-morbid depression, care should be taken when drawing conclusions from these findings.

Kim and colleagues conducted a study looking at the effectiveness of MBCT and pharmacotherapy in individuals with treatment resistant Panic Disorder (PD) or Generalised Anxiety Disorder (Kim, Lee, Choi, Suh, Kim, Kim et al, 2009). The program

was based on Segal, Williams and Teasdale's MBCT program (2002), however differed somewhat in its inclusion of Korean mindfulness meditation (not specified), psycho-education about PD and GAD and the reduction in class length from 2 hours to 90 minutes.

Participants were consecutively allocated to either an MBCT or an anxiety disorder education (ADE) group, both of which were conducted weekly for 8 weeks. The ADE group involved education about the biological aspects of PD and GAD for one hour per week. All participants were treated with antidepressant and anxiolytic medication. Patients with co-morbidities (including depression) were excluded from the study.

Following completion of the course, there was a significant decrease in anxiety and depression scores for participants in the MBCT group, but not in the ADE group. The difference between the MBCT and the ADE group was significant on measures of both depression and anxiety (Kim et al, 2009). While the study has significant limitations, including amendments to the MBCT protocol that were not clearly articulated, the non-random allocation of participants, differences in prescribed medication, differences in the amount of time participants spent in the groups and lack of follow-up, it does compare MBCT to an active treatment, something which to date has been lacking in the MBCT research. While the results should be treated with caution, this study does indicate that MBCT and medication are superior to psycho-education and medication in reducing anxiety and depressive symptoms in patients with PD and GAD.

These two studies are summarised in table 2. While inconclusive by themselves, they lend support for a role of MBCT in treating anxiety disorders. Further research will need to be undertaken to fully understand the effectiveness of MBCT in treating populations

with anxiety disorders, however the studies are interesting in the context of investigating the perceived value and effectiveness of MBCT with those experiencing anxiety.

Table 2

*MBCT for anxiety disorder studies*

Study	n	Target population	Follow-up period	Changes to MBCT protocol?	Findings
Evans et al (2008)	11	Current GAD. No current co-morbid MD, substance abuse, psychosis, suicidal or homicidal ideation or dissociative states.	None	Not specified	Significant reduction in anxiety (BAI pre to post decrease of 10.09, $p < 0.01$ ), worry (PSWQ pre to post decrease of 12.00, $p < 0.01$ ), tension (POMS tension-anxiety pre to post decrease of 7.2, $p < 0.05$ ) and depression (BDI-II pre to post decrease of 4.98, $p < 0.05$ ), and a trend towards an increase in mindfulness (MAAS pre to post increase of 0.52, $p > 0.05$ ).
Kim et al (2009)	46	Current GAD or PD (with or without agoraphobia). Current ADM for at least 6 months without remission. No history of substance abuse,	None	Yes	Significant decrease in anxiety (BAI pre to post decrease of 7.6, $p < 0.01$ ) and depression (BDI-II pre to post decrease of 6.5, $p < 0.01$ ) in MBCT group. Significant differences between MBCT

or current psychiatric co-  
morbidities (including MD).

and active control group (ADE) for  
anxiety ( $p < 0.01$ ) and depression ( $p < 0.01$ ).

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ADE = Anxiety Disorder education; ADM = antidepressant medication; BAI = Beck Anxiety Inventory; BDI-II = Beck Depression Inventory; GAD = Generalised Anxiety Disorder; MD = Major Depression; PD = Panic Disorder; POMS = Profile of Mood State; PSWQ = Penn State Worry Questionnaire



### **MBCT as a Treatment for Co-occurring Depression and Anxiety: Empirical Support**

A number of studies have begun to explore the acceptability and effectiveness of Mindfulness-based Cognitive Therapy for depressed individuals with anxious symptomatology, co-morbid anxiety disorders and primary anxiety disorders. These are outlined in table three.

Finucane and Mercer (2006) conducted a small mixed methods study investigating the acceptability and effectiveness of MBCT with individuals with recurrent and active depression and anxiety. The course followed Segal, Williams and Teasdale's manualised program (2002), with the exception of the length of the longer meditations. The body scan was reduced from 40 to 30 minutes, and the sitting meditation from 40 to 25 minutes. The authors deemed this adaptation necessary, as they reported that the longer meditation sessions were originally designed for individuals who had recovered from depression, and believed that these were too difficult for the participants in their study, who had a wide range of active affective symptoms. Interestingly, participants were excluded from the study if they scored seven or more on the combined Beck Depression Inventory (BDI-II) items for energy, concentration difficulty and tiredness, as they were considered unable to participate in the MBCT program.

The quantitative data showed that both depression and anxiety scores were significantly reduced, with large effect sizes, over the course of the program. The qualitative data collected indicated that depression was significantly reduced from a clinical to a sub clinical level. Anxiety was also significantly reduced, however clinically significant symptoms for some participants remained following completion of the course (Finucane & Mercer, 2006).

Following treatment, the participants reported that they were more able to relax, were less likely to jump to negative conclusions, were taking time out, were learning new ways of managing difficult emotions and had greater self-acceptance. One woman with Generalised Anxiety Disorder and depression stated; *'I got a lot out of the body-scan. There was an incidence where I had went to the hospital for an endoscopy and you hear all the horror stories about what is going to happen and whatever and normally with things like that I would be physically shaken, you know I would be so uptight but because I had this, under my belt if you like, I thought no I've got to use it, that is what it is there for, so I did use it and I wasn't shaken and I was so proud of myself'* (Finucane & Mercer, 2006, p. 23).

Another participant who had experienced depression and anxiety for over 30 years reported that she hoped MBCT would be a miracle cure and was disappointed that this was not the case. She said that she enjoyed the classes and found them informative, however was at times overwhelmed by the quantity of information. The authors reported that she remained goal orientated and conceptualised the mindfulness practice as simply relaxation, judging her practice as successful if she was able to relax and unsuccessful if she was tense or distracted (Finucane & Mercer, 2006).

Three of the thirteen participants did not complete the course. Two of these had a comparatively mild mental health history, which is consistent with previous findings that individuals with two previous episodes of depression are more likely to drop out than those with three or more and the hypothesis that the duration of the depressive history is an important motivating factor in engaging in the MBCT course (Finucane & Mercer, 2006; Ma & Teasdale, 2004). Three months following the end of the course, eight out of the eleven participants who completed the course continued to use mindfulness techniques

and five participants continued with a formal mindfulness meditation practice two to three times per week.

Overall, the authors reported good agreement between the qualitative and quantitative data. Despite the limitations of this study, including a small sample size, lack of control group, limited experience in MBCT facilitation of the instructor and controversial changes to the MBCT protocol, it indicates that Mindfulness-based Cognitive Therapy may be an acceptable and possibly effective treatment for individuals with symptoms of both depression and anxiety.

Ree and Craigie (2007) evaluated the effects of MBCT on outpatient population with a range of presentations. Of the 26 individuals involved in the study, 16 were diagnosed with depression, 16 with an anxiety disorder, one with Somatisation Disorder, one with Substance Abuse, four with an eating disorder and two participants did not meet diagnostic criteria for any psychological disorder. The course largely followed Segal, Williams and Teasdale's treatment protocol (2002), however included psycho-education for anxiety and stress as well as depression, and throughout the course the examples given to illustrate key points were related to depression, anxiety and stress.

Significant changes were found in the expected directions for depression, anxiety, stress, mindfulness and a number of other outcomes measures. When the entire sample was included, medium effect sizes were found, however when only the psychiatric population was included in the analysis, large effect sizes were found for most measures (and medium for a few). The participants rated the treatment as credible, acceptable and important. This research is limited by its small sample size and lack of control group, however it does indicate the acceptability and effectiveness of MBCT in reducing

depression, anxiety and stress in a diverse population, which included a large number of participants with depression and/or anxiety disorders.

Craigie, Rees, Marsh and Nathan (2008) conducted a preliminary evaluation of the acceptability and effectiveness of Mindfulness-based Cognitive Therapy with individuals diagnosed with GAD. Of the 23 individuals in the study with GAD, 10 were also diagnosed with secondary Major Depressive Disorder current/recurrent and six with Major Depressive Disorder in partial or full remission. The sessions were based on Segal, Williams and Teasdale's protocol (2002), however audio recordings were used from the MBSR program instead of the standard MBCT recordings or script and an extra session with no new material, designed to consolidate previously learnings, was added after week four.

Craigie and colleagues asked the participants to rate how acceptable they found the MBCT course for dealing with their problems, on a scale from one to four, where 1 = not acceptable and 4 = extremely acceptable. Of those who completed the course, 42% found the program acceptable, 37% found it very acceptable and 21% found it extremely acceptable. Anxiety levels measured on the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV) were moderate to severe prior to engaging in the MBCT course. Large effect sizes were found for worry, stress, fear of relaxation and depression in the post and follow-up analysis. Anxiety as measured by the Depression, Anxiety and Stress Scale (DASS21) showed only a small effect size post treatment and follow-up, however anxiety levels measured by the Beck Anxiety Inventory (BAI) showed a medium effect size at post treatment and large effect size at the three month follow-up. The authors compared their results to previous Cognitive Behavioural Therapy studies for GAD and found that MBCT was somewhat less effective, particularly in reducing worry. They

concluded that MBCT may require treatment enhancement, such as applied relaxation and multi-component CBT for this notoriously chronic and difficult to treat group (Craigie et al, 2008).

Despite the lack of control group, small sample size and short follow-up period, this study suggests that for individuals with a diagnosis of GAD, many of whom also had experienced depression, MBCT was acceptable and reasonably effective in reducing symptoms of depression and anxiety.

Williams and colleagues investigated the effects of MBCT on between episode depression and anxiety symptoms in patients with bipolar disorder and suicide ideation (Williams, Alatiq, Crane, Barnhofer, Fennell, Duggan, Hepburn & Goodwin, 2008). Sixty-eight participants in remission with a history of unipolar or bipolar depression were randomly allocated to either MBCT or a wait list control TAU condition. The course followed Segal, Williams and Teasdale's MBCT protocol (2002) and additionally included a full day meditation session between weeks six and seven. This additional day long meditation is included in the Mindfulness-based Stress Reduction program (Kabat-Zinn, 2005<sub>a</sub>) and has recently been included in a number MBCT trials (e.g. Foley et al, 2010; Michalak, Heidenreich, Meibert & Schulte, 2008).

Following completion of the MBCT course, depression levels were reduced for participants with both unipolar and bipolar depression relative to the waitlist control group. Interestingly, anxiety levels were only significantly reduced for participants with bipolar depression and not for those with unipolar depression. This is inconsistent with other research reviewed in this section, which has indicated a decrease in anxiety scores in individuals with unipolar depression following completion of a MBCT course. The authors of the study do not provide an explanation for their findings and it may be an

artifact of the small number of individuals with clinically significant anxiety. It does, however, suggest the need for further research in the area.

Cebolla and Miró (2009) conducted a qualitative study of MBCT with a group of 32 depressed and/or anxious patients in a Mental Health Unit in Spain. They adapted the MBCT program for their symptomatic patients by focusing on common, rather than differential aspects of depression and anxiety (e.g. cognitive styles). They further adapted the program by including exercises based on Convivial Cognitive Therapy, training the participants to understand the difference between internal and external perspectives of one's self and others, which they hypothesised would extend the lessons of mindfulness from the intrapersonal to the interpersonal.

Although the study was a predominately qualitative one, the researchers reported that the quantitative data they did collect showed a decrease in anxious and depressive symptomatology, a reduction in maladaptive cognitions such as rumination and worry and an increase in metacognitive skills. The statistical results were not published in the 2009 paper, which was translated from Spanish to English by the journal *Psychology In Spain*, an annual publication by the Colegio Oficial de Psicólogos (COP - Spanish Psychological Association) which translates Spanish psychology published in COP journals. The authors made reference to a previous article (Cebolla & Miró, 2007), which presumably contains more details about their quantitative analysis, however as this was published in Spanish it is inaccessible to the present author.

Despite the lack of access to the details of the quantitative analysis, the qualitative details of Cebolla and Miró's (2009) study are interesting in regards to the acceptability and perceived changes of Mindfulness-based Cognitive Therapy for individuals with depression and anxiety. The authors asked the participants what they thought of the

training. Thirty-one of the 32 participants responded positively, predominately commenting on their personal experience (e.g. *'good, interesting, brilliant'*) and the course's utility (e.g. *'beneficial, useful, of great help,'* p.11). One responded *'just ok'* (p. 11). When asked about the difficulties that they encountered at the beginning of the treatment, one of the most common (37.5%) was anxiety related symptoms, such as feelings of panic, distress, loss of control and breathing problems. Another common reported difficulty was concentration (43.7%), specifically in regards to intrusive thoughts. Many participants reported that they perceived the presence of these thoughts as bad practice and were subsequently distressed by this, even though the facilitators informed the group that intrusive thoughts were normal and need not be controlled.

Cebolla and Miró (2009) asked the participants if they had noticed a change in their mood and ways of thinking after the completion of the course. The majority of participants reported noticing a change in both mood (87.5%) and cognitions (93.8%). The participants who reported elevated mood, described their mood state with words such as *'happier, more confident, more motivated'* (p. 12). Those who indicated a change in thoughts reported thinking more positively, feeling more patient, feeling calmer, giving things less importance and not letting things *'get on top of them'* as much (p.12). Three months after completing the course, 87.5% of the participants reported that their changes in thoughts and feelings had been maintained over time. Overall, while this study is limited by it's small sample size, lack of reported qualitative and clinical data, lack of control group and the difficulties associated with asking participants open questions, it does indicate that Mindfulness-based Cognitive Therapy may be acceptable and subjectively effective for individuals experiencing depression and anxiety.

Foley and colleagues examined the effects of MBCT in a randomised controlled trial with 115 cancer patients (Foley, Baillie, Huxter, Price & Sinclair, 2010). The treatment followed Segal, Williams and Teasdale's manualised program (2002), with a modification for cancer patients and an additional day long meditation session between weeks six and seven, involving five hours of guided silent meditation and concluded with a group discussion. The modification for cancer patients included information about common challenges associated with cancer, including anxiety, depression and pain, alternatives for the body scan, yoga postures and home practices for those who required them, and carers were invited to assist those who needed extra support.

Participants were randomly assigned to either the MBCT group or a waitlist TAU group. Prior to attending the MBCT course, average participant scores revealed moderate active depression and mild levels of anxiety. Following completion of the course, clinically significant change was reported for both depression and anxiety. The average improvement for depression was 9.76 points on the Hamilton Rating Scale for Depression (HAM-D), compared to 4.11 points for the waitlist group. The average improvement for anxiety was 10.0 points for the treatment group, and 5.7 points for the waitlist group on the Hamilton Rating Scale for Anxiety (HAM-A). Significant improvements were also found in the areas of mindfulness and distress and a trend towards quality of life, compared to the waitlist control group.

While Foley et al's (2010) study did not explicitly report on the incidence of co occurrence of depression and anxiety in the study population, it does indicate the acceptability of MBCT with currently depressed and anxious patients with cancer and the effectiveness of the program in reducing depressive and anxious symptomatology.



Table 3

*MBCT for anxiety and depression studies*

Study	n	Target population	Follow-up period	Changes to MBCT protocol?	Findings
Craigie et al (2008)	28	Current GAD. No current MD, substance abuse, psychosis, suicidal ideation or dissociative states.	None	Yes	Significant decreases in anxiety (BAI pre to post decrease of 10.91, $p < 0.01$ ), depression (BDI-II pre to post decrease of 4.98, $p < 0.05$ ), worry (PSWQ pre to post decrease of 12.00, $p < 0.01$ ) and tension (POMS tension-anxiety pre to post decrease of 7.2, $p < 0.05$ ) and a non-significant increase in mindfulness (MAAS pre to post increase of 0.52, $p > 0.05$ ).
Cebolla & Miró (2009)	32	Current depression and anxiety symptoms. Patient in a public mental health unit.	3 months	Yes	Decrease in anxiety, depression, rumination and worry and an increase in metacognitive skills MBCT considered acceptable and

Author (Year)	N	Inclusion Criteria	Duration	Intervention	Outcomes
Finucane & Mercer (2006)	13	History of recurrent DD, or depression and anxiety. Current BDI-II score >14 and depressive symptoms lasting >2 weeks. No OBD, current drug or alcohol abuse, history or psychosis or mania, suicidal ideation, score of >7 on BDI-II items for energy, concentration difficulty and tiredness.	3 months	Yes	Depression (BDI-II pre to FU decrease of 17.9) and anxiety symptoms (BAI pre to FU decrease of 11.45) were significantly reduced.
Foley et al (2010)	115	Cancer diagnosis.	3 months	Yes	Significant decreases in depression (ES = 0.83), anxiety (ES = 0.59) and distress (ES = 0.53), and significant improvement in mindfulness (ES = 0.55) for MBCT

Ree & Craigie (2007)	26	Symptoms of depression, anxiety or stress. No current psychosis, or suicidal ideation (without support).	3 months	Yes	participants, compared to the waitlist control group. Depression (BDI-II pre to FU decrease of 7.57, $p<0.01$ ), anxiety (DASS anxiety pre to FU of 5.48, $p<0.01$ ) and stress (DASS stress pre to FU decrease of 6.84, $p<0.01$ ) significantly decreased and mindfulness levels increased (MAAS pre to post increase of 5.43, $p<0.05$ ).
Williams et al (2008)	68	>1 previous episode of MD with serious suicidal ideation. No or minimal current depressive symptoms in past 8 weeks, no manic episodes in past 6 months.	No	Yes	Significant decreases in depression for individuals with unipolar (BDI-II pre to post decrease of 6) and bipolar depression (BDI-II pre to post decrease of 8.7) following the MBCT course. Post-MBCT depression levels were significantly less than the waitlist control group for both unipolar (BDI difference of

1.7,  $p < 0.05$ ) and bipolar depression (BDI difference of 8.2,  $p < 0.05$ ).

Significant increases in anxiety for bipolar waitlist control group (BAI pre to post increase of 9.2,  $p = 0.004$ ), no significant changes for bipolar MBCT group (BAI pre to post decrease of 5.9,  $p > 0.05$ ).

Bipolar MBCT group had significantly lower scores at post than the bipolar control group (BAI difference of 13.8,  $p = 0.014$ ).

For unipolar depression, there were no significant differences for pre and post anxiety scores for neither the MBCT (BAI pre to post change of 0.0) nor the control group (BAI pre to post decrease of 1.3,  $p > 0.05$ ).

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No significant difference between the unipolar MBCT group and the unipolar control group at post (BAI difference of -2.7,  $p>0.05$ ).

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BAI = Beck Anxiety Inventory; BDI-II = Beck Depression Inventory; DASS = Depression, Anxiety & Stress Scale; DD = Depressive Disorder; ES = effect size; GAD = Generalised Anxiety Disorder; MAAS = Mindful Attention Awareness Scale; MD = Major Depression; FU = follow-up; OBD = organic brain disease; POMS = Profile of Mood States; PSWQ = Penn State Worry Questionnaire

These studies (as outlined in table 3) have explored the acceptability and effectiveness of MBCT for depressed individuals with anxious symptomatology, co-morbid anxiety disorders and primary anxiety disorders. This has been important and informative given concerns about the feasibility and acceptability of a demanding meditation practice for anxious individuals, whose mental state is often characterised by an orientation away from present moment awareness (Evans et al, 2008; Krisanaprakornkit, Sriraj, Piyavhatkul & Laopaiboon, 2009). The results of the above studies however, indicate that Mindfulness-based Cognitive Therapy is indeed feasible and acceptable for depressed and anxious individuals, however, clearly further research is needed to confirm the effectiveness of MBCT for this population group.

### **The Current Study**

Many people with depression also experience symptoms of anxiety, both at a subsyndromal and diagnostic level (Australian Bureau of Statistics, 2007). Research estimates between 50% and 75% of depressed individuals experience anxious symptomatology (Clayton et al, 1991; Zimmerman et al, 2000), and higher levels of psychopathology, disability, impairment and chronicity result (Brown et al, 1996; Clayton et al, 1991; Merikangas et al, 2003; Teesson, 2009). Research into the clinical and treatment implications of depressive and co-morbid anxiety disorders is limited; however, this is important knowledge to have when selecting interventions with demonstrated efficacy (Brown et al, 1996; Kaufman & Charney, 2000; Ninan et al, 2002).

Mindfulness-based Cognitive Therapy is a class-based treatment program that has been found to reduce depression and relapse in patients with active and recovered depression (Eisendrath et al, 2008; Kenny & Williams, 2006; Ma & Teasdale, 2004; Mathew et al, 2010; Segal et al, 2002; Teasdale et al, 2000). As a large proportion of

individuals with depression also have anxiety, it is likely that a significant number of individuals who complete an MBCT course will be undertaking the course without their treatment providers having a clear understanding of the impact of their anxiety symptoms on the treatment effectiveness. While theoretically there is an argument for the effectiveness of MBCT for those with co-occurring anxiety (e.g. Orsillo et al, 2004; Ramel et al, 2004; Roemer et al, 2006; Sauer & Baer, 2010), research has yet to unequivocally confirm this hypothesis. In an *'era of increased accountability to demonstrate that our psychosocial interventions are indeed safe and effective'* (Bishop, 2002, p.76), it is especially important to support what we believe to be effective with empirical evidence.

While studies have begun to explore the acceptability, credibility and effectiveness of MBCT for individuals with a primary anxiety disorder diagnosis (e.g. Evans et al, 2008; Kim et al, 2009) and others have included individuals with both depression and anxiety in their population groups (e.g. Finucane & Mercer, 2006; Foley et al, 2010), as far as the present author is aware, there has not been any research to date that clearly assesses the effectiveness of Segal, Williams and Teasdale's MBCT protocol (2002) for individuals with recurrent depression and additional symptoms of anxiety. Specifically, there is a distinct lack of understanding about the impact that anxiety has on the effectiveness of MBCT in reducing depressive relapse and a noticeable lack of research that clearly looks at the effectiveness of Segal, Williams and Teasdale's MBCT protocol (2002) in reducing levels of anxiety in individuals with a history of multiple episodes of depression.

MBCT is a relatively new treatment and a growing area of study and as a result there are still gaps in the literature that need to be filled in order to gain a full

understanding of the treatment (Williams et al, 2008). The role of anxiety is clearly one of these gaps. The present study aims to provide an understanding of the role of anxiety for individuals who undertake an MBCT course to treat recurrent depression.

The current research is best described as an effectiveness study. Unlike efficacy studies, which involve randomised controlled trials, use selectively recruited patients and highly structured treatment manuals for a narrow problem focus, the current study examines the effect of treatment in a clinical setting, which increases the external validity and generalisation of results (Ree & Craigie, 2007).

The aim of the current research is to answer the following two questions:

1. Does MBCT reduce anxiety in individuals with recurrent depression?
2. Does the presence of baseline anxiety decrease the effectiveness of MBCT in reducing depression and preventing relapse?

Given the preliminary success in reducing anxiety symptoms in earlier MBCT studies (e.g. Cebolla & Miró, 2009; Craigie et al, 2008; Evans et al, 2008; Finucane and Mercer, 2006; Foley et al, 2010; Kim et al, 2009), and the goodness of fit between the conceptualisation of anxiety and mindfulness-based therapies (e.g. Hayes et al, 2004; Kingston et al, 2007; Orsillo et al, 2004; Ramel et al, 2004; Roemer et al, 2006; Sauer & Baer, 2010), it is hypothesised that anxiety scores will be significantly reduced following the completion of the MBCT course. In addition, given the likelihood of increased pathology (e.g. Teeson et al, 2009; Brown et al, 1996) and the history of poorer outcomes in treatment (e.g. Clayton et al, 1991; Merikangas et al 2003) in individuals with co-occurring depression and anxiety, it is hypothesised that MBCT will not be as effective in reducing depression and depressive relapse for those with significant symptoms of anxiety.



## Chapter 2: Methodology

### Participants

One hundred and thirty six participants with a history of depression completed a Mindfulness-based Cognitive Therapy course at the Centre for the Treatment of Anxiety and Depression (CTAD) in Adelaide, Australia, between October 2005 and April 2009. All were contacted by mail inviting them to participate in the current study and 68 (50.0%) returned the questionnaire.

### Procedure

Individuals were referred to the CTAD by their GP or psychiatrist for MBCT for depression. Eligibility for the course was assessed during a pre-course clinical interview by a psychiatrist. The inclusion criteria for entry into the course was:

- Participants had to meet DSM-IV criteria for Major Depressive Disorder, Bipolar Affective Disorder, Depressed phase or Dysthymia.
- Participants with MDD had to have either three or more previous episodes of depression or a chronic course for longer than 12 months that was related to a pattern of ruminative thought processes, as determined during a clinical interview.
- Participants had to be open to using meditation as a way to manage their condition (once the rationale was explained in the pre-course interview).
- Participants had to be prepared to attend all classes and be prepared to practice between classes.

The exclusion criteria were:

- Using substances in a way that would interfere with meditating in clear consciousness.

- Currently actively suicidal, unless they were being monitored by a therapist outside of the MBCT program.

The course followed the MBCT protocol as described by Segal, Williams and Teasdale (2002) and consisted of eight weekly two and a half hour sessions, led by trained and experienced MBCT teachers (a psychiatrist and a clinical psychologist). There were up to 14 participants in each course. At the end of the course, participants were also offered an individual session to discuss progress, plan ways to implement the relapse prevention plan and to continue to meditate if this was considered helpful. Ongoing follow-up was arranged as required.

Participants were given a battery of questionnaires at the pre-course interview to return at the first MBCT class and a battery of post-course questionnaires at the completion of the final MBCT class to return at the post-course interview.

The current study is a clinical audit of participants who attended the MBCT course between October 2005 and April 2009. Participants were contacted by post and asked if they would complete and return a short follow-up questionnaire (see Appendices A, B and C for participant letter, consent form and questionnaire). Questionnaires were returned by post in a pre-paid envelope to the CTAD and responses were added to the data from the previously collected pre and post questionnaires. Data collection and entry occurred on site at the CTAD to ensure confidentiality of participants.

### **Ethics**

The present study was approved by the Australian National University Human Research Ethics Committee on the 29<sup>th</sup> July 2009, and by the South Australia Health Ethics of Human Research Committee on the 30<sup>th</sup> July 2009.

After patients were referred and accepted onto the MBCT program at the CTAD, they were asked if they would like to participate in research, by allowing researchers to access their coded (identifying information such as names were removed) responses to pre- and post-course questionnaires. If the patient chose to participate in research, they completed a consent form.

The patients who nominated to be involved in research were later contacted via post and asked if they would be willing to complete a follow-up questionnaire (see appendix A for the letter accompanying the follow-up questionnaire). The mailing, collection and storage of the questionnaire was undertaken by the CTAD. The current researcher did not have access to any identifying information of the participants in order to ensure confidentiality.

Participants were given the number of the CTAD and asked to call if they were experiencing feelings of depression or distress when completing the questionnaire. The true purpose of the research was disclosed to the participants in the information statement, therefore no debriefing was required. Before completing the follow-up questionnaire, all participants gave informed written consent (see Appendix B for the statement of consent), indicating that they:

- Consented to taking part in the study
- Understood the objectives and procedures of the project
- Understood that their participation was completely voluntary
- Understood that the responses they provided would be given to the present researcher at the Australian National University, however no identifying information would be connected with their responses
- Allowed the present researcher access to their responses to the questionnaires they

completed during their MBCT course (without identifying information)

- Consented to results of the project being published (personal details remaining confidential)
- Voluntarily consented to participate and understood that they may withdraw from the study at any time

### **Treatment protocol**

The treatment followed the manualised Mindfulness-based Cognitive Therapy program developed by Segal, Williams and Teasdale, described in *Mindfulness-based Cognitive Therapy for Depression* (Segal et al, 2002). In each two-hour session, approximately one hour was spent in meditation practices. Class discussions were held during each session, however these were voluntary. Homework involved approximately one hour per day of formal mindfulness practice (meditation or yoga) and other formal and informal mindfulness practices throughout the duration of the 8-week course.

The theme of the first session was '*mindfulness starts when we recognize the tendency to be on automatic pilot and make a commitment to learning how best to step out of it to become aware of each moment. Practice in purposely moving attention around the body shows both how simple and difficult this can be*' (p. 100). The session included a) orientation, introduction and ground rules, b) raisin exercise and feedback/discussion, c) body scan and feedback/discussion, d) setting homework: body scan and mindfulness of a routine activity and e) short breath focus.

The theme of the second session was '*further focus on the body begins to show more clearly the chatter of the mind, and how it tends to control our reactions to everyday events*' (p.128). The agenda included a) body scan and review, b) homework review, c) thoughts and feelings exercise, d) pleasant events calendar, e) 10-15 minute sitting

meditation and f) setting homework: body scan, mindfulness of breath, pleasant events calendar and mindfulness of a routine activity.

The theme of session three was *'with a greater awareness of how the mind can often be busy and scattered, learning to take awareness intentionally to the breath offers the possibility of being more focused and gathered* (p.161). The agenda included a) 5 minute 'seeing' or 'hearing' exercise, b) 30-40 minute sitting meditation, including awareness of breath and body and what to do with intense physical sensations c) practice review d) homework review, e) 3 minute breathing space and review, f) mindful stretching and review, g) mindful walking and review, h) unpleasant events calendar, i) setting homework: sitting meditation with stretching, yoga, unpleasant events calendar and 3 minute breathing space.

The theme of session four was *'the mind is most scattered when it tries to cling to some things and avoid/escape others things. Mindfulness offers a way of staying present by giving another place from which to view things: to help take a wider perspective and relate differently to experience* (p. 192).' The agenda for this session included a) five minute 'seeing' or 'hearing' exercise, b) 40 minute sitting meditation, including awareness of breath, body, sounds and thoughts, c) practice review, d) homework review, e) defining depression, including Automatic Thoughts Questionnaire and Diagnostic Criteria for Depression, f) 3 minute breathing space and review, g) watching the first half of the 'Healing from Within' video and discussion, h) 3 minute breathing space and review, i) reading the 'Wild Geese' poem and j) setting homework: sitting meditation and 3 minute breathing space – regular and coping.

The theme of session five was *'relating differently involves bringing to experience a sense of "allowing" it to be, just as it is, without judging it or trying to make it different.*

*Such an attitude of acceptance is a major part of taking care of oneself and seeing more clearly what, if anything, needs to change (p. 220).*’ The session included a) 40 minute sitting meditation, including awareness of breath, body, sounds and thoughts, noting the way we relate to experiences and introducing a difficulty into the practice, b) practice review, c) homework review, d) breathing space and review, e) reading ‘The Guest House’ poem, f) watching the second half of the ‘Healing from Within’ video and discussion, g) 3 minute breathing space – coping and review, h) setting homework: sitting meditation and 3 minute breathing space – regular and coping.

The theme of session six was *‘negative moods, and the thoughts that accompany them, restrict our ability to relate differently to experience. It is liberating to realize that our thoughts are merely thoughts, even the ones that way they are not (p. 246).*’ The agenda for the session included a) 40 minute sitting meditation, including awareness of breath, body, sounds and thoughts and noting reactions to difficulties, b) practice review, c) homework review, d) discuss preparation for the course conclusion, e) moods, thoughts and alternative viewpoint exercise, f) breathing space and review and f) setting homework: various 40 minute daily practices and 3 minute breathing space – regular and coping.

The theme of session seven was *‘there are some specific things that can be done when depression threatens. Taking a breathing space will come first, and then deciding what action, if any, to take. Each person has his or her own unique warning signs of relapse, but participants can help each other in making plans for how best to respond to the signs (p. 272).*’ The agenda for session seven was a) 40 minute sitting meditation, including awareness of breath, body, sounds and thoughts and noting reactions to difficulties, b) practice review, c) homework review, d) exploring links between activity and mood exercise, e) generate and schedule pleasure and mastery activities and plan, f) 3

minute breathing space as the first step before mindful action and g) setting homework: daily formal practice, 3 minute breathing space – regular and coping, developing an early warning system for detecting relapses and developing an action plan to be used with lowered mood.

The theme of the final session was '*maintaining a balance in life is helped by regular mindfulness practice. Good intentions can be strengthened by linking such intentions to a positive reason for taking care of oneself* (p. 294).' The agenda for this session was a) body scan, b) practice review, c) homework review, d) review of the whole course, e) questionnaire about personal reflections on the course, f) discussing how best to continue mindfulness practices, developing a plan, linking this to positive reasons for maintaining the practice and g) conclude the class with a meditation.

### **Instructors**

The MBCT courses were led by an experienced psychiatrist and clinical psychologist /cognitive therapist. Both had extensive training, supervision and experience in facilitating MBCT courses.

### **Measures**

The following measures were used in the pre, post and follow-up questionnaires (with the exception of the final question, which was only used in the follow-up questionnaire package; see appendix C for details):

#### **Beck Depression Inventory.**

The Beck Depression Inventory-II (BDI-II; Beck, Steer & Brown, 1996) is a 21 item self-report questionnaire used to measure the severity of depressive symptoms. The BDI-II and its predecessors have been widely used to assess depression in psychiatric and non-psychiatric populations in well over 1,000 research studies and have been found to

detect depression as effectively as longer and more costly structured interviews (Groth-Marnet, 2009).

The BDI-II asks respondents to indicate on a Likert rating scale, ranging from 0 to 3, their response to statements relating to emotional, biological and cognitive symptoms such as sadness, fatigue and suicidal thoughts. The inventory takes around five to ten minutes to complete. To calculate the score, responses are summed. Higher scores on the BDI-II are indicative of a greater severity of depression, and the scores are interpreted as

such:

0 – 13	No or minimal depression
14 – 19	Mild depression
20 – 28	Moderate depression
29 – 63	Severe depression

The BDI-II has been reported to have high test-retest reliability over a one-week interval (.93) and high internal consistency (.91; Beck et al, 1996; Dozois, Dobson, & Ahnberg, 1998). As the content of the BDI items were developed by a panel of clinicians taking into consideration the DSM-IV categories for a diagnosis depression, the content validity is considered to be favourable (Groth-Marnet, 2009). Concurrent validity has also been found to be favourable, with high to moderate correlations with clinical ratings for psychiatric populations and moderate correlations with comparable scales that assess depression, such as the Hamilton Psychiatric Rating Scale for Depression (.71), the Beck Hopelessness Scale (.68) and the Depression Anxiety Stress Scale (.88; Beck et al, 1996; Groth-Marnet, 2009; Osman, Downs, Barrios, Kopper, Gutierrez & Chiros, 1997).

The BDI-II has been shown to discriminate between psychiatric and non-psychiatric populations, and in psychiatric populations was able to discriminate the level of adjustment, indicating construct validity (Beck, 1996; Groth-Marnet, 2009). The BDI-



II scores were more highly correlated with the Hamilton Psychiatric Scale for Depression (.71) than the Hamilton Rating Scale for Anxiety (.47), and more highly correlated with the SCL-90-R Depression dimension (.89) than the SCL-90-R Anxiety dimension (.71), indicating that the BDI-II is capable of discriminating between depression as a primary disorder as opposed to anxiety as a primary disorder (Groth-Marnet, 2009; Steer, Rissmiller & Beck, 2000). Factor analysis has found that the BDI-II is composed of cognitive-affective (e.g. self-dislike, suicidal thoughts, thoughts of worthlessness) and non-cognitive factors (e.g. loss of energy, changes in sleep patterns, crying), which are consistent across various populations (Beck, 1996; Groth-Marnet, 2009).

### **Sheehan Disability Scale.**

The Sheehan Disability Scale (SDS; Sheehan, 1983) asks respondents to rate their work, social and family functioning on a Likert scale from 0 (not at all impaired) to 10 (very severely impaired). A score is computed by summing across all three items and higher scores are indicative of higher levels of impairment. The scores are interpreted as

such:	0	not at all impaired
	1 – 3	mildly impaired
	4 – 6	moderately impaired
	7 – 9	markedly impaired
	10	severely impaired

The SDS is one of the earliest and most frequently used measure of disability and has demonstrated sensitivity to impairment and changes in treatment across a wide variety of disorders, including depression and anxiety (Hambrick, Turk, Heimberg, Schneier & Liebowitz, 2004; Olfson et al, 1997).

In a study of 1,001 primary care patients, the inter-item correlations of the three items on the SDS were found to be fairly high (0.70 for work and family impairment, 0.72 for work and social impairment and 0.79 for family and social impairment), as was the internal consistency (0.89; Leon, Olfson, Portera, Farber, and Sheehan, 1997; Rush, First & Blacker, 2000).

Construct validity was suggested in the above study as above, where 80% of patients with a diagnosis of a mental disorder showed elevated scores on the SDS and almost 50% of those with an elevated score were diagnosed with a minimum of one disorder. In addition, patients diagnosed with a mental disorder (alcohol dependence, drug dependence, Generalised Anxiety Disorder, Major Depressive Disorder, Obsessive-Compulsive Disorder and/or Panic Disorder) had significantly higher SDS scores than those who did not (Leon et al, 1997).

Using the aforementioned mental disorders as the standard, the sensitivity (0.83), specificity (0.69), positive predictive value (0.47) and negative predictive value (0.92) were respectable in helping to identify patients with mental health problems (Rush et al, 2000). The SDS has also been found to reflect change following effective treatment and has been shown to discriminate between active drug and placebo treatments, and between two active treatments (Rush et al, 2000).

### **State-Trait Anxiety Inventory.**

The State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg & Jacobs, 1983) is a 40-item self-report questionnaire used to measure and differentiate between state and trait anxiety levels in adults. Trait anxiety refers to the frequency and intensity of the more general, stable and long-standing quality of anxiety, and includes feelings of apprehension, tension and increased activity of autonomic system (Spielberger,

1972). In contrast, state anxiety is a more temporary, fluctuating condition, which increases with stressors perceived by the individual to be threatening (Spielberger, 1972).

The STAI is the most frequently used measure of anxiety, with over 8,000 studies in the literature (Groth-Marnet, 2009). Research has evaluated its use in treating phobias, test anxiety, panic, generalised anxiety, as well as the impact of various treatments including cognitive behavioural therapy, systematic desensitisation, relaxation and rational emotive therapy (Groth-Marnet, 2009; Spielberger, Sydeman, Owen & Marsh, 1999).

The STAI consists of two forms with 20 items on each, with a Likert rating scale ranging from 1 (not at all) to 4 (very much so). The STAI State scale (Form Y-1) asks respondents how they feel at the time they are completing the form and are asked to respond to statements such as '*I feel calm*' and '*I feel tense*.' On the STAI Trait scale (Y-2) respondents are asked to consider how they generally feel, and respond to statements such as '*I feel pleasant*' and '*I feel nervous and restless*.' The two-part inventory takes about 10 minutes to complete. To calculate the scores, the responses are summed, taking the reverse scoring into consideration for the necessary items.

Cutoff scores for clinical significant anxiety were not published by the authors, and adequate cutoff scores for identifying the presence of anxiety disorders have not been found (Groth-Marnat, 2009; Kabacoff, Segal, Hersen & Van Hasselt, 1997). Various scores have been used in the literature (Fisher & Durham, 1999), however a score of 45 and above is widely used to indicate moderate to severe anxiety (e.g. Austin, Tully & Parker, 2007; Roomruangwong, Tangwongchai, Pittman & Epperson, 2009).

The test-retest reliability of the STAI has reasonably good coefficients ranging from .73 to .86 for trait anxiety, and relatively lower test-retest coefficients for state anxiety, ranging from .36 for females to .51 for males (Spielberger et al., 1983). The

lower range of state anxiety is to be expected, given the fluctuating nature of the construct, and therefore measures of internal consistency are considered to be more relevant (Groth-Marnet, 2009). These have been found to be high in both state and trait anxiety, with median coefficients ranging between .88 and .93 for state anxiety and .92 and .94 for trait anxiety (Kabacoff, Segal, Hersen & Van Hasselt, 1997; Spielberger et al., 1983).

The STAI measures five out of the eight domains for a DSM-IV diagnosis of Generalised Anxiety Disorder, supporting its content validity and applicability for current research (Okun, Stein, Bauman & Silver, 1996). The STAI shows high concurrent validity, supported by the finding that correlations with the Manifest Anxiety Scale and the Anxiety Scale Questionnaire range between .73 and .75 (Spielberger et al, 1999), which indicate that it can be considered an alternative measure of trait anxiety, with the added advantage of being shorter and less contaminated by measures of depression (Groth-Marnet, 2009).

Spielberger and colleagues (1983) reported that psychiatric patients scored higher on the trait anxiety scale than non-patients and that students undertaking a stressful military training procedure had higher scores on the state anxiety scale while sitting an exam than scores taken after a relaxation session or with age-matched controls. These results suggest appropriate construct validity for both the state and trait measures. Factor analysis on the STAI has been varied and research has shown that while Spielberger and colleagues' (1983) attempt to make Form Y (the second version of the scale) more of a pure measure of anxiety than Form X (the initial version), it was only partially successful and is somewhat contaminated by measures of negative affect and depression, a common occurrence in measures of this nature (Groth-Marnet, 2009).

A high score on the STAI trait scale indicates that the respondent is likely to perceive many situations as threatening or dangerous and is likely to be concerned with being evaluated by others. A high score on the state anxiety scale indicates feelings of apprehension, worry, nervousness, perceived feelings of tension and is likely to report subsequent activation of the autonomic nervous system (Groth-Marnet, 2009).

### **Mindful Attention Awareness Scale.**

The Mindful Attention Awareness Scale (MAAS: Brown & Ryan, 2003) is a 15-item self-report scale designed to measure the tendency to be aware of the present moment experience in day-to-day life. Participants are asked to consider their everyday experiences and indicate on a Likert Scale from 1 (almost always) to 6 (almost never) how frequently they experience each item. Items include cognitive, emotional, interpersonal, physical and general domains, and ask about mindfulness indirectly (i.e. statements reflect mindlessness, rather than mindfulness). Items include *'I could be experiencing some emotion and not be conscious of it until some time later'* and *'I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.'* The MAAS is the most frequently cited mindfulness scale in the literature (Cordon & Finney, 2008). The MAAS takes less than 10 minutes to complete. To calculate scores, responses are summed and a mean is computed. Higher scores reflect higher levels of dispositional mindfulness.

The MAAS has been found to have good test-retest reliability (.81; Brown & Ryan, 2003). It has also been reported to have good internal consistency in student and adult samples, ranging between .82 and .89 (Baer, Smith, Hopkins, Krietemeyer & Toney, 2006; Brown & Ryan, 2003; MacKillop & Anderson, 2007) and temporal stability over a 4-week period (.81; Brown & Ryan, 2003).

The MAAS demonstrated good concurrent validity, supported by the finding that it was significantly positively correlated with the Freiburg Mindfulness Inventory (.31), the Kentucky Inventory of Mindfulness Skills (.51), the Cognitive Affective Mindfulness Scale (.51) and the Mindfulness Questionnaire (.38; Baer, Smith, Hopkins, Krietemeyer & Toney, 2006).

The authors of the MAAS found moderate positive correlations between their scale and theoretically related constructs such as emotional intelligence, openness to experience, mindful engagement, and to a lesser extent novelty seeking and producing, suggesting convergent validity for the scale scores (Brown & Ryan, 2003). They also found no correlation with the MAAS and theoretically unrelated constructs, such as private self-consciousness and reflection, which suggests discriminant validity (Brown & Ryan, 2003). In addition, the MAAS was shown to discriminate between groups that were expected to differ in degrees of mindfulness (Brown & Ryan, 2003)

#### **Frequency of practice at follow-up.**

In order to ascertain how frequently the participants practiced the exercises they learnt in the MBCT course at the time of follow-up, participants were asked to respond to the following question: "Over the past week, how many minutes have you spent practicing the meditation and/or yoga you learnt during the Mindfulness-based Cognitive Therapy course?"

### Chapter 3: Results

#### Response Rate

One hundred and thirty six participants enrolled in a Mindfulness-based Cognitive Therapy course at the Centre for the Treatment of Anxiety and Depression in Adelaide, Australia, between October 2005 and April 2009. All 136 participants were contacted by mail inviting them to participate in the current study and 68 (50.0%) returned the questionnaire between November 2009 and January 2010. This response rate is comparable to that of other postal questionnaires in the literature (e.g. Harrison & Cock, 2004; Harrison, Holt & Elton, 2002). The flow of participants in the study is outlined in figure two.

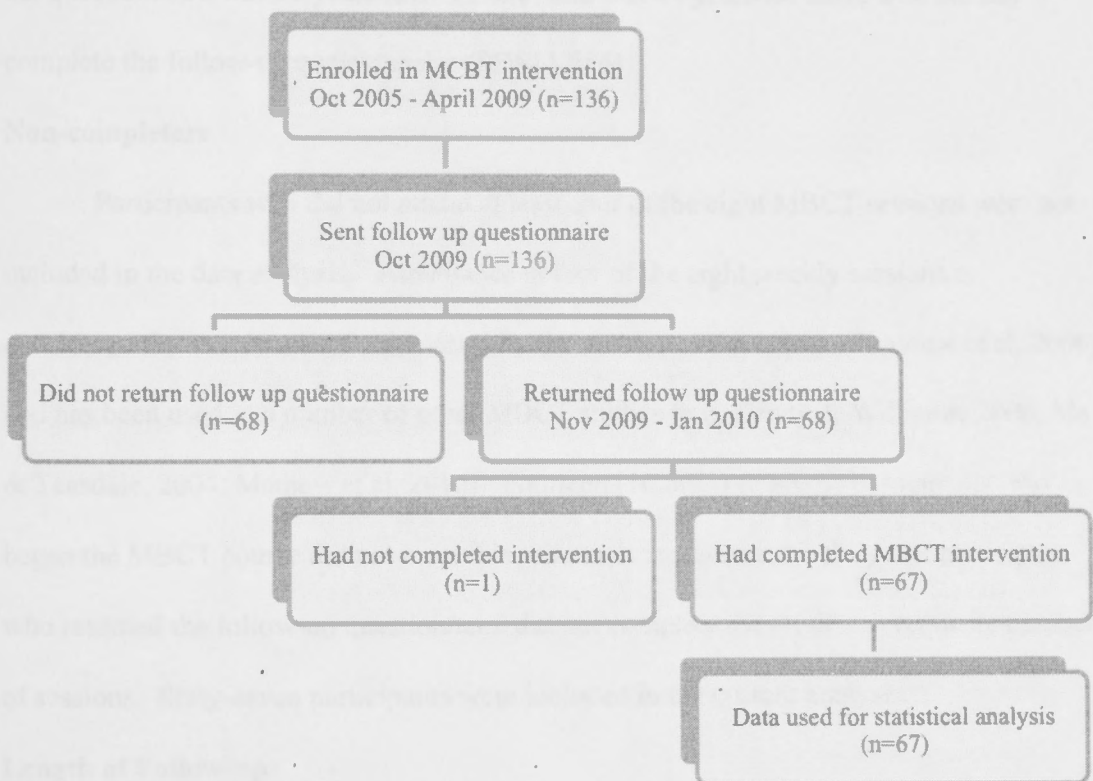


Figure 2. Flow of participants through the study

### **Data Screening**

The data was screened to ensure that statistical assumptions were not violated. There were no significant differences between those who returned the follow-up questionnaire and those who did not, on measures of depression ( $p=.306$ ), state anxiety ( $p=.709$ ), trait anxiety ( $p=.367$ ), mindfulness ( $p=.278$ ), disability ( $p=.061$ ), previous meditation experience ( $p=.739$ ), the date of course completion ( $p=.568$ ), gender ( $p=.589$ ), country of birth (Australia or overseas,  $p=.551$ ) or employment (employed or unemployed,  $p=.397$ ).

There was a significant difference in the age of those who completed the follow-up questionnaire and those who did not ( $p=.002$ ). The mean age of participants who returned the questionnaire was 50 years ( $SD=11.656$ ) and was 44 years for those who did not complete the follow-up questionnaire ( $SD=11.656$ ).

### **Non-completers**

Participants who did not attend at least four of the eight MBCT sessions were not included in the data analysis. Attendance at four of the eight weekly sessions is considered the '*minimum effective dose*' by the authors of the course (Teasdale et al, 2000) and has been used in a number of other MBCT studies (e.g. Kenny & Williams, 2006; Ma & Teasdale, 2004; Mathew et al, 2010). Fourteen (10.60%) of all the participants who began the MBCT course did not meet this minimum requirement. Only one participant who returned the follow-up questionnaire did not complete the minimum requisite number of sessions. Sixty-seven participants were included in the current analysis.

### **Length of Follow-up**

The length of follow-up ranged from seven to 49 months. Seven (10.4%) participants had a follow-up period of 12 months or less. Eighteen (26.9%) participants



had a period of 13 – 24 months, 20 (29.9%) had a period of 25 – 36 months and 22 (32.8%) participants had a period of 37 – 49 months. This grouping is based on follow-up periods frequently reported in literature (Mathew et al, 2010).

### **Missing Data**

In the Beck Depression Inventory, 9.45% of the responses to individual items on the questionnaire were missing (across baseline, post and follow up). In the state section of the State-Trait Anxiety Inventory, 8.18% of the responses to individual items on questionnaire were missing (across baseline, post and follow up) and in the trait section, 7.64% were missing. In the Mindfulness Awareness Attention Scale, 12.4% of the responses to individual items on the questionnaire were missing (across baseline, post and follow up). In the Sheehan Disability Scale 10.95% of the responses to individual items on the questionnaire were missing (across baseline, post and follow up).

In order to account for a lack of response to individual items within a questionnaire, questionnaire measure scores were adjusted by taking the average for all answered questions, then multiplying it by the total number of questions, so that individuals' scores could be compared against published cutoff scores.

### **Demographics**

The mean age of participants in the study was 49.78 years (SD=11.22), ranging between 22 and 72 years of age. Forty-four of the 66 participants were female (67%).

Thirty-six of the participants reported that they were born in Australia (70.6%). Seven (13.7%) reported that they were born in the United Kingdom and eight (15.7%) indicated that they were born in other countries (including one participant each from the USA, Europe, Canada, Vietnam, Hong Kong, New Zealand, El Salvador and Germany).

Twenty-two participants reported that they were employed (43.1 %). Six (11.8%) described their employment status as unemployed, six (11.8%) as a pensioner, six (11.8%) as home duties, four (7.8%) as retired, four (7.8%) as casual and three (5.9%) as disability pensioners.

### **Previous Meditation Experience**

When asked if they had previous meditation experience, 31 (62.0%) participants responded yes and 19 (38.0%) responded no. Ten (14.9%) participants reported previous experience with yoga, 10 (14.9%) with relaxation practices, 7 (10.4%) with guided meditations, 7 (10.4%) with breath exercises, 5 (7.5%) with mindfulness meditations, 4 (6.0%) with Buddhist meditation, 2 (3.0%) with spiritual meditation, 1 (1.5%) with the body scan, 1 (1.5%) with MBCT and 18 (26.9%) with a variety of other meditation techniques.

### **Mental Health Prior to the MBCT Course**

At baseline, 20 (31.3%) participants were not actively depressed, as measured by the Beck Depression Inventory (BDI-II). Thirteen (20.3%) reported mild depression, another 13 (20.3%) reported moderate depression and 18 (28.1%) reported severe depression. The average pre-MBCT score was 20.57 (moderate depression; SD=11.97) on a scale from 0 to 63, where higher scores reflect higher levels of depression.

Forty (60.6%) participants reported clinically significant state anxiety and 50 (75.8%) reported clinically significant trait anxiety, as measured by the State-Trait Anxiety Inventory (STAI). The correlation between state and trait anxiety was 0.84. The average pre-MBCT state anxiety score was 49.78 (SD=13.78) and the average trait anxiety score was 52.28 (SD=10.08) on a scale from 20 to 80, where higher scores reflect higher levels of anxiety.

Twenty-eight (43.75%) participants reported both moderate to severe depression and moderate to severe state anxiety. The correlation between depression and state anxiety was 0.745.

Three (4.7%) participants reported no disability impairment on the Sheehan Disability Scale (SDS), 19 (29.7%) reported mild impairment, 21 (32.8%) reported moderate impairment, 19 (29.7%) reported marked impairment, and two (3.1%) reported severe impairment. The average pre-MBCT disability score was 14.84 (SD=7.89) on a scale from 0 to 30, where higher scores reflect higher levels of impairment.

The average baseline Mindful Attention Awareness Scale (MAAS) score was 3.36 (SD=0.81) on a scale from 1 to 6, where higher scores reflect higher levels of dispositional mindfulness.

### **MBCT and Depression**

To explore the effects of MBCT on depression and depressive relapse, t-tests and mean calculations were conducted in three separate statistical analyses. As shown in tables four and five, one analysis included the entire sample, another included only those with active baseline depression (a BDI-II score of 14 or over), and the final analysis included only those without active baseline depression (a BDI-II score of 13 or less). The differences in BDI-II depression scores from pre to post, post to follow-up and pre to follow-up were used in the analysis to compare the change over time.

Overall, the results showed a significant average decrease in depression scores from baseline to post-MBCT ( $p<.001$ ) and from baseline to follow-up ( $p=.008$ ). Depression decreased from a 'moderate' level to 'no or minimal depression' at post-MBCT. There was a slight but significant increase in average depression scores during the period following completion of the MBCT course ( $p=.037$ ), however, they did not

return to baseline levels and remained within the 'mild' range at follow-up. At baseline, 31.3% (n=20) of the participants were in remission ('no or minimal depression'). At post-MBCT, of those who completed the post BDI-II questionnaire, 58.82% (n=30) were in remission. At follow-up, 53.03% (n=35) were in remission.

There were 20 individuals (30.3%) who were in remission at baseline. For these individuals, levels of depression remained on average within the 'no or minimal depression' range at post and follow-up. There was a statistically significant decrease in depression immediately following completion of the MBCT course ( $p=.013$ ) and these gains were maintained at follow-up ( $p=.086$ ). One hundred percent (n=14) of the individuals who were depressed at baseline and completed the post BDI-II questionnaire remained in remission ('no or minimal depression') immediately following completion of the course. Thirty percent (n=6) of the individuals who were not depressed at baseline indicated signs of relapse at follow-up, four reporting 'mild depression' and two reporting 'severe depression' as measured by the BDI-II.

There were 46 individuals (69.7%) who were depressed at baseline (score of 14 or above on the BDI-II). Depression scores were significantly reduced on average from moderate to mild levels of depression immediately following completion of the course ( $p<.001$ ); and these gains were maintained at follow-up ( $p=.157$ ). Forty one percent (n=15) of the individuals who were depressed at baseline and completed the post-BDI-II questionnaire achieved remission ('no or minimal depression') immediately following completion of the course. Forty five percent (n=20) achieved remission at follow-up. For those who did not, 20.8% (n=5) reported 'mild depression,' 25.0% (n=6) reported 'moderate depression' and 54.2% (n=13) reported 'severe depression' as measured by the BDI-II at follow-up.

Table 4

*T Tests Comparing BDI-II Scores Over Time*

Group/sample	Mean difference	SD	SE Mean	t	df	p
<u>Entire sample</u>						
pre - post	7.91	7.50	1.06	7.46	49	<.001
post - follow-up	-2.52	8.39	1.17	-2.15	50	.037
pre - follow-up	4.15	12.14	1.52	2.74	63	.008
<u>Without Baseline Depression</u>						
pre - post	2.64	3.45	.92	2.87	13	.013
post - follow-up	-3.68	7.40	1.98	-1.86	13	.086
pre - follow-up	-3.15	11.75	2.63	-1.20	19	.245
<u>With Baseline Depression</u>						
pre - post	9.64	7.54	1.28	7.56	34	<.001
post - follow-up	-2.08	8.78	1.44	-1.44	36	.157
pre - follow-up	7.48	10.89	1.64	4.55	43	<.001

BDI-II = Beck Depression Inventory

Table 5

*Pre, Post and Follow-up Mean BDI-II Scores*

	Mean	SD	Skewness	SE	Interpretation of mean value
<u>Entire sample</u>					
pre	20.57	11.96	.32	.30	Moderate depression
post	13.14	10.61	.93	.33	No or minimal depression
follow-up	16.52	13.42	.74	.30	Mild depression
<u>Without Baseline Depression</u>					
pre	7.40	3.88	-.44	.51	No or minimal depression
post	4.21	3.97	1.35	.60	No or minimal depression
follow-up	10.55	10.43	1.41	.51	No or minimal depression
<u>With Baseline Depression</u>					
pre	26.55	9.27	.47	.36	Moderate depression
post	16.52	10.39	.71	.39	Mild depression
follow-up	19.11	13.84	.51	.35	Mild depression

BDI-II = Beck Depression Inventory

On average, individuals who were in remission at baseline had significantly lower depression scores immediately following completion of the course ( $p < .001$ ) and at follow-up ( $p = .018$ ) than those who reported active baseline depression (see tables six and seven for details). And while individuals in remission at baseline were more likely to be in remission post treatment and at follow-up than those with active baseline depression, the

difference was only statistically significant at post-MBCT ( $p < .001$ ) and not at follow-up ( $p = .068$ ; see table eight for details).

Table 6

*Group Statistics Analysing the Relationship Between the Presence of Baseline Depression and BDI-II Scores at Post and Follow-up*

	N	Mean	SD	SE
<u>BDI-II Post-MBCT Score</u>				
without baseline depression	14	4.21	3.97	1.06
with baseline depression	35	16.46	10.66	1.80
<u>BDI-II Follow-up Scores</u>				
without baseline depression	20	10.55	10.43	2.33
with baseline depression	44	19.07	14.02	2.11

BDI-II = Beck Depression Inventory

Table 7

*T Test for Comparing the Presence of Baseline Depression with BDI-II Scores at Post and Follow-up*

	t-test for Equality of Means					
	t	df	sig.*	mean diff.	SE diff.	95% CI of diff.
Post-MBCT BDI-II Score	-4.16	47	<.001	-12.25	2.94	[-18.16, -6.33]
Follow-up BDI-II Score	-2.43	62	.018	-8.52	3.51	[-15.55, -1.50]

BDI-II = Beck Depression Inventory

\*2 tailed

Table 8

*Crosstabulation Exploring the Effect of Baseline Depression on Post and Follow-up Depression*

	Baseline			Pearson Chi Square		
	not depressed	depressed	total	value	df	sig.*
<u>Post</u>						
not depressed	14	15	29			
depressed	0	20	20	13.52	1	<.001*
total	14	35	49			
<u>Follow-up</u>						
not depressed	14	20	34			
depressed	6	24	30	3.33	1	.068
total	20	44	64			

\*Asymp. Sig. (2-sided)

The effect of the length of the follow-up period on follow-up depression scores was examined, and while levels of depression increased over time following completion of the MBCT course, the overall effect of time on the BDI-II scores was not statistically significant ( $p=0.940$ , see tables nine and ten).

Table 9

*Univariate ANOVA for Effect of the Length of the Follow-up Period on BDI-II Scores*

	Type III Sum of Squares	df	Mean Square	F	Sig.
Time	29.43	3	9.81	0.13	.940

BDI-II = Beck Depression Inventory



TABLE 11

Table 10

*Estimated Means for the Effect of the Length of the Follow-up Period on BDI-II Scores*

Time	Mean	SE	95% CI
1-12m	-1.33	3.52	[-8.41, 5.75]
13-24m	-1.55	2.72	[-7.03, 3.93]
25-36m	-2.70	2.03	[-6.79, 1.38]
37m+	-3.32	2.09	[-7.53, 0.88]

BDI-II = Beck Depression Inventory; CI = confidence interval

**MBCT and Mindfulness**

There was a significant average pre to post increase in mindfulness MAAS scores of 0.48 ( $p < .001$ ) and a further non-significant average post to follow-up increase in mindfulness scores of 0.12 ( $p = .259$ ; see table 11). The results showed that levels of dispositional mindfulness increased significantly following completion of the MBCT course and these gains were maintained over time (see table 12 for mean MAAS scores at pre, post and follow-up).

Table 11

*T Tests Comparing MAAS Scores Over Time*

	Mean difference	SD	SE Mean	t	df	p
Pre - post	0.48	0.86	0.12	3.91	48	<.001
Post - follow-up	0.12	0.72	0.10	1.14	49	.259
Pre - follow-up	-0.54	0.81	0.11	-5.11	59	<.001

MAAS = Mindfulness Attention Awareness Scale

Table 12

*Pre, Post and Follow-up Mean MAAS Scores*

	Mean	SD	Skewness	SE
Pre	3.36	0.81	.45	.31
Post	3.90	0.92	.22	.34
Follow-up	3.87	0.96	.22	.30

MAAS = Mindfulness Attention Awareness Scale

**MBCT and Disability**

There was a significant average pre to post decrease in SDS disability scores of 3.13 ( $p < .001$ ) and a further non-significant average post to follow-up decrease in disability scores of 0.09 ( $p = .922$ ). The results in tables 13 and 14 show that levels of disability decreased following completion of the MBCT course and that these gains were maintained over time, however remained in the moderate range at baseline, post and at follow-up.

Table 13

*T-tests Comparing SDS Scores Over Time*

	Mean difference	SD	SE Mean	t	df	p
Pre – post	3.14	5.17	0.72	4.39	51	<.001
Post – follow-up	0.09	6.31	0.88	0.10	51	.922
Pre – follow-up	2.02	6.93	0.87	2.32	62	.024

SDS = Sheehan Disability Scale

Table 14

*Pre, Post and Follow-up Mean SDS Scores*

	Mean	SD	Skewness	SE	Interpretation of mean value
Pre	4.95	2.63	.02	.30	Moderately impaired
Post	3.88	2.62	.28	.33	Moderately impaired
Follow-up	4.33	3.06	.06	.30	Moderately impaired

SDS = Sheehan Disability Scale

As can be seen in table 15, levels of anxiety at baseline were positively associated with levels of disability at baseline. This was true for both state ( $p < .001$ ) and trait ( $p < .001$ ) anxiety. Individuals with higher levels of anxiety reported higher levels of impairment.

Table 15

*Linear Regression Analysing the Relationship Between Baseline STAI (State and Trait) Scores and Baseline SDS Scores*

	Sum of Squares	df	Mean Square	F	Sig.
Baseline STAI State	1750.26	1	1750.26	49.13	<.001
Baseline STAI Trait	1738.37	1	1738.37	48.23	<.001

STAI = State-Trait Anxiety Inventory; SDS = Sheehan Disability Index

### **Does MBCT Reduce Anxiety in Individuals with Recurrent Depression (Question One)?**

To explore the effects of MBCT on state and trait anxiety, t-tests and mean calculations were conducted in three separate statistical analyses. As shown in tables 16 and 17, one analysis included the entire sample, another included only those with active baseline depression, and the final analysis included only those without active baseline depression. The differences in state and trait STAI scores from pre to post, post to follow-up and pre to follow-up were used in the analysis to compare the change over time.

Overall, there was a significant average pre to post decrease in STAI state anxiety scores ( $p < .001$ ) and a significant average pre to follow-up decrease in STAI state anxiety scores ( $p = .004$ ). There was, however, a significant average post to follow-up increase ( $p = .018$ ). On average, state anxiety levels were clinically significant prior to the MBCT course and were within the normal range immediately after and at follow-up. A cutoff score of 45 was used to identify the presence of clinical significant anxiety, as suggested by the literature (e.g. Austin et al, 2007; Roomruangwong et al, 2009). At baseline, 39.4% ( $n = 26$ ) of participants reported normal levels of state anxiety. Immediately following

treatment 65.5% (n=36) of those who completed the post-MBCT questions reported normal levels, and 54.5% (n=36) reported normal levels at follow-up.

There were 23 individuals (34.3%) who indicated normal levels of state anxiety at baseline. For this group, average state anxiety levels remained within the normal range at post and follow-up. Ninety five percent (n=18) of the individuals with normal levels of state anxiety at baseline also had normal state anxiety levels immediately following treatment, and 82.6% (n=19) reported normal levels at follow-up.

There were 44 individuals (65.7%) with clinically significant state anxiety at baseline. For this group, average state anxiety levels were significantly reduced ( $p < .001$ ) to a normal level immediately following treatment and at follow-up. There were also significant reductions in anxiety from baseline to follow-up, however, the gains made during the MBCT course were not wholly maintained between post-treatment and follow-up, as average state anxiety scores increased to above the cutoff for clinically significant anxiety at follow-up. Fifty percent (n=16) of the individuals with clinical levels of state anxiety at baseline achieved normal levels of state anxiety immediately following treatment, and 37.5% (n=15) achieved normal levels at follow-up.

Looking at overall trait anxiety, there was a significant average pre to post decrease in trait anxiety scores ( $p < .001$ ) and a significant average pre to follow-up decrease ( $p = .012$ ) of trait anxiety scores. The slight increase in scores from post to follow-up was not significant ( $p = .412$ ). Despite the reduction in anxiety scores, average trait anxiety levels remained within the clinically significant range at pre, post and follow-up, however at post-MBCT, they were only one point above the cutoff. At baseline, 24.2% (n=16) of participants reported normal levels of trait anxiety. Immediately

following treatment, 51.9% (n=28) of those who completed the post-MBCT questions reported normal levels, and 39.4% (n=26) reported normal levels at follow-up.

There were 14 individuals (21.2%) who indicated normal levels of trait anxiety at baseline. For this group, levels of trait anxiety remained within the normal range at post and follow-up. Ninety-two percent (n=11) of the individuals with normal levels of trait anxiety at baseline also had normal trait anxiety levels immediately following treatment and 71.4% (n=10) reported normal levels at follow-up.

There were 52 individuals (78.8%) who indicated clinically significant trait anxiety at baseline. For this group, levels of trait anxiety were significantly reduced at post ( $p<.001$ ) and follow-up ( $p=.002$ ). However, trait anxiety remained above the cutoff for clinically significant anxiety at pre, post and follow-up. Forty-three percent (n=17) of the individuals with clinical levels of trait anxiety at baseline achieved normal levels of state anxiety immediately following treatment and 32.0% (n=16) achieved normal levels at follow-up.

Table 16

*T Tests Comparing STAI Scores Over Time*

		Mean difference	SD	SE Mean	t	df	p
<u>Entire sample</u>							
STAI STATE SCORES	pre - post	10.40	11.27	1.56	6.65	51	<.001
	post - follow-up	-3.76	11.33	1.54	-2.44	53	.018
	pre - follow-up	4.94	13.16	1.66	2.98	62	.004
<u>Without Baseline State Anxiety</u>							
	pre - post	2.47	7.51	1.72	1.44	18	.169

Table 17	post – follow-up	-0.81	11.06	2.54	-0.32	18	.752
Pre Post	pre – follow-up	-1.11	12.58	2.62	-0.42	22	.677
<u>With Baseline State Anxiety</u>							
	pre - post	14.52	10.45	1.85	7.87	31	<.001
	post – follow-up	-5.37	11.31	1.91	-2.81	34	.008
	pre – follow-up	8.42	12.34	1.95	4.31	39	<.001
<hr/>							
<u>Entire sample</u>							
	pre - post	6.40	8.76	1.20	5.32	52	<.001
	post – follow-up	-1.28	11.41	1.55	-0.83	53	.412
	pre – follow-up	3.92	12.13	1.52	2.59	63	.012
<u>Without Baseline Trait Anxiety</u>							
	pre - post	1.30	3.98	1.15	1.13	11	1.30
	post – follow-up	1.42	10.83	3.13	0.45	11	1.42
	pre – follow-up	-0.78	13.70	3.66	0-.21	13	-.78
<u>With Baseline Trait Anxiety</u>							
	pre - post	7.51	9.02	1.43	5.26	39	<.001
	post – follow-up	-2.06	11.58	1.79	-1.15	41	.256
	pre – follow-up	5.24	11.45	1.62	3.23	49	.002

STAI = State Trait Anxiety Inventory

STAI TRAIT SCORES

Table 17

*Pre, Post and Follow-up STAI Scores*

		Mean	SD	Skewness	SE	Interpretation of mean value	
<u>Entire sample</u>							
	pre	49.78	13.78	.02	.30	Significant anxiety	
	post	39.36	13.04	.51	.33	Normal	
	follow-up	44.79	15.24	.21	.30	Normal	
STAI STATE SCORES	<u>Without Baseline State Anxiety</u>						
		pre	34.52	5.09	-.44	.48	Normal
		Post	32.05	9.12	.70	.52	Normal
		follow-up	35.63	12.49	.91	.48	Normal
	<u>With Baseline State Anxiety</u>						
		pre	58.55	8.43	.57	.37	Significant anxiety
		post	43.33	13.22	.22	.40	Normal
		follow-up	49.69	14.39	-.08	.36	Significant anxiety
	STAI TRAIT SCORES	<u>Entire sample</u>					
		pre	52.28	10.08	-.28	.30	Significant anxiety
		post	46.00	12.24	.46	.33	Significant anxiety
		follow-up	48.79	14.79	-.12	.30	Significant anxiety
<u>Without Baseline Trait Anxiety</u>							
		pre	37.76	4.72	-1.47	.60	Normal
		post	36.25	5.71	.36	.64	Normal



follow-up	38.54	14.39	.50	.60	Normal
<u>With Baseline</u>					
<u>Trait Anxiety</u>					
pre	56.35	6.90	.53	.33	Clinically sig. anxiety
post	48.79	12.22	.17	.37	Clinically sig. anxiety
follow-up	51.55	13.76	-.19	.33	Clinically sig. anxiety

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STAI = State Trait Anxiety Inventory

Tables 18, 19 and 20 show that the differences in short- and long-term anxiety outcomes for those with normal levels of baseline anxiety compared those with clinically significant levels were statistically significant.

Individuals with normal levels of state anxiety had on average lower state anxiety levels at post-MBCT ( $p=.002$ ) and follow-up ( $p<.001$ ) than those with clinically significant state anxiety at baseline. They were less likely to experience clinically significant levels of state anxiety post treatment ( $p=.001$ ) and at follow-up ( $p=.001$ ) than those with baseline state anxiety.

The same was true for trait anxiety. Individuals with normal levels of trait anxiety had on average lower trait anxiety levels post treatment ( $p=.002$ ) and at follow-up ( $p<.001$ ) than those with clinically significant trait anxiety at baseline. They were also less likely to experience clinically significant levels of trait anxiety at post-MBCT ( $p=.003$ ) and follow-up ( $p=.008$ ) than those with baseline trait anxiety.

Table 18

*Group Statistics Analysing the Relationship Between the Presence of Baseline Anxiety and STAI Scores at Post and Follow-up*

		N	Mean	SD	SE	
<u>STAI State Post-MBCT Score</u>						
STAI STATE SCORES	without baseline state anxiety	19	32.05	9.12	2.09	
	with baseline state anxiety	32	43.48	13.78	2.44	
	<u>STAI State Follow-up Scores</u>					
	without baseline state anxiety	23	35.63	12.49	2.60	
	with baseline state anxiety	40	50.14	14.33	2.27	
<u>STAI Trait Post-MBCT Score</u>						
STAI TRAIT SCORES	without baseline trait anxiety	12	36.25	5.71	1.65	
	with baseline trait anxiety	40	48.35	12.36	1.95	
	<u>STAI Trait Follow-up Scores</u>					
	without baseline trait anxiety	14	38.54	14.39	3.85	
	with baseline trait anxiety	50	51.11	13.83	1.96	

STAI = State Trait Anxiety Inventory

Table 19

*T test for Comparing the Presence of Baseline Anxiety with STAI Scores at Post and Follow-up*

	T Test for Equality of Means					
	t	df	sig.*	mean diff.	SE diff.	95% CI of diff.
<u>State Anxiety</u>						
STAI State post-MBCT score	-3.21	49	.002	-11.43	3.55	[-18.57, -4.29]
STAI State follow-up score	-4.05	61	<.001	-14.51	3.58	[-21.67, -7.35]
<u>Trait Anxiety</u>						
STAI Trait post-MBCT score	-3.27	50	.002	-12.10	3.70	[-19.53, -4.67]
STAI Trait follow-up score	-2.98	62	.004	-12.57	4.21	[-21.01, -4.14]

STAI = State Trait Anxiety Inventory

\* 2 tailed

Table 20

*Crosstabulation Exploring the Effect of Baseline Anxiety on Post and Follow-up Anxiety*

		Baseline			Pearson Chi Square		
		not Anxious	anxious	total	value	df	sig.*
<u>Post</u>							
STATE ANXIETY	not anxious	18	16	34			
	anxious	1	16	17	10.74	1	.001
	total	19	32	51			
<u>Follow-up</u>							
	not anxious	19	15	34			
	anxious	4	25	29	11.96	1	.001
	total	23	40	63			
<u>Post</u>							
TRAIT ANXIETY	not anxious	11	17	28			
	anxious	1	23	24	8.98	1	.003
	total	12	40	52			
<u>Follow-up</u>							
	not anxious	10	16	26			
	anxious	4	34	38	7.05	1	.008
	total	14	50	64			

\*Asymp. Sig. (2-sided)

The effect of length of the follow-up period was examined and no significant differences in time variation for state ( $p=.885$ ; tables 21 and 22) or trait ( $p=.328$ ; tables 23

and 24) anxiety levels were found. Levels of state anxiety increased non-significantly up to 36 months following completion of the course, then decreased non-significantly (although did not return to post-MBCT levels) afterwards. Trait anxiety decreased non-significantly up to 24 months, then increased considerably (however non-significantly) between 25 and 36 months, then decreased again (non-significantly) after this time.

Table 21

*Univariate ANOVA for the Effect of Length of the Follow-up Period on STAI State Scores*

	Type III Sum of Squares	df	Mean Square	F	Sig.
Time	86.68	3	28.89	0.22	.885

STAI = State-Trait Anxiety Inventory

Table 22

*Estimated Means for the Effect of the Length of the Follow-up Period on STAI State Scores*

Time	Mean	SE	95% CI
1-12m	-0.20	5.18	[-10.61, 10.21]
13-24m	-3.82	3.21	[-10.27, 2.64]
25-36m	-4.89	2.73	[-10.37, 0.60]
37m+	-3.60	2.73	[-9.08, 1.89]

STAI = State-Trait Anxiety Inventory; CI = confidence interval

Table 23

*Univariate ANOVA for Effect of the Length of the Follow-up Period on STAI Trait Scores*

	Type III Sum of Squares	df	Mean Square	F	Sig.
Time	455.13	3	151.71	1.18	.328

STAI = State-Trait Anxiety Inventory

Table 24

*Estimated Means for the Effect of the Length of the Follow-up Period on STAI Trait Scores*

Time	Mean	SE	95% CI
1-12m	0.53	5.08	[-9.67, 10.72]
13-24m	0.81	3.15	[-5.52, 7.13]
25-36m	-5.39	2.68	[-10.76, -0.01]
37m+	0.81	2.68	[-4.57, 6.18]

STAI = State-Trait Anxiety Inventory; CI = confidence interval

In summary, there were significant overall reductions in both state and trait anxiety following completion of the MBCT course and at follow-up. State anxiety was reduced from clinically significant levels to normal levels of anxiety and while trait anxiety remained clinically significant, anxiety scores were significantly reduced. While MBCT was effective in reducing average state and trait anxiety levels for all, outcome anxiety levels were significantly lower for those who did not report clinical levels of anxiety at baseline.

## Does the Presence of Anxiety Decrease the Effectiveness of MBCT in Reducing Depression and Preventing Relapse (Question Two)?

Higher levels of both state and trait anxiety at baseline were associated with higher levels of depression both immediately following the course ( $p < 0.001$ ) and at follow-up ( $p < 0.001$ ; see tables 25 and 26 for details).

Table 25

*Parameter Estimates for the Effect of Baseline STAI Scores on Post-MBCT BDI-II Scores*

Parameter	Coefficient	SE	95% CI	df	Sig.
Pre-MBCT STAI State	0.49	0.09	[0.32, 0.67]	1	<.001
Pre-MBCT STAI Trait	0.74	0.11	[0.53, 0.95]	1	<.001

BDI-II = Beck Depression Inventory; CI = confidence interval; MBCT = Mindfulness-based Cognitive Therapy; STAI = State-Trait Anxiety Inventory

Table 26

*Parameter Estimates for the Effect of Baseline STAI Scores on Follow-up BDI-II Scores*

Parameter	Coefficient	SE	95% CI	df	Sig.
Pre-MBCT STAI State	0.47	0.11	[0.27, 0.69]	1	<.001
Pre-MBCT STAI Trait	0.61	0.15	[0.32, 0.90]	1	<.001

BDI-II = Beck Depression Inventory; CI = confidence interval; MBCT = Mindfulness-based Cognitive Therapy; STAI = State-Trait Anxiety Inventory

The 23 individuals (34.8%) without baseline state anxiety reported on average 'no or minimal' levels of depression at pre, post and follow-up (see table 27 for details). For this group, there were significant reductions in depression scores from pre to post

( $p=.002$ ), however no significant long-term reductions (pre – follow-up  $p=.759$ ; see table 28 for details). Twenty-six percent ( $n=6$ ) were actively depressed (a BDI-II score of 14 or over) at baseline, 16.7% ( $n=3$ ) were actively depressed immediately following treatment, and 30.4% ( $n=7$ ) were actively depressed at follow-up (see table 29 for details). For the 43 individuals (65.2%) with clinically significant levels of baseline state anxiety, depression levels were significantly reduced from pre to post ( $p<.001$ ) and these gains were maintained over the follow-up period ( $p=.086$ ). This group reported ‘moderate depression’ at baseline, ‘mild depression’ immediately following treatment, and rising depression levels that only just crossed the threshold into ‘moderate depression’ at follow-up. Ninety-three percent ( $n=37$ ) were actively depressed at baseline, 53.3% ( $n=16$ ) were actively depressed immediately following treatment, and 57.5% ( $n=23$ ) were actively depressed at follow-up. The differences in depression scores between those with baseline state anxiety and those without were statistically significant; individuals without baseline state anxiety reported significantly lower depression scores and relapse rates at baseline, post-treatment and follow (see tables 29, 30 and 31 for details).

Similarly, the 14 individuals (21.2%) without baseline trait anxiety reported on average ‘no or minimal’ levels of depression at pre, post and follow-up (see table 27 for details). There were significant reductions in depression scores from pre to post ( $p=.002$ ), however there were no significant long-term effects (pre to follow-up  $p=.436$ ; see table 28 for details). For this group, 14.3% ( $n=2$ ) were actively depressed at baseline, 8.3% ( $n=1$ ) were actively depressed immediately following treatment, and 35.7% ( $n=5$ ) at follow-up. In contrast, for the 52 individuals (78.8%) with clinically significant levels of baseline trait anxiety, depression levels were significantly reduced from pre to post ( $p<.001$ ) and these gains were maintained over the follow-up period ( $p=.084$ ). This group reported ‘moderate



depression' at baseline and 'mild depression' immediately following treatment and at follow-up. Eighty-four percent (n=42) were actively depressed at baseline, 51.4% (n=19) were actively depressed immediately following treatment and 50.0% (n=25) were actively depressed at follow-up. The lower levels of depression scores and relapse rates in those without baseline trait anxiety were statistically significantly less than those with baseline trait anxiety at pre- and post-MBCT, but not at follow-up (see tables 29, 30 and 31 for details).

In summary, these results show that individuals without anxiety (either state or trait) prior to undertaking MBCT, began the treatment, on average, without depression and remained this way at post and at follow-up. This was significantly different to those with clinical levels of anxiety prior to undertaking the treatment. Individuals with baseline state anxiety had higher levels of depression to begin with, and while depression scores were significantly reduced at post and follow-up, they remained significantly higher for this group than for those without baseline state anxiety. As such, MBCT was less effective in reducing post and follow-up depression levels and depressive relapse in those experiencing baseline state anxiety prior to undertaking the treatment. In addition, individuals with clinical levels of baseline trait anxiety also reported significantly higher baseline and post treatment depression levels than those without baseline trait anxiety; however the follow-up levels and rates of relapse were not statistically significantly higher. As such, MBCT was less effective in reducing post treatment depression levels and depressive relapse in those experiencing trait anxiety when compared to those without trait anxiety, however it was equally effective in reducing depression levels and depressive relapse at follow-up.

Table 27

*Pre, Post and Follow-up BDI-II Scores (For Individuals With and Without Baseline State and Trait Anxiety)*

	Mean BDI-II Score	SD	Skewness	SE	Interpretation of mean value
<u>Entire sample</u>					
pre	20.57	11.96	.32	.30	Moderate depression
post	13.14	10.61	.93	.33	No or minimal depression
follow-up	16.52	13.42	.74	.30	Mild depression
<u>Without Baseline State Anxiety</u>					
pre	11.64	9.74	1.43	.48	No or minimal depression
post	6.72	7.25	1.62	.54	No or minimal depression
follow-up	10.70	10.82	1.26	.48	No or minimal depression
<u>With Baseline State Anxiety</u>					
pre	25.57	10.10	.33	.37	Moderate depression
post	16.64	10.59	.75	.41	Mild depression
follow-up	19.63	13.74	.52	.36	Moderate depression
<u>Without Baseline Trait Anxiety</u>					
pre	8.81	8.42	2.10	.60	No or minimal depression

With Baseline Anxiety	post	5.58	7.57	2.43	.64	No or minimal depression
	follow-up	11.89	13.27	.97	.60	No or minimal depression
<u>With Baseline</u>						
<u>Trait Anxiety</u>						
	pre	23.86	10.71	.30	.34	Moderate depression
	post	15.46	10.39	.84	.38	Mild depression
	follow-up	17.76	13.31	.75	.33	Mild depression

BDI-II = Beck Depression Inventory; STAI = State Trait Anxiety Inventory

Table 28

*T Tests Comparing BDI-II Scores Over Time (For Individuals With and Without Baseline State and Trait Anxiety)*

	Mean BDI-II difference	SD	SE Mean	t	df	p
<u>Entire sample</u>						
pre - post	7.91	7.50	1.06	7.46	49	<.001
post - follow-up	-2.52	8.39	1.17	-2.15	50	.037
pre - follow-up	4.15	12.14	1.52	2.74	63	.008
<u>Without Baseline State Anxiety</u>						
pre - post	4.43	5.09	1.20	3.69	17	.002
post - follow-up	-1.97	6.97	1.64	-1.20	17	.246
pre - follow-up	.95	14.59	3.04	.31	22	.759

With Baseline State  
Anxiety

pre - post	9.51	7.84	1.41	6.75	30	<.001
post - follow-up	-2.82	9.16	1.60	-1.77	32	.086
pre - follow-up	5.96	10.28	1.61	3.71	40	.001

Without Baseline Trait  
Anxiety

pre - post	3.94	3.50	1.01	3.90	11	.002
post - follow-up	-2.50	6.71	1.94	-1.29	11	.223
pre - follow-up	-3.09	14.36	3.84	-.80	13	.436

With Baseline Trait  
Anxiety

pre - post	8.84	7.86	1.29	6.84	36	<.001
post - follow-up	-2.53	8.92	1.43	-1.77	38	.084
pre - follow-up	6.18	10.75	1.52	4.07	49	<.001

BDI-II = Beck Depression Inventory; STAI = State Trait Anxiety Inventory

Table 29

*Crosstabulation Exploring the Effect of Baseline Clinically Significant Anxiety (State and Trait) on Post and Follow-up Depression*

		Baseline			Pearson Chi Square		
		not Anxious	anxious	total	value	df	sig.*
<u>Pre</u>							
	not depressed	17	3	20			
	depressed	6	37	43	29.73	1	<.001
	total	23	40	63			
STATE ANXIETY	<u>Post</u>						
	not depressed	15	14	29			
	depressed	3	16	19	6.33	1	.012
	total	18	30	48			
	<u>Follow-up</u>						
	not depressed	16	17	33			
	depressed	7	23	30	4.29	1	.038
	total	23	40	63			
TRAIT ANXIETY	<u>Pre</u>						
	not depressed	12	8	20			
	depressed	2	42	44	24.74	1	<.001
	total	14	50	64			
	<u>Post</u>						
	not depressed	11	18	29	6.94	1	.008

depressed	1	19	20			
total	12	37	49			
<u>Follow-up</u>						
not depressed	9	25	34			
depressed	5	25	30	.90	1	.344
total	14	50	64			

\*Asymp. Sig. (2-sided)

Table 30

*Group Statistics Analysing the Relationship Between the Presence of Baseline Anxiety (State and Trait) and BDI-II Scores at Post and Follow-up*

		N	Mean BDI-II Score	SD	SE
STATE ANXIETY	<u>Pre-MBCT</u>				
	without baseline state anxiety	23	11.64	9.74	2.03
	with baseline state anxiety	40	25.63	10.22	1.62
	<u>Post-MBCT</u>				
	without baseline state anxiety	18	6.72	7.25	1.71
	with baseline state anxiety	30	16.41	11.04	2.02
	<u>Follow-up</u>				
	without baseline state anxiety	23	10.70	10.82	2.26
	with baseline state anxiety	40	20.08	13.79	2.18
TRAIT ANXIETY	<u>Pre-MBCT</u>				
	without baseline trait anxiety	14	8.81	8.42	2.23
	with baseline trait anxiety	50	23.86	10.71	1.52
	<u>Post-MBCT</u>				
	without baseline trait anxiety	12	5.58	7.57	2.19
	with baseline trait anxiety	37	15.35	10.63	1.75
	<u>Follow-up</u>				
	without baseline trait anxiety	14	11.89	13.27	3.55
	with baseline trait anxiety	50	17.67	13.45	1.90

BDI-II = Beck Depression Inventory; STAI = State Trait Anxiety Inventory

Table 31

*T Test for Comparing the Presence of Baseline Anxiety (State and Trait) with BDI-II Scores at Post and Follow-up*

		T Test for Equality of Means					
		t	df	sig.*	mean BDI-II diff.	SE diff.	95% CI of diff.
STATE ANXIETY	Pre	-5.32	61	<.001	-13.99	2.63	[-19.25, -8.73]
	Post	-3.31	46	.002	-9.68	2.93	[-15.57, -3.80]
	Follow-up	-2.80	61	.007	-9.39	3.35	[-16.08, -2.69]
TRAIT ANXIETY	Pre	-4.84	62	<.001	-15.05	3.11	[-21.26, -8.84]
	Post	-2.94	47	.005	-9.77	3.32	[-16.45, -3.09]
	Follow-up	-1.43	62	.159	-5.78	4.06	[-13.89, 2.33]

BDI = Beck Depression Inventory; STAI = State Trait Anxiety Inventory

\* 2 tailed

### Post-MBCT Mindfulness Practice

As shown in table 32, lower levels of baseline of depression and state and trait anxiety were associated with longer periods of mindfulness meditation practice at follow-up, however this relationship was not significant. This lack of statistical significance may be attributed to the large variance in the amount of time spent meditating.



Table 32

*Parameter Estimates for the Effects of Baseline BDI-II and STAI Scores on the Length of Mindfulness Meditation at Follow-up*

Parameter	Coefficient	SE	95% CI	df	Sig.
BDI-II	-1.05	1.07	[-3.15, 1.05]	1	.328
STAI State	-1.72	0.94	[-3.56, 0.129]	1	.068
STAI Trait	-1.40	1.32	[-4.00, 1.19]	1	.288

BDI-II = Beck Depression Inventory; CI = confidence interval; STAI = State-Trait Anxiety Inventory

Individuals with clinically significant state anxiety at baseline practiced mindfulness meditation for on average 46.70 minutes in the week prior to completing the questionnaire and those without clinically significant state anxiety at baseline practiced for 88.09 minutes. The difference was not statistically significant ( $p=.423$ ; see tables 33 and 34 for details).

Individuals with clinically significant levels of trait anxiety at baseline practiced mindfulness meditation for on average 55.54 minutes in the week prior to completing the questionnaire and those without clinically significant levels of trait anxiety at baseline practiced for 75.25 minutes. The difference was not statistically significant ( $p=.988$ ).

Individuals with clinically significant state anxiety at follow-up practiced mindfulness meditation for on average 55.32 minutes in the week prior to completing the questionnaire and those without clinically significant state anxiety practiced for 66.86 minutes. The difference was not statistically significant ( $p=.974$ ).

Individuals with high levels of trait anxiety ( $>45$ ) at follow-up practiced mindfulness meditation for on average 52.80 minutes in the week prior to completing the

questionnaire and those without practiced for 76.31 minutes. The difference was not statistically significant ( $p=.175$ ).

Table 33

*Group Statistics for the Effects of Clinically Significant Anxiety on The Amount of Mindfulness Meditation Practiced (in Minutes) at Follow-up*

	Clinically significant?	N	Mean	SD	SE
Pre-MBCT STAI State	Yes	34	46.69	91.21	15.64
	No	17	88.09	86.88	21.07
Pre-MBCT STAI Trait	Yes	42	55.54	92.53	14.28
	No	10	75.25	84.41	26.69
Follow-up STAI State	Yes	23	55.33	98.92	20.63
	No	31	66.86	83.88	15.07
Follow-up STAI Trait	Yes	33	52.80	85.77	14.93
	No	21	76.31	96.34	21.02

MBCT = Mindfulness-based Cognitive Therapy; STAI = State-Trait Anxiety Inventory

Table 34

*T Test for the Differences between the Presence and Absence of Clinically Significant Anxiety on the Amount of Mindfulness Meditation Practiced (in Minutes) at Follow-up*

Variable	t	df	Sig.*	Mean Diff.	SE Diff	95% CI of Diff.
Pre-MBCT STAI State	1.55	49	.127	41.40	26.68	[-12.22, 95.01]
Pre-MBCT STAI Trait	0.62	50	.541	19.71	32.06	[-44.59, 84.12]
Follow-up STAI State	-.046	52	.646	11.53	24.92	[-38.48, 61.53]
Follow-up STAI Trait	0.94	52	.354	23.51	25.12	[-26.90, 73.91]

Equal variances assumed

\* = 2 tailed

CI = confidence interval; MBCT = Mindfulness-based Cognitive Therapy; STAI = State-Trait Anxiety Inventory

### Drop-out rates

As there was only one participant who returned the follow-up questionnaire and did not complete the minimum number of sessions, the analysis of drop-out rates was conducted on the 136 individuals who enrolled in the MBCT course. This allowed for added power in the analysis. As shown in the tables below, while individuals with higher levels of baseline state anxiety, trait anxiety and depression were associated with attendance at fewer sessions, the differences were not statistically significant (see table 35).

Table 35

*Parameter Estimates for Baseline STAI and BDI-II Scores and Number of MBCT Sessions Attended*

Parameter	Coefficient	SE	95% CI	df	Sig.
Pre-MBCT STAI State	-0.01	.01	[-0.04, 0.02]	1	.486
Pre-MBCT STAI Trait	-0.01	.020	[-0.05, 0.03]	1	.510
Pre-MBCT BDI-II	-.02	.01	[-0.04, 0.01]	1	.282

BDI-II = Beck Depression Inventory; CI = confidence interval; MBCT = Mindfulness-based Cognitive Therapy; STAI = State-Trait Anxiety Inventory

### **Post Hoc Analysis on Participants With a Follow-up Period of 25 to 36 Months**

A post hoc analysis was conducted to see whether participants with a follow-up period of 25 to 36 months differed in any way from the rest of the population, as participants in this bracket showed higher trait anxiety scores at follow-up than the participants in the other time brackets. As can be seen in tables 36, 37 and 38, no significant difference was found for gender ( $p=.806$ ), birthplace ( $p=.271$ ), employment ( $p=.140$ ), previous meditation experience ( $p=.480$ ), disability ( $p=.188$ ), depression, ( $p=.179$ ), mindfulness ( $p=.797$ ), state anxiety ( $p=.268$ ), trait anxiety ( $p=.363$ ), age ( $p=.627$ ) or number of MBCT sessions attended ( $p=.270$ ).

Table 36

*Crosstabulations between Length of Follow-up Period, and Gender, Birthplace, Employment and Previous Meditation Experience*

	Time		Total	df	Sig.*
	25-36 months	other			
<b>Gender</b>					
female	13	32	45	1	.806
male	7	15	22		
total	20	47	67		
<b>Birthplace</b>					
Australia	12	24	36	2	.145
overseas	2	13	15		
total	14	37	51		
<b>Employment</b>					
employed	9	13	22	2	.061
unemployed	5	24	29		
total	14	37	51		
<b>Previous meditation</b>					
yes	7	24	31	2	.276
no	7	12	19		
total	14	36	50		

\*Asymp. Sig. (2-sided)

Table 37

*Group Statistics Analysing the Relationship Between the Length of the Follow-up Period and Disability, Depression, Mindfulness, Anxiety, Age and Number of Sessions Attended*

		N	Mean	SD	SE
Baseline SDS	25-36 m	20	5.64	2.27	0.51
	Other	45	4.70	2.76	0.41
Baseline BDI-II	25-36 m	20	23.69	10.55	2.36
	Other	45	19.36	12.35	1.84
Baseline MAAS	25-36 m	20	3.32	0.56	0.13
	Other	41	3.37	0.91	0.14
Baseline STAI State	25-36 m	19	53.00	13.15	3.02
	Other	45	48.78	14.05	2.09
Baseline STAI Trait	25-36 m	20	54.08	7.98	1.78
	Other	45	51.61	10.81	1.61
Age	25-36 m	20	51.30	12.33	2.76
	Other	44	49.75	11.54	1.74
No. of sessions attended	25-36 m	20	6.80	1.51	0.33
	Other	32	7.22	1.18	0.21

BDI-II = Beck Depression Inventory; MAAS = Mindful Attention Awareness Scale; SDS = Sheehan Disability Scale; STAI = State-Trait Anxiety Inventory

Table 38

*T test for Comparing the Length of the Follow-up Period with SDS Scores, BDI-II Scores, MAAS Scores, STAI (State and Trait) Scores, Age and Number of MBCT Sessions Attended.*

	T Test for Equality of Means					
	t	df	sig.*	mean diff.	SE diff.	95% CI of diff.
Baseline SDS	1.33	63	.188	0.94	0.70	[-0.47, 2.35]
Baseline BDI-II	1.36	63	.179	4.33	3.18	[-2.03, 10.69]
Baseline MAAS	-0.26	59	.797	-0.06	0.22	[-0.50, 0.39]
Baseline STAI State	1.12	62	.268	4.22	3.77	[-3.32, 11.76]
Baseline STAI Trait	0.92	63	.363	2.47	2.70	[-2.92, 7.86]
Age	0.49	62	.627	1.55	3.18	[-4.80, 7.90]
No. of sessions attended	-1.12	50	.270	-0.42	.38	[-1.17, 0.34]

\* 2 tailed

BDI-II = Beck Depression Inventory; MAAS = Mindful Attention Awareness Scale; SDS = Sheehan Disability Scale; STAI = State-Trait Anxiety Inventory

## Chapter 4: Discussion

### Aims of the study

The aims of the current were to determine if Mindfulness-based Cognitive Therapy (MBCT) reduced levels of anxiety in individuals with recurrent depression, and if the presence of baseline anxiety decreased the effectiveness of MBCT in reducing depression and preventing relapse.

### Mental Health Prior to the MBCT Course

The population in the current study consisted entirely of individuals with a history of depression. While early MBCT studies excluded participants with active depression (e.g. Ma & Teasdale, 2004; Teasdale et al, 2000), more recent studies have included these individuals (e.g. Eisendrath et al, 2008; Kenny & Williams, 2006; Mathew et al, 2010). The majority of participants in the current study reported symptoms of depression at the beginning the program. Nearly two thirds of the population reported at least mild symptoms of depression and almost half indicated moderate to severe depression at the initial assessment.

At the beginning of the course, 60% of the participants reported clinically significant state anxiety and 76% reported clinically significant trait anxiety. The correlation between state and trait anxiety was high. While all of the participants had a history of depressive episodes, nearly half reported co-occurring clinically significant active depression and state anxiety and the correlation between active depression and anxiety was high. This is consistent with findings from previous studies (e.g. Sanderson et al, 1990; Teesson et al, 2009; Zimmerman et al, 2000).

Almost all participants reported experiencing some level of disability. Ninety-five percent reported experiencing at least mild impairment and 65% reported that this



impairment was moderate to severe. Consistent with the literature (e.g. Olfson et al, 1997; Teesson et al, 2009), individuals with co-occurring anxiety and depression reported higher levels of disability than those with either disorder alone; however in the current study, the difference was not statistically significant. The lack of statistical significance may have stem from the fact that all individuals had a history of depressive illness that may have affected their levels of reported disability, even when the symptoms were not active.

### **MBCT and Depression**

In the current study, levels of depression were significantly reduced immediately following completion of the eight-week Mindfulness-based Cognitive Therapy course and at follow-up. These results support previous MBCT findings (e.g. Ma & Teasdale, 2004; Teasdale et al, 2000; Kenny & Williams, 2006; Mathew et al, 2010).

Overall depression levels, as measured by the Beck Depression Inventory (BDI-II), were reduced on average from a moderate level at baseline to no or minimal levels of depression immediately after the course. They were also significantly reduced at follow-up, between seven and 49 months later, providing further evidence for the long-term effectiveness of MBCT. The large gains during the MBCT course, however, were not entirely maintained at follow-up, as average depression levels increased slightly from no or minimal depression at post-MBCT to mild levels at follow-up. While this increase was statistically significant, the clinical significance is questionable, as the change was just 2.5 points on the Beck Depression Inventory (BDI-II) scale, representing only a slight increase to a mild level of depression.

For the 20 individuals who were not in remission when they commenced treatment, depression levels remained on average below the clinical cutoff immediately following completion of the course and at follow-up. Immediately following completion

of the course, none of the participants had relapsed. At follow-up (seven to 49 months later), 30% of these individuals had relapsed. This follow-up relapse rate is slightly less than the 36-37% relapse rate found in early MBCT trials and much less than the 78% depressive relapse rates reported in individuals not receiving treatment (Ma & Teasdale, 2004; Teasdale et al, 2000). Four (67%) of those who relapsed indicated only mild depression, and two (33%) indicated severe depression. These results support earlier findings regarding the effectiveness of MBCT in reducing depressive relapse in individuals in remission with a history of depression (Ma & Teasdale, 2004; Teasdale et al, 2000).

For the 46 individuals who were actively depressed when they commenced treatment, average levels of depression were significantly reduced from moderate to mild levels immediately following treatment. These gains were maintained at follow-up. Fifty-nine percent of individuals with active baseline depression reported active depression after treatment and 55% at follow-up. As far as the current author is aware, no study to date has reported the long-term (i.e. follow-up) relapse rates of individuals with active depression after MBCT treatment, however relapse rates immediately following completion of MBCT courses have been reported to be between 33% and 61% (Eisendrath et al, 2008; Kenny & Williams, 2006). While a follow-up relapse rate of 55% sounds high, it is less than the 80% two year follow-up relapse rate and 90% six year follow-up relapse rate reported in the control group of a CBT study for individuals with recurrent depression (Fava, Rafanelli, Grandi, Conti & Belluardo, 1998; Fava, Ruini, Rafanelli, Finos, Conti & Grandi, 2004). These results add to the growing body of research that has found significant decreases in depression in individuals with active depression following

completion of an MBCT course (Eisendrath et al, 2008; Kenny & Williams, 2006; Mathew et al, 2010).

While levels of depression were on average significantly reduced for all participants, depression scores immediately following treatment and at follow-up were higher for those who were actively depressed when they enrolled in the MBCT course than those who were in remission. The differences in relapse rates were statistically significant post treatment, but they were not significant at follow-up. The results indicate that MBCT was more effective in reducing short-term depressive relapse in individuals in remission than those with active depression. It may be that MBCT is equally effective in reducing long-term depressive relapse for those with and without active depression. However, as there were only 20 individuals without active depression, this lack of statistical significance may also be an artifact of the small sample size, and there indeed may be a difference in relapse outcomes between those with and without active depression. The fact that there was a significant difference in depression scores immediately following treatment and at follow-up supports this assertion. While further research with larger populations would greatly assist in clarifying whether individuals in remission benefitted more so than those with active depression, it is clear that MBCT has clinical benefits for both groups.

The length of time between undertaking the MBCT course and completion of the follow-up questionnaires varied, as the courses were offered consecutively over a period of three and half years. The follow-up period varied between seven and 49 months depending upon when the participant enrolled in the MBCT course. This is the longest follow-up period in the published MBCT literature to date. While levels of depression increased over time following completion of the MBCT course, the difference was not

statistically significant. Perhaps with a larger sample size, this pattern of increased relapse over time may show significant results. Teasdale and colleagues (2000) found that the likelihood of depressive relapse increased over time in the 50 weeks following completion of their MBCT course. Mathew and colleagues (2010) found that depressive relapse only occurred when the follow-up period was greater than two years after completion of an MBCT course, however this trend was also non-significant. Over time, it may be that the awareness and practice of the skills learnt during the course decreases, explaining an increase in depression over time (Mathew et al, 2010). Extended research that assessed continued awareness and practice of MBCT skills and levels of depression regularly over periods of time following completion of an MBCT course would be beneficial in ascertaining the long-term effects of MBCT, the effects of ongoing practice, and the trajectory of depressive relapse following completion of the course.

### **Does MBCT Reduce Anxiety in Individuals with Recurrent Depression (Question One)?**

As was hypothesised, anxiety levels decreased significantly following completion of the MBCT course.

On average, state anxiety was significantly reduced from clinical to normal levels immediately following completion of the course and continued to remain within the normal range at follow-up. There was a statistically significant increase in anxiety scores from post to follow-up, however the increase was small, and anxiety levels continued to remain below the clinically significant threshold and were significantly lower than at baseline. For the 23 individuals who reported normal levels of state anxiety at the beginning of the course, 5% reported clinical levels of state anxiety immediately following treatment and 17% at follow-up. This is in contrast with the 44 individuals who reported

clinical state anxiety at the beginning of treatment; 50% continued to report clinically significant state anxiety immediately following the course, and 38% at follow-up. MBCT was less effective in reducing anxiety to normal levels in individuals who experienced clinically significant state anxiety at the beginning of treatment than those who did not.

The length of the follow-up period did not significantly affect the overall state anxiety scores, however there was a trend towards a gradual increase in anxiety levels up to 36 months and a decrease beyond this time (however it did not return to post-course levels). As with depressive relapse, it is possible that with a larger sample, this pattern of increased state anxiety relapse over time would show significant results. As suggested earlier in regards to the gradual increase in depression during the follow-up period, it may be that the participants' awareness and practice of the skills learnt during the course decreased over time, resulting in the return of some anxious symptomatology. Again, future research with a larger sample size, that regularly measured ongoing awareness and practice of the skills learnt during the MBCT course, as well as levels of anxiety would assist in achieving a greater understanding of the long-term effects of MBCT, the effects of ongoing practice and the trajectory of anxiety relapse. The slight decrease in anxiety scores after 36 months is difficult to explain, however may be the result of the small sample size resulting from breaking the sample into four groups for this analysis.

Levels of trait anxiety were also on average significantly reduced following completion of the treatment and these gains were maintained at follow-up. Despite this significant reduction in anxiety scores, trait anxiety levels remained slightly above the selected cutoff level for clinical significance. Immediately following completion of the MBCT course, the average STAI score was just one point above the cutoff for clinically significant trait anxiety. As the authors of the STAI did not publish clinically significant

cutoff scores, and adequate cutoff scores are yet to be determined (Groth-Marnat, 2009; Kabacoff, Segal, Hersen & Van Hasselt, 1997), the selected cutoff point (which was based on a review of commonly used cutoff scores) may not necessarily accurately reflect the presence of clinically significant trait anxiety. Therefore the possibility of a clinically significant decrease to normal or mild levels of trait anxiety following completion of the MBCT course should not be ruled out, particularly as the reductions were statistically significant.

For the 14 individuals who reported normal levels of trait anxiety at the beginning of the course, 8% reported an increase to clinical levels of trait anxiety immediately following treatment and 29% report this at follow-up. This was significantly different than the outcomes of the 52 individuals with baseline clinical trait anxiety; 58% continued to report clinically significant trait anxiety immediately following the course and 68% at follow-up. As with state anxiety, MBCT was more effective in achieving normal levels of trait anxiety in individuals who reported normal levels of trait anxiety prior to undertaking the course.

The length of the follow-up period did not significantly affect the overall trait anxiety scores, however there was a trend towards a continued decrease in trait anxiety levels over time, with the exception of a noticeable increase between 25 and 36 months. Because of the stable and longstanding nature of trait anxiety, it makes sense that any changes that occurred during treatment would remain relatively constant over time (indeed anxiety scores continued to decrease long after it had finished). Particularly in comparison to state anxiety, which is characterised by more temporary and fluctuating anxiety. However, the increase in anxiety levels that occurred between 25 and 36 months, is difficult to explain, especially as a post hoc analysis revealed that the participants in this

group did not differ in any meaningful way from participants in the other groups. Again, perhaps this increase was a result of the small sample sizes that resulted when the population was divided into 4 groups for this analysis. Larger sample sizes in future studies would help to ascertain whether the increase in anxiety at this point was an actual phenomenon, or simply a result of a small sample size.

The presence of anxiety by definition reflected co-morbidity (as all participants had a history of depression and many experienced active depression during the course) and was associated with higher levels of disability in areas of social, family and occupational functioning. In light of research which has found that co-morbidity between depression and anxiety is associated with higher levels of impairment and a more severe, chronic and persistent course (Brown et al, 1996; Merikangas et al, 2003; Teesson et al, 2009), it is not surprising that some symptoms of anxiety remained after the treatment had finished, particularly in those with higher levels of baseline anxiety.

The current study is the first of its kind to explore the effectiveness of MBCT in reducing anxiety levels in individuals with recurrent depression (in remission and active), following the MBCT program as outlined by Segal, Williams and Teasdale (2002). Earlier research has found that MBCT adapted for the population group was effective in reducing anxiety levels in individuals diagnosed with Generalised Anxiety Disorder (Craigie et al, 2008; Evans et al, 2008; Kim et al, 2009), Panic Disorder (Kim et al, 2009), Bipolar Disorder (Williams et al, 2008) and those reporting co-morbid depression and anxiety (Cebolla & Miró, 2009), depression in primary care patients (Finucane & Mercer, 2006), outpatients with a range of presentations (Ree & Craigie, 2007) and cancer patients (Foley et al, 2010). The current study adds to this assortment of research by showing the effectiveness of MBCT in reducing levels of anxiety, although caution should be taken in

generalising the results further than its effectiveness in treating anxiety in individuals with a history of recurrent depression.

While the current study provides support for the effectiveness of MBCT for individuals with a history of depression and anxiety, it does not provide information about the mechanisms of action. It was hypothesised in the introduction that MBCT would address core issues of anxiety, including rumination, dysfunctional attitudes, experiential avoidance, worry and rigidity of response to stimuli, and target selective attentional bias towards threat cues. Additional research is required to confirm or disprove these assertions and to ascertain precisely how the treatment is effective in reducing anxiety in those with a history of depression.

So while MBCT was not designed to target anxiety, nor did the psycho-education component of the course include specific information on anxiety symptoms or disorders, the program was nonetheless effective in reducing levels of both state and trait anxiety in the short and long-term. These current results support Williams and colleagues' description of MBCT as a '*trans-diagnostic therapeutic tool*' (Williams et al, 2008, p. 278). Their description was in regards to the applicability of MBCT for individuals with bipolar disorder, and the current results provide further evidence for this statement in its effectiveness for individuals with recurrent depression (whether in remission or not) and anxiety.

### **Does the Presence of Anxiety Decrease the Effectiveness of MBCT in Reducing Depression and Preventing Relapse (Question Two)?**

As was hypothesised, higher baseline levels of anxiety negatively affected depression outcomes. It appears that while MBCT was effective in reducing levels of depression and relapse overall, it was less effective for those with higher levels of pre-



course anxiety. On average, individuals without baseline state anxiety were not actively depressed immediately after treatment and at follow-up, while those with baseline state anxiety reported mild to moderate levels post treatment and at follow-up. Looking at the depressive relapse rates, 17% of individuals without baseline state anxiety had relapsed at post treatment and 30% at follow-up, compared to 53% and 58% for those with baseline state anxiety respectively. Individuals without baseline trait anxiety were also on average in remission immediately after treatment and at follow-up, while those with baseline trait anxiety reported mild post treatment and follow-up depression levels. For those without baseline trait anxiety, 8% had relapsed at post treatment and 36% at follow-up, compared to 51% and 50% at post and follow-up for those with baseline trait anxiety. These results are consistent with the depression literature, which has found that individuals with co-occurring anxiety and depression generally have poorer treatment outcomes (e.g. Clayton et al, 1991; Merikangas et al, 2003). Similar findings have also been reported for other treatment modalities, including Cognitive Behaviour Therapy (Brent et al, 1998; Gelhart & King, 2001) and Interpersonal Therapy (Feske et al, 1998).

There are a number of ways to explain the negative effect that the presence of anxiety has on depression treatment outcomes. Co-morbid depression and anxiety have consistently been found to be associated with higher levels of disability (e.g. Olfson et al, 1997; Teeson et al 2009) and this was also true of the current population. These increased levels of impairment in social, family and occupational functioning may provide an explanation regarding the reduced effectiveness of MBCT in decreasing levels of depression for those with symptoms of anxiety.

Another way that co-morbid anxiety could affect treatment outcomes is decreased rates of treatment attendance, as co-morbidity has been found to be associated with lower

attendance rates (Brown et al, 1996). This is a potential hidden cost of co-morbid anxiety, as data from participants who do not complete a sufficient number of treatment sessions are routinely excluded from data analysis (e.g. Ma & Teasdale, 2004; Teasdale et al, 2000). A post hoc analysis that included all 136 participants who enrolled in the MBCT program revealed no association between levels of anxiety at baseline and session attendance. Incidentally, depression levels at baseline were also unrelated to the number of sessions participants attended. This suggests that individuals with active anxiety and/or depression are just as likely to attend a sufficient number of treatment sessions as those without. Further, these results indicate that treatment drop out is not the reason for the decreased effectiveness of MBCT in reducing depression scores for those with co-occurring anxiety.

### **Summary Of Results**

Mindfulness-based Cognitive Therapy has been found to be effective in treating depression and depressive relapse in individuals with three or more previous episodes of depression (Eisendrath et al, 2008; Kenny & Williams, 2006; Ma & Teasdale, 2004; Mathew et al, 2010; Segal et al, 2002; Teasdale et al, 2000). As many people with depression also experience anxiety (e.g. Zimmerman et al, 2000), an understanding of the impact of anxiety on treatment outcomes as well as the effect of the treatment on anxiety levels is vital. Research had begun to explore the acceptability, feasibility and effectiveness of mindfulness-based therapies and anxiety (Cebolla and Miró, 2009; Craigie et al, 2008; Evans, 2008; Finucane & Mercer, 2006; Kim, 2009; Ree & Craigie, 2007). However, an understanding has yet to be reached about the effectiveness of Segal, William and Teasdale's MBCT protocol (2002) in reducing anxiety in individuals with a history of depression nor the impact that anxiety has on the effectiveness of MBCT in

reducing depression and depressive relapse. The aim of the current study was fill this knowledge gap.

The first question in the current study asked whether MBCT reduced levels of anxiety in individuals with recurrent depression. As was hypothesised, the results indicated that this was the case. Anxiety levels were significantly reduced in the short and long-term, from clinically significant at baseline to normal or near normal levels at follow-up. Individuals without baseline anxiety were more likely to report normal levels of anxiety at follow-up than those with clinically significant anxiety at baseline.

The second question asked whether the presence of anxiety decreased the effectiveness of MBCT in reducing depression and preventing relapse. As hypothesised, the results indicated that baseline anxiety did indeed negatively affect depression outcomes. MBCT was effective in reducing depression levels and preventing relapse in those who experienced anxiety at the beginning of treatment, however it was more effective for those who were not clinically anxious at the beginning of treatment.

### **Clinical Implications**

One important clinical implication of this research is the verification that MBCT is effective in reducing not only depression, but also anxiety. Research estimates that between 50% and 75% of depressed individuals also experience symptoms of anxiety (Clayton et al, 1991; Zimmerman et al, 2000) and 60 – 76% of participants in the current study reported significant baseline anxiety. Due to this high prevalence of anxiety in participants who seek MBCT for treatment for recurrent depression, it is vital to understand the effect that treatment has on anxious symptomatology. The current study provides clear evidence for the effectiveness of MBCT in reducing anxiety levels and supports the use of the program in treating individuals with anxiety as well as depression.

Despite its efficacy, MBCT was less effective in reducing anxiety and depression in those with active baseline anxiety than in those without. In addition, while levels of both state and trait anxiety were significantly reduced following completion of the MBCT course, state anxiety shifted from clinically significant to normal levels and trait anxiety remained just within the clinically significant range. While a debate about the appropriateness of the cutoff point is fitting, it remains clear that trait anxiety was not completely eradicated by the treatment. It may be that the MBCT program would benefit from some changes that reflected the needs of those with anxiety, especially as the numbers of individuals enrolling in the course with anxiety are so high. Additional psycho-education about anxiety and associated automatic negative thoughts could be beneficial. Session four is commonly where MBCT has been adapted with other client groups (Crane, 2008) and the additional anxiety specific information could be included here. Another change to the MBCT protocol that might be beneficial is the length of the program and even the time spent in meditation. In a qualitative study that investigated the effects of MBCT for individuals with depressive and anxiety symptoms, a quarter of the participants reported that they would like more sessions, and would like the group meditations to be longer in duration (Cebolla & Miró, 2009). The suggestion of more treatment sessions is consistent with research that found that depressed individuals with high levels of anxiety took twice as long to recover than those with low levels (Clayton et al, 1991). Future research might also explore these possibilities.

### **Limitations of the study**

Importantly, there was no control group in the current study. As a result, the changes that occurred over the period of the study cannot be categorically attributed to the specific effects of the treatment, particularly as non-specific group effects such as

validation and normalisation are known to play a large role in the treatment of both depression and anxiety (Finucane & Mercer, 2006). The completed MBCT studies so far have been criticised for their lack of randomised control trials and active comparison groups (Baer, 2003; Coelho et al, 2007); however, as it is still a relatively new area of research, the state of the research to date could be considered appropriate and the criticisms overly premature (Williams et al, 2008). When conducting future research into MBCT for depression and anxiety, the use of an active control group in a randomised control trial would greatly expand on the results of the current study.

In addition, there may have been some bias in the results, as participants who enrolled in the MBCT program were all screened for a willingness to use meditation to manage their condition and were therefore predisposed to engaging in this type of treatment. As all participants were open to this orientation of therapy, caution should be taken in generalising the results beyond those who have a willingness to engage in meditation therapy.

It is possible that the data was confounded by response or recall bias, as it relied solely on responses to a battery of self-report questionnaires. In addition, the STAI may not have fully captured the complexity of clinically significant anxiety, including the presence of panic attacks and avoidant behaviour (Kabat-Zinn et al, 1992). Clinical interviews conducted by experienced researchers may have provided more clinically accurate information and increased the reliability and validity of the results.

The final participant question was not a standardised questionnaire like the others and would also be susceptible to response or recall bias. Participants were asked to consider the week prior to completing the follow-up questionnaire, and report on the number of minutes they had spent practicing the meditation or yoga they had learnt during

the MBCT course. While the aim of the question was simply to get an approximation of the amount of time participants continued to practice, the reliability and validity are untested and unknown. In addition, it is unrealistic to assume that the amount of mindfulness practice conducted in the week prior to completing the questionnaire was indicative of the general amount of time spent practicing since completion of the course. In particular, participants may have been influenced by receiving the questionnaire in the mail, which may have altered the amount of time they engaged in the practices. Future studies more concerned with continued mindfulness practice may benefit from a more systematic recording of ongoing yoga and meditation, such as asking participants to maintain a diary or regular follow-up sessions, however these also present with their own difficulties.

Another limitation of this study is the length of follow-up periods. While the follow-up period was over 4 years for some participants, for others it was just 7 months. There were 22 participants who had a follow-up period of 3 to 4 years, and in order to more fully understand the long-term effects of MBCT for individuals with depression and anxiety, a larger sample size with this length of follow-up (or longer) would be beneficial. While there were interesting patterns in symptom change over time, the results were not statistically significant. Future research would be well placed to examine the long-term effectiveness of MBCT with a larger number of participants.

While the population sample in the current study was relatively large for a study of its kind, there were only a small number of participants without depression or anxiety at baseline. Having an even larger number of participants may result in larger numbers of asymptomatic participants and would allow for a clearer understanding of the effects of the presence of active baseline depression and anxiety have on treatment outcomes.

Fifty percent of individuals who enrolled in the MBCT course returned the follow-up questionnaire. This response rate is consistent with other postal questionnaires in the literature (e.g. Harrison & Cock, 2004; Harrison, Holt & Elton, 2002), however it remains that half of the population did not return the questionnaire, for reasons that are not known. Statistical analysis showed that there was no difference between those who did and did not return the follow-up questionnaire on measures of depression, anxiety, levels of mindfulness, disability, previous meditation experience, date of course completion, gender, country of birth or employment. There was, however, a difference in age between the two groups. Participants in the current study were on average six years older, and while this age difference is not large, it is unclear how it may have affected the results and the generalisability of conclusions.

The number of female participants in the study was twice the number of males, however this is not unexpected as women are twice as likely to report depression than men (Hyde, Mezulis & Abramson, 2008). In addition, less than-half of the participants reported that they were employed, which could be considered low for a population sample with a mean age of 50 years and a range of 22 to 72 years. One explanation for this is that the course attracted participants who had experienced multiple episodes of depression and this may have resulted in levels of impairment that might make it difficult to maintain employment. Over 60% of participants reported moderate to severe levels of impairment in work, social and family life, lending some support for this hypothesis. Another explanation is that as the course was conducted free of charge in a public CBT clinic, it may have attracted those with a low income who were unable to afford more expensive treatment. Again, it is unclear how the lack of employment may affect the results and

caution should be taken when generalising the results to a population with higher employment rates.

While the MBCT course was administered by two very competent and experienced therapists whose qualifications were listed in the methodology section, the treatment was not monitored for treatment integrity. As the effectiveness of the treatment requires that it is adequately administered (Kazdin, 1994), future studies might benefit from monitoring the treatment provision more closely (Baer, 2003).

### **Future research**

In order to overcome the limitations of the current study, future studies in MBCT for depression and anxiety would benefit from conducting randomised controlled trials with an active control group, relying on clinical interviews for data collection, evaluating the treatment integrity, considering alternate ways to collect information on post-MBCT mindfulness practice and having longer follow-up periods with larger numbers of participants.

It also would be valuable to know the effects that the inclusion of anxiety-specific psycho-education in the MBCT program had on anxiety scores. While the treatment addresses many important components of anxiety as it stands and was effective in reducing anxiety scores, the inclusion of anxiety-specific information may be further beneficial for those individuals with anxious symptomatology and disorders. Another area where change may be beneficial is the number of treatment sessions and the length of group meditations (Cebolla & Miró, 2009). Given the interwoven nature of depression and anxiety (Andrews, Goldberg, Krueger, Carpenter, Hyman, Sachdev et al., 2009; Goldberg, Krueger, Andrews & Hobbs, 2009; Jorm, 2009) and the high rates of co-morbidity (e.g. Zimmerman et al, 2000), it would be also interesting to see the effects that



adaptations specifically for anxiety had on depression scores.

## Conclusion

Mindfulness-based Cognitive Therapy is a treatment program that has been found to reduce levels of depression and relapse in individuals with three or more previous episodes of depression. The current study supported these earlier findings and added to the growing MBCT literature in two important ways. Firstly, that MBCT is effective in reducing levels of anxiety in the short and long-term. Secondly, that the presence of anxiety negatively affects depression outcomes.

These findings have important clinical and research implications. It is vital for MBCT therapists to acknowledge the likelihood that a large number of those who participate in their courses experience symptoms of anxiety as well as depression, and that while anxiety is simultaneously treated during the course, it does have a negative impact on depression outcomes. Research into ways that the MBCT protocol can be adapted to better accommodate individuals with anxiety would assist therapists to provide the best possible treatment for their clients.

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**Appendix A: Letter Accompanying the Follow-up Questionnaire**

School of Psychology



Government  
of South Australia

**Centre for Treatment of Anxiety & Depression (C.T.A.D.)**

A Cognitive Behavioural Therapy Service  
30 Anderson Street,  
THEBARTON SA 5031  
Ph: 82228100 Fax: 82228101 DX: 465738

24<sup>th</sup> August 2009

Dear MBCT Class Graduate,

I am writing to you to ask if you would be willing to complete and return the enclosed brief questionnaire.

As you know, Mindfulness-based Cognitive Therapy classes are a new approach to managing depression, anxiety and relapse prevention here in Australia. The work we have done together has attracted interest from other centres around the world who are using this program.

One question we are interested in is whether there is any effect on anxiety symptoms and if so, whether this effect lasts after the program has finished, or whether the effect wears off over time.

If you could take 10 minutes to complete the questionnaire and return it to me in the enclosed stamped addressed envelope, it would be very much appreciated.

Be as honest as you can, as that will help us understand what really happens over time. We are non-judgementally curious, and hope you can be that towards yourself as you answer this.

Your answers will be treated in the strictest confidence, and viewed only by CTAD staff who will collate the data without identifying you. This data will then be reviewed by our research colleague, Lauren Wood, who will be looking at whether MBCT has any effect on anxiety symptoms, and will be used to contribute to her doctoral thesis in clinical psychology at the Australian National University. You are free to withdraw from participating at any time and it will not impact on your ability to access the therapy programs here at CTAD.

Should you have any queries you are welcome to contact the researcher: Lauren Wood, Australian National University ([lauren.wood@anu.edu.au](mailto:lauren.wood@anu.edu.au)) or Dr Maura Kenny, Centre for the Treatment of Anxiety and Depression (ph 8222 8100). The research is also being supervised by Professor Don Byrne ([don.byrne@anu.edu.au](mailto:don.byrne@anu.edu.au)). If you have any concerns about the way the research is conducted please contact the Human Research Ethics Committee (02 6125 7945 or [human.ethics@anu.edu.au](mailto:human.ethics@anu.edu.au)).

Thank you for your help with this.

Warm wishes,

*Maura*

Dr Maura Kenny  
Centre for the Treatment of Anxiety and Depression

*Lauren*

Lauren Wood  
D Psych Candidate, ANU

**Appendix B: Statement of Consent**

Thank you for taking the time to complete this questionnaire.

Remember, your personal identification details (i.e., your name) will in no way be connected with the responses you provide. An identifying number has been assigned to you to protect your confidentiality.

Your participation in this study is completely voluntary – you do not have to complete this questionnaire if you do not wish to.

If you have been feeling depressed recently or feel distressed when completing this questionnaire, please do not hesitate to contact the Centre for the Treatment of Anxiety and Depression on 08 8222 8100.

Please read each page fully and respond as indicated on each page. Please do not skip any items. There are no right or wrong answers. Try not to spend too much time on each item.

When you have completed this questionnaire, please send it in the pre-paid addressed envelope to the Centre for Treatment of Anxiety and Depression.

Please sign below to indicate that:

- You consent to taking part in the study
- You understand the objectives and procedures of the project
- You understand that your participation is completely voluntary
- You understand that the responses you provide will be given to a researcher at the Australian National University, however no identifying information will be connected with your responses
- You allow the researcher access to your responses to the questionnaires you completed during your MBCT course (again, without identifying information)
- You consent to results of the project being published (your personal details will remain confidential)
- You voluntarily consent to participate and understand that you may withdraw from the study at any time

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

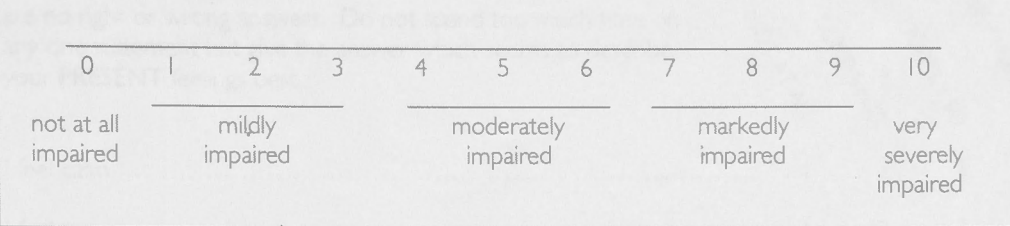
**Appendix C: Participant Questionnaire**

This questionnaire consists of 21 groups of statements. After reading each group of statements carefully, circle the number (0, 1, 2 or 3) next to the one statement in each group which best describes the way you have been feeling *the past week, including today*. If several statements in the group seem to apply equally well, circle each one. Be sure to read all statements in each group before making your choice.

<p><b>Sadness</b></p> <p>0 I do not feel sad</p> <p>1 I feel sad much of the time</p> <p>2 I am sad all the time</p> <p>3 I am so sad or unhappy that I can't stand it</p>	<p><b>Pessimism</b></p> <p>0 I am not discouraged about my future</p> <p>1 I feel more discouraged about my future than I used to be</p> <p>2 I do not expect things to work out for me</p> <p>3 I feel my future is hopeless and will only get worse</p>
<p><b>Past failure</b></p> <p>0 I do not feel like a failure</p> <p>1 I have failed more than I should have</p> <p>2 As I look back, I see a lot of failures</p> <p>3 I feel I am a total failure as a person</p>	<p><b>Loss of pleasure</b></p> <p>0 I get as much pleasure as I ever did from the things I enjoy</p> <p>1 I don't enjoy things as much as I used to</p> <p>2 I get very little pleasure from the things I used to enjoy</p> <p>3 I can't get any pleasure from the things I used to enjoy</p>
<p><b>Guilty feelings</b></p> <p>0 I don't feel particularly guilty</p> <p>1 I feel guilty over many things I have done or should have done</p> <p>2 I feel quite guilty most of the time</p> <p>3 I feel guilty all of the time</p>	<p><b>Punishment feelings</b></p> <p>0 I don't feel I am being punished</p> <p>1 I feel I may be punished</p> <p>2 I expect to be punished</p> <p>3 I feel I am being punished</p>
<p><b>Self dislike</b></p> <p>0 I feel the same about myself as ever</p> <p>1 I have lost confidence in myself</p> <p>2 I am disappointed in myself</p> <p>3 I dislike myself</p>	<p><b>Self criticalness</b></p> <p>0 I don't criticise or blame myself more than usual</p> <p>1 I am more critical of myself than I used to be</p> <p>2 I criticise myself for all of my faults</p> <p>3 I blame myself for everything bad that happens</p>
<p><b>Suicidal thoughts or wishes</b></p> <p>0 I don't have any thoughts of killing myself</p> <p>1 I have thoughts of killing myself, but I would not carry them out</p> <p>2 I would like to kill myself</p> <p>3 I would kill myself if I had the chance</p>	<p><b>Crying</b></p> <p>0 I don't cry anymore than I used to</p> <p>1 I cry more than I used to</p> <p>2 I cry over every little thing</p> <p>3 I feel like crying, but I can't</p>
<p><b>Agitation</b></p> <p>0 I am no more restless or wound up than usual</p> <p>1 I feel more restless or wound up than usual</p> <p>2 I am so restless or agitated that it's hard to stay still</p> <p>3 I am so restless or agitated that I have to keep moving or doing something</p>	<p><b>Loss of interest</b></p> <p>0 I have not lost interest in other people or activities</p> <p>1 I am less interested in other people or things than before</p> <p>2 I have lost most of my interest in other people or things</p> <p>3 It's hard to get interested in anything</p>

<p><b>Indecisiveness</b></p> <p>0 I make decisions about as well as ever</p> <p>1 I find it more difficult to make decisions than usual</p> <p>2 I have much greater difficulty in making decision than I used to</p> <p>3 I have trouble making any decisions</p>	<p><b>Worthlessness</b></p> <p>0 I do not feel I am worthless</p> <p>1 I don't consider myself as worthwhile and useful as I used to</p> <p>2 I feel more worthless as compared to other people</p> <p>3 I feel utterly worthless</p>
<p><b>Loss of energy</b></p> <p>0 I have as much energy as ever</p> <p>1 I have less energy than I used to</p> <p>2 I don't have enough energy to do very much</p> <p>3 I don't have enough energy to do anything</p>	<p><b>Changes in sleeping pattern</b></p> <p>0 I have not experienced any change in my sleeping pattern</p> <hr/> <p>1a I sleep somewhat more than usual</p> <p>1b I sleep somewhat less than usual</p> <hr/> <p>2a I sleep a lot more than usual</p> <p>2b I sleep a lot less than usual</p> <hr/> <p>3a I sleep most of the day</p> <p>3b I wake up 1-2 hours early and can't get back to sleep</p>
<p><b>Irritability</b></p> <p>0 I am no more irritable than usual</p> <p>1 I am more irritable than usual</p> <p>2 I am much more irritable than usual</p> <p>3 I am irritable all the time</p>	<p><b>Changes in appetite</b></p> <p>0 I have not experienced any change in my appetite</p> <hr/> <p>1a My appetite is somewhat less than usual</p> <p>1b My appetite is somewhat greater than usual</p> <hr/> <p>2a My appetite is much less than before</p> <p>2b My appetite is much greater than usual</p> <hr/> <p>3a I have no appetite at all</p> <p>3b I crave food all the time</p>
<p><b>Concentration Difficulty</b></p> <p>0 I can concentrate as well as ever</p> <p>1 I can't concentrate as well as usual</p> <p>2 It's hard to keep my mind on anything for very long</p> <p>3 I find I can't concentrate on anything</p>	<p><b>Tiredness or fatigue</b></p> <p>0 I am no more tired or fatigued than usual</p> <p>1 I get more tired or fatigued more easily than usual</p> <p>2 I am too tired or fatigued to do a lot of the things I used to</p> <p>3 I am too tired or fatigued to do most of the things I used to</p>
<p><b>Loss of interest in sex</b></p> <p>0 I have not noticed any recent change in my interest in sex</p> <p>1 I am less interested in sex than I used to be</p> <p>2 I am much less interested in sex now</p> <p>3 I have lost interest in sex completely</p>	

On a scale of 0 to 10, as shown in the diagram below, enter the number that best describes the amount of your disability or impairment, at this time, in each of the following areas: Work, Social Life and Activities, Family Life and Home Responsibilities.



<p><b>Work:</b> At this time, how much is your work impaired because of your problem?</p>	<p>_____</p> <p>(0 - 10)</p>
<p><b>Social Life and Leisure Activities:</b> At this time, how much is your social life and leisure activities impaired because of your problem?</p>	<p>_____</p> <p>(0 - 10)</p>
<p><b>Family Life and Home Responsibilities:</b> At this time, how much is your family life and home responsibilities impaired because of your problem?</p>	<p>_____</p> <p>(0 - 10)</p>

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

	<i>NOT AT ALL</i>	<i>SOMEWHAT</i>	<i>MODERATELY SO</i>	<i>VERY MUCH SO</i>
I feel calm .....	1	2	3	4
I feel secure .....	1	2	3	4
I am tense .....	1	2	3	4
I feel strained .....	1	2	3	4
I feel at ease .....	1	2	3	4
I feel upset .....	1	2	3	4
I am presently worrying over possible misfortunes .....	1	2	3	4
I feel satisfied .....	1	2	3	4
I feel frightened .....	1	2	3	4
I feel comfortable .....	1	2	3	4
I feel self-confident .....	1	2	3	4
I feel nervous .....	1	2	3	4
I am jittery .....	1	2	3	4
I feel indecisive .....	1	2	3	4
I am relaxed .....	1	2	3	4
I feel content .....	1	2	3	4
I am worried .....	1	2	3	4
I feel confused .....	1	2	3	4
I feel steady .....	1	2	3	4
I feel pleasant .....	1	2	3	4

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

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
I feel pleasant .....	1	2	3	4
I feel nervous and restless .....	1	2	3	4
I feel satisfied with myself .....	1	2	3	4
I wish I could be as happy as others seem to be .....	1	2	3	4
I feel like a failure .....	1	2	3	4
I feel rested .....	1	2	3	4
I am "calm, cool and collected" .....	1	2	3	4
I feel that difficulties are piling up so that I cannot overcome them .....	1	2	3	4
I worry too much over something that really doesn't matter .....	1	2	3	4
I am happy .....	1	2	3	4
I have disturbing thoughts .....	1	2	3	4
I lack self confidence .....	1	2	3	4
I feel secure .....	1	2	3	4
I make decisions easily .....	1	2	3	4
I feel inadequate .....	1	2	3	4
I am content .....	1	2	3	4
Some unimportant thought runs through my mind and bothers me .....	1	2	3	4
I take disappointments so keenly that I can't put them out of my mind ...	1	2	3	4
I am a steady person .....	1	2	3	4
I get in a state of tension or turmoil as I think over my recent concerns and interests .....	1	2	3	4

Day-to-Day Experiences

Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

	1	2	3	4	5	6				
	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never				
I could be experiencing some emotion and not be conscious of it until some time later.					1	2	3	4	5	6
I break or spill things because of carelessness, not paying attention, or thinking of something else.					1	2	3	4	5	6
I find it difficult to stay focused on what's happening in the present.					1	2	3	4	5	6
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.					1	2	3	4	5	6
I tend not to notice feelings of physical tension or discomfort until they really grab my attention.					1	2	3	4	5	6
I forget a person's name almost as soon as I've been told it for the first time.					1	2	3	4	5	6
It seems I am "running on automatic," without much awareness of what I'm doing.					1	2	3	4	5	6
I rush through activities without being really attentive to them.					1	2	3	4	5	6
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.					1	2	3	4	5	6
I do jobs or tasks automatically, without being aware of what I'm doing.					1	2	3	4	5	6
I find myself listening to someone with one ear, doing something else at the same time.					1	2	3	4	5	6
I drive places on "automatic pilot" and then wonder why I went there.					1	2	3	4	5	6
I find myself preoccupied with the future or the past.					1	2	3	4	5	6
I find myself doing things without paying attention.					1	2	3	4	5	6
I snack without being aware that I'm eating.					1	2	3	4	5	6



Over the past week, how many minutes have you spent practicing the meditation and/or yoga you learnt during the Mindfulness Based Cognitive Therapy course? \_\_\_\_\_

Thank you for taking the time to complete this questionnaire.  
Your participation is greatly appreciated.