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Mindfulness-Based Cognitive Therapy for recurrent depression

Do we need to exclude currently depressed patients?

Joël van Alderen

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Mindfulness-Based Cognitive Therapy for recurrent depression

Do we need to exclude currently depressed patients?

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Promotor:
Prof. dr. A.E.M. Speckens

Copromotor:
Dr. A.R.T. Donders

Manuscriptcommissie:
Prof. dr. E.S. Becker
Prof. dr. J. Spijker
Dr. T. Barnhofer (Freie Universität Berlin, Duitsland)

Spiritus Sancti gratia illuminet sensus et corda nostra
(Moge de genade van de heilige Geest ons verstand en hart verlichten)

- Openingsgebed van de promotieceremonie van de Radboud Universiteit Nijmegen

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CHAPTER

1

GENERAL INTRODUCTION

Major depressive disorder

Major depressive disorder (MDD) is a psychiatric condition with a high prevalence, associated with severe levels of distress. The World Health Organization (WHO) estimated that in 2012, about 350 million people suffer from depression worldwide (World Health Organization, 2012). Projections of the WHO burden of disease statistics resulted in the estimation that in 2030, depression will be worldwide the most disabling disease after HIV/AIDS and in the high income countries, depression will be the most disabling disease (Mathers & Loncar, 2006).

Major depressive disorder, described in more detail below, is associated with a decrement in health, more than chronic diseases like angina, arthritis, asthma (Moussavi et al., 2007). MDD is also associated with an increased risk of attempting suicide (Kessler, Borges, & Walters, 1999), 8.8% of the patients with MDD attempted suicide in the United States (Hasin, Goodwin, Stinson, & Grant, 2005).

Approximately one out of six people in the western world has the risk to develop one or more depressive episodes during life-time (Bijl, Ravelli, & Van Zessen, 1998; Kessler et al., 2003). The 12-months prevalence ranges from 6-10% (Bijl et al., 1998; Kessler et al., 2003). The incidence, prevalence and morbidity rates of MDD are about twice as high in females compared to males (Piccinelli & Wilkinson, 2000).

According to the Diagnostic statistical manual of Mental Disorders (5th ed., *DSM-5*, American Psychiatric Association, 2013), MDD is defined as meeting at least five out of nine symptoms for at least 2 weeks. 'Depressed mood' and/or 'loss of interest or pleasure in almost all activities' are conditional criteria. The other 7 symptoms are significant weight loss or gain or decrease/increase in appetite; insomnia or hypersomnia; psychomotor agitation/retardation; fatigue or loss of energy; feelings of worthlessness or excessive or inappropriate guilt; diminished ability to think or concentrate, or indecisiveness; and recurrent thoughts of death, recurrent suicidal ideation or behaviour. To classify MDD in terms of the *DSM-5*, these symptoms cause clinically significant impairment in social, work, or other important areas of functioning almost every day (American Psychiatric Association, 2013).

The *DSM-5* MDD criteria do not differ from the criteria described in the Diagnostic Statistical manual of Mental Disorders (4th edition, *DSM-IV*, American Psychiatric Association, 1994). The *DSM-IV* criteria of depression (American Psychiatric Association, 1994) are used throughout this thesis since the *DSM-5* was not published at the start of our study in 2007.

Recurrent depressive disorder

Approximately half of the patients suffering from MDD have only one episode in their lives. However, about 35% of the patients have more than one depressive episode and

another 15% do not reach full remission at all in a naturalistic sample over 23 years (Eaton et al., 2008).

According to the DSM-IV (American Psychiatric Association, 1994), recurrence is defined as meeting the criteria for MDD after an asymptomatic period for at least two months. Partial remission is defined as not meeting five or more criteria of major depression but still meeting three or four symptoms. Relapse is defined as meeting the criteria of MDD after a period of partial remission. In this thesis, we do not make a distinction between recurrence and relapse.

Judd et al. (2000) reported that patients with residual sub threshold symptoms of MDD are at risk of a more severe and chronic course of future depressive episodes. These findings are confirmed by other studies reviewed by Hardeveld et al. (2010) showing that in specialized mental health care, the risk of recurrence is up to 85% after 15 years. The risk of relapse seems to increase with each subsequent episode and decreases with longer recovery periods (Post, 1992; Solomon et al., 2000). Eaton et al., (2008) also found cumulative risk by increasing numbers of episodes, but warn against overgeneralization of this result since an already vulnerable subgroup in longitudinal samples could become more and more apparent over time and might be responsible for these findings.

Theoretical models for recurrent depression

Several theoretical frameworks are developed to explain vulnerability for (recurrent) depression. Below, we discuss neurobiological and information processing models.

Post et al. (1992; Post, Rubinow, & Ballenger, 1986) developed a neurobiological model, suggesting two mechanisms responsible for recurrent depression. First, both stressors and previous depressive episodes leave 'residual traces', sensitizing the individual for a consequent episode on a neurotransmitter and gene-expression level. Second, the authors suggest that the kindling phenomenon is also applicable to mood disorders. Kindling refers to the process that each subsequent episode becomes more autonomous and less related to specific stressors. The sensitizing and kindling hypothesis was confirmed by a large prospective longitudinal study by Kendler et al. (Kendler, Thornton, & Gardner, 2000), showing that the influence of life events associated with onset decreased with increasing numbers of episodes. This effect is seen over the period of the first 9 episodes. This suggests a more autonomic onset over time due to sensitizing, to a certain level.

From an information processing perspective, Barnard & Teasdale (1991) and Teasdale et al. (Teasdale, Segal, & Williams, 1995) used the *Interactive cognitive subsystem* (ICS) to describe the development and perpetuation of negative thought content. This complex model integrates all levels of information available, ranging from sensory information (e.g. information about the position of the body) building up towards complex levels resulting in 'meaning' through sensory and cognitive loops. At this highest level, information is stored in schemas, containing implicit representations about oneself,

others and the world. Emotions are interlinked with these schemas but emotions can also be elicited by direct sensory input.

A depressive episode is explained as the 'depressive interlock', the result of 'continuing production of depressogenic schematic models' (Teasdale et al., 1995) leading to depressive emotional states. This process can start with an external stimulus or memory of a negative event, but can become an internal autonomic process escalating into MDD.

More recent, De Raedt & Koster (2010) proposed their *impaired disengagement hypothesis*, integrating information processing models like the ICS model and neurobiological models like the kindling hypothesis, in order to explain vulnerability for depression.

By a thorough review of existing literature, they describe that a period of stress, including a depressive episode leads to disturbances in the HPA-axis due to high levels of cortisol, resulting in sensitization to stressors. This HPA-axis disturbance in turn results in imbalances in the neurotransmitter serotonin, related to decreased activation of prefrontal areas associated with attentional control. Diminished attentional control is linked with prolonged amygdala activation. Importantly, diminished attentional control has also a hypothesized link with increased rumination and elaboration of negative (self) information on a cognitive level. Rumination is thought to start with the activation of negative (self) schemas in reaction to perceived stress and rumination is seen as an internal stressor itself.

Both increased amygdala activation and rumination are thought to lead to sustained negative affect, further installing negative schemas which in turn heighten the risk of depression and relapse/recurrence of depression.

Treatment of recurrent depression

As already mentioned, in a considerable part of patients, MDD appears to have a recurrent character which stresses the need for adequate treatment. Maintenance anti-depressant medication (m-ADM) is the first-line intervention for relapse prevention in remitted patients (Geddes et al., 2003; National Institute for Clinical Excellence, 2009). However, a substantial part of patients tend to discontinue their medication (Olfson, Marcus, Tedeschi, & Wan, 2006) due to several reasons including unwanted side effects (Cooper et al., 2007). There are also indications that treatment resistance for m-ADM occurs in patients with many recurrences (Kaymaz, Os, Loonen, & Nolen, 2008).

An alternative for medication are psychological interventions also showing prophylactic effects on the risk of depressive relapse (e.g. Bockting, Hollon, Jarrett, Kuyken, & Dobson, 2015). One of these psychological interventions is mindfulness-based cognitive therapy (MBCT).

Mindfulness-based cognitive therapy (MBCT)

Mindfulness-based cognitive therapy (MBCT) is a relative new intervention developed by Segal, Williams and Teasdale (2002), aimed to reduce the risk of relapse in MDD, without the side effects of maintenance antidepressant medication. MBCT is now adopted as one of the treatment options for recurrent depression (Landelijke Stuurgroep Multidisciplinaire Richtlijnontwikkeling GGZ, 2010; National Institute for Clinical Excellence, 2009).

MBCT is an adaptation of mindfulness-based stress reduction (MBSR), introduced by Kabat-Zinn (Kabat-Zinn, 1982, 1990) for patients with chronic pain. Mindfulness is defined as: 'the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment' (Kabat-Zinn, 2003).

MBCT combines cognitive behavioural techniques for depression with mindfulness meditation interventions. The training consists of an 8-weeks group intervention, including both 'formal' and 'informal' meditation exercises, dialogue and cognitive behavioural techniques in weekly sessions of 2,5 hours and a silent day of 6 hours. In addition to the group sessions, participants are instructed to carry out home work exercises for approximately 45 minutes a day, 6 days a week. To support home practice, patients receive CD's with guided meditations and exercises. Group size varies between 8-14 participants.

Hypothesized mechanisms of action of MBCT

From an information processing viewpoint, Williams and others distinguish different modes of the mind corresponding with the level of mindfulness. The doing mode is associated with lower levels of mindfulness and is characterized by 'rumination, avoidance, perfectionism and maladaptive self-guides' (Williams, 2008). Increased levels of mindfulness are associated with a being mode. In the being mode, thoughts, emotions and bodily sensations are seen as '(mental) events' allowing to observe these instead of coincide with the experience. Increased awareness is hypothesized to enable patients to notice when depressogenic thinking patterns occur. Noticing these patterns also opens the way for other coping strategies.

Based on the integrative approach of the impaired disengagement hypothesis discussed above, hypothesized mechanism of action take place on a level of attentional control (De Raedt & Koster, 2010). Mindfulness based interventions are thought to intervene by increasing prefrontal activation and thereby increasing awareness and executive control. Also, it is hypothesized to reduce ruminative processes.

From a neural perspective, Hölzel et al. (2011) proposes several brain areas which are thought to be associated with mechanisms of action involved with mindfulness practice. These areas are related to attention regulation, body awareness, emotion

regulation (reappraisal and exposure, extinction and reconsolidation) and also changes in perspectives on the self.

Scientific evidence of MBCT for recurrent depression

Clinical trials

A review of six randomized clinical trials have shown that MBCT is efficacious in reducing the risk of relapse by 43% compared to treatment as usual (TAU) alone (Piet & Hougaard, 2011).

A recent randomized controlled trial comparing MBCT to a group intervention without meditation showed that MBCT was particularly effective in recurrently depressed patients with a history of severe childhood trauma (Williams et al., 2014).

In addition, MBCT has shown effects that are comparable to m-ADM (Piet & Hougaard, 2011). Results of a recent large scale trial confirms that outcome of MBCT alone is comparable with the outcome of m-ADM in recurrent depressive patients (Kuyken et al., 2015).

All abovementioned trials included patients with a history of three or more depressive episodes. This 'golden standard' also used in our trial is the result of earlier findings of Teasdale (2000) and Ma & Teasdale (2004) reporting only significant differences in patients with three or more episodes compared to patients with two or less prior episodes. In addition, the subgroups with three or more episodes also reported a lower onset of first depressive episode and a higher age at start of the trial, suggesting that this group might be a distinct high risk group. Geschwind et al. (2012) however, reported that decreases in depressive symptoms after MBCT occurred irrespective of the amount of previous episodes (two or less versus three or more).

Evidence for mechanisms of action of mindfulness interventions

Van der Velden et al. (2015) reviewed 23 articles about the working mechanisms of MBCT for recurrent MDD. On the basis of 12 studies, the authors found that 'alterations in mindfulness, rumination, worry, compassion, or meta-awareness were associated with, predicted or mediated MBCT's effect on treatment outcome' (Van der Velden et al., 2015). Alterations in attention, emotional reactivity and momentary positive and negative affect were some of the preliminary factors related to the working mechanism of MBCT. The authors also concluded that more research with stricter research designs or subgroup analyses are needed to draw conclusions about causality (Van der Velden et al., 2015). A recent review of mediation studies (Gu, Strauss, Bond, & Cavanagh, 2015) showed strong evidence for cognitive and emotional reactivity in the effects of mindfulness interventions. Mindfulness skills, rumination and worry showed moderate mediation effects on mental health. These authors also concluded that the quality of the studies limits strong conclusions about how MBCT works.

A recent review/meta-analysis of Fox and colleagues (2014) concluded from 21 neuroimaging studies that alterations in different brain structures are associated with mindfulness meditation practice. Convergent evidence was found for changes in eight brain regions including regions associated with meta-awareness; exteroceptive and interoceptive body awareness; memory consolidation and reconsolidation; self and emotion regulation; and intra- and interhemispheric communication. More research is needed however, before conclusions can be drawn whether changes in brain have a causal relationship with MBCT (Fox et al., 2014). These findings are in line with a review of Tang et al., (2015), reporting emerging evidence for changes in brain areas associated with attentional control, emotion regulation and self-awareness, resulting in better self regulation.

MBCT for current depression

MBCT was developed as a relapse prevention program. The designers of MBCT stressed that patients with current depressive symptoms had to be excluded from the training: ‘...because it was assumed that depression-related difficulties in concentration would interfere with the implementation of MBCT, selection criteria for the trial were deliberately chosen to exclude patients who were not largely recovered or remitted’ (Teasdale et al., 2000).

Against this expectation, there is growing evidence that MBCT might also be applicable to patients experiencing a current depressive episode (e.g. Pots, Meulenbeek, Veehof, Klungers, & Bohlmeijer, 2014; Strauss, Cavanagh, Oliver, & Pettman, 2014).

The studies until now, however, are relatively small and mostly uncontrolled. Larger scale controlled studies investigating MBCT for patients with a current depression are therefore needed.

Aims of this thesis

The general aim of this thesis is examining the efficacy of MBCT for recurrent depressive patients with a high risk of depressive relapse/recurrence. A substantial part of this thesis involves a randomised controlled trial of MBCT in patients with three or more previous depressive episodes who are either in remission or currently depressed. In contrast with the expectations of the developers of MBCT, we expect that MBCT is also efficacious in currently depressed patients.

We also wanted to explore whether improvements after completion of MBCT are consolidated over the course of a 1-year follow-up period and whether the course of depressive symptoms over time could be predicted by baseline characteristics. We were interested in potential mechanisms of action, in terms of mediation by mindfulness skills and rumination as well as possible changes in attention processes. Finally, we conducted a couple of qualitative studies into the unique characteristics of the trainer-participant

relationship in MBCT and in the acceptability of MBCT training with its roots in Buddhist meditation practice for therapists with a Christian background.

Thesis outline

Mindfulness-based cognitive therapy for recurrent depression is the central theme in this thesis, with special attention for patients meeting the criteria of a depressive episode at the start of the training.

First, we investigated the efficacy of MBCT in recurrent depressive patients with and without a current depressive episode to see if their responses to the intervention are similar. Therefore, we have carried out a randomized controlled trial, including a subsample of currently depressed patients to compare treatment outcome in both groups. In addition, we performed exploratory mediation analyses to explore how MBCT works. Also, we investigated the role of MBCT homework exercises. The results are presented in **chapter 2**.

In **chapter 3** we report the outcome of the 1-year follow-up results of the RCT presented in chapter 2. Besides the consolidation of the treatment effect on depressive symptoms, we were interested in the changes in rumination, mindfulness skills and quality of life. Since we included both depressed and remitted patients, we were able to show that the course of depressive symptoms, rumination, quality of life and mindfulness skills were similar in both groups.

Next, we were interested if we could predict the change of depressive symptoms during MBCT and in the year following MBCT. This might lead to a better distinction between those who might and might not improve with the training and to indications about how to further adapt the training to particular subgroups. The results are presented in **chapter 4**.

One of the major drawbacks of self-report measures and interviews as described in the other chapters, is the risk of response bias (Adams, Soumerai, Lomas, & Ross-Degnan, 1999), resulting in over or underestimations of the actual effects. To by-pass this risk, we included a study presented in **chapters 5**, using an attention tasks to measure possible objective changes before and after MBCT in attentional functioning. **Chapter 5** provides the results of a neutral attention task called the 'attention network test' (ANT) (Fan, McCandliss, Sommer, Raz, & Posner, 2002). We were interested whether in a sample of recurrently depressed patients, changes take place at a basal level of attentional processing like orienting, alerting and executive attention, after an 8-week MBCT training.

Besides a quantitative approach, **chapter 6** focuses on the experiences of both the MBCT trainers and participants of the MBCT training from a qualitative point of view. Information of in depth interviews, focus groups and participant-observations of the training sessions were triangulated. We reported how the trainer-participant relationship was perceived and presented some recommendations based on our findings for MBCT

therapists. In **chapter 7**, we describe a study on the acceptability of MBCT in therapists with a Christian background compared to therapist without a Christian background. The results of expert interviews were integrated in a questionnaire filled out by Christian and non-Christian therapists. A theoretical discussion of the results is given.

Chapter 8 provides a summary of the findings of the above studies. Subsequently, an overall discussion of the findings is presented emphasizing the possible differences between depressed and remitted patients at the start of the study. Methodological strengths and limitations are discussed as well as the implications for clinical practice and directions for future research.

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CHAPTER

2

The efficacy of mindfulness-based cognitive therapy (MBCT) in recurrent depressed patients with and without a current depressive episode, a randomized controlled trial

Van Aalderen, J.R., Donders, A.R.T., Giommi, F., Spinhoven, P., Barendregt, H.P., & Speckens, A.E.M. (2012). The efficacy of mindfulness-based cognitive therapy in recurrent depressed patients with and without a current depressive episode: a randomized controlled trial. *Psychological Medicine*, 42(5), 989-1002.

Abstract

Background: The aim of this study is to examine the efficacy of mindfulness-based cognitive therapy (MBCT) in addition to treatment as usual (TAU) for recurrent depressive patients with and without a current depressive episode.

Method: A randomized controlled trial comparing MBCT + TAU (n=102) with TAU alone (n=103). The study population consisted of patients with three or more previous depressive episodes. Primary outcome measure was post-treatment depressive symptoms according to the Hamilton Rating Scale for Depression (HRSD). Secondary outcome measures included the Beck Depression Inventory (BDI), rumination, worry and mindfulness skills. Group comparisons were carried out with linear mixed modelling, controlling for intra-group correlations. Additional mediation analyses were performed. Comparisons were made between patients with and without a current depressive episode.

Results: Patients in the MBCT +TAU group reported less depressive symptoms, worry and rumination and increased levels of mindfulness skills compared to patients receiving TAU alone. MBCT resulted in a comparable reduction of depressive symptoms for patients with and without a current depressive episode. Additional analyses suggest that the reduction of depressive symptoms was mediated by decreased levels of rumination and worry.

Conclusions: The study findings suggest that MBCT is as effective for patients with recurrent depression who are currently depressed as for patients who are in remission. Directions towards a better understanding of the mechanisms of action of MBCT are given, although future research is needed to support these hypotheses.

Introduction

Major depression is a serious health problem. Its life-time prevalence is 16.2% and the 12-month prevalence 6.6% (Kessler et al., 2003). The probability of relapse increases with every depressive episode (Eaton et al., 2008). Consequently, the development of effective strategies to prevent relapse is very important. The usual treatment offered is antidepressant medication, which often yield unwanted side effects, compromising patient compliance (Hollon et al., 2005; Hollon et al., 2002).

Mindfulness-based cognitive therapy (MBCT) is an alternative, psychological intervention designed for prevention of relapse in recurrent depression. It is a group based, eight week training (Segal et al., 2002), consisting of meditation exercises combined with cognitive behavioural techniques. Mindfulness-based approaches have been successfully applied to a broad range of health and stress related problems (Hofmann, Sawyer, Witt, & Oh, 2010; Kabat-Zinn et al., 1992).

In patients with three or more previous depressive episodes, Teasdale *et al.* (2000) showed that MBCT resulted in a 40% relapse rate in the year following the intervention compared to 66% in the treatment as usual (TAU) condition (intention to treat analysis). These results were replicated in a second study (Ma & Teasdale, 2004). In contrast with the above mentioned studies, Bondolfi et al. (2010) did not show MBCT to be superior to TAU alone for patients with recurrent depression. Explanations offered for this discrepancy are the possible differences in the standard of treatment as usual or the level of experience of the MBCT trainers. Kuyken et al. (2008) showed that MBCT was as effective as maintenance anti-depressant medication (m-ADM) in preventing relapse in patients with three or more previous depressive episodes (Kuyken et al., 2008). Patients receiving MBCT reported less depressive symptoms and higher quality of life. This finding of MBCT being equally effective as m-ADM was recently confirmed by Segal *et al.* (2010) in a trial, showing equal reduction in relapse risk for m-ADM and MBCT, however, only in unstable remitters.

In addition to preventing relapse of depression, several preliminary, mostly uncontrolled studies have shown MBCT to be efficacious in reducing depressive symptoms per se (Barnhofer et al., 2009; Eisendrath et al., 2008; Finucane & Mercer, 2006; Kenny & Williams, 2007; Kingston, Dooley, Bates, Lawlor, & Malone, 2007). This research extends the founding inception of MBCT, namely that the program was developed with the purpose to prevent remission of depression and considered unsuitable for acute depression. Symptoms such as difficulty in concentration and intensity of negative thinking were hypothesized to preclude the acquisition of attention control skills central to the training (Segal *et al.*, 2002). For this reason, patients with recurrent depression

not in remission were indeed excluded from previous studies (Ma & Teasdale, 2004; Teasdale et al., 2000).

The aim of this study was to examine the efficacy of MBCT in a more representative sample of patients with recurrent depression, including those using antidepressant medication or with previous cognitive behavioural therapy or meditation experience. We also wanted to examine whether MBCT was effective for both patients with or without a current depressive episode. Finally, we wanted to investigate rumination, worry and mindfulness skills as possible mediators for the reduction of depressive symptoms in the MBCT condition. We expected increased mindfulness skills, such as 'act with awareness', would increase insight into the patients' own maladaptive cognitive, affective and behavioural processes, reducing the likelihood of repeated depressive episodes (Teasdale et al., 1995).

Method

Design

A randomized controlled design was used comparing MBCT plus TAU with TAU alone. Patients in the TAU condition participated in the MBCT training after a three month waiting list period. In order to investigate the stability of the effects of MBCT, patients in both conditions were followed for one year after completing MBCT. The results at 1 year follow-up will be presented separately.

As the studies of (Ma & Teasdale, 2004; Teasdale et al., 2000) only included patients with a Hamilton Rating Scale for Depression (HRSD) (Hamilton, 1960) score of <10, randomization of the current trial was stratified according to a HRSD score <10 or ≥10. Block-randomization was used with block size of 12 for HRSD<10 and block size of 4 for HRSD≥10. A list of random numbers was generated for both groups. Assignment to groups was conducted by an independent researcher.

Participants

The study population consisted of patients with three or more previous depressive episodes according to DSM-IV criteria. Patients using antidepressant medication were required to be on a stable dose for at least 6 weeks and were asked to maintain this dosage for the study period. Exclusion criteria for the study were: 1) one or more previous (hypo)manic episodes according to DSM-IV criteria; 2) current alcohol and/or drugs abuse; 3) urgent need for psychiatric treatment, for example suicidality or psychotic symptoms; 4) problems impeding participating in a group, such as severe borderline personality disorder; 5) problems impeding completing the questionnaires, such as cognitive dysfunctions.

Procedure

Patients were referred by their general practitioners or psychiatrists and psychologists in and around the city of Nijmegen. Alternatively, they were self-referred, informed by local and national advertisements. Patients were then screened by telephone and, if applicable, invited for a research interview including the Mini-International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998; Van Vliet, Leroy, & Van Megen, 2000), including the section on recurrent depression according to the Structural Clinical Interview for DSM-IV axis I Disorders (SCID-I) (First, Spitzer, Gibbon, & Williams, 1995; Groenestijn, Akkerhuis, Kupka, Schneider, & Nolen, 1999). The interviews were used to confirm in- and exclusion criteria, and were conducted by a psychologist or psychiatrist in training, supervised by an experienced psychiatrist.

For the MBCT condition, questionnaires were administered at the time of the research interview and after the last MBCT session. For the TAU condition, questionnaires were administered at the time of the research interview and before their first MBCT session. After completing MBCT, all patients were reassessed at 3, 6, 9 and 12 months follow-up. The study was approved by the Medical Ethical Committee of local hospitals in Nijmegen, the Netherlands. After complete description of the study to the subjects, written informed consent was obtained.

Mindfulness Based Cognitive Therapy

MBCT was delivered according to the guidelines by Segal, Williams and Teasdale (Segal et al., 2002). Training consisted of eight weekly sessions of 2,5 hours and a silent day of 6 hours meditation. In addition to the group sessions, participants were instructed to practice 6 days a week for approximately 45 minutes a day. Compliance was assessed by attendance and weekly homework diaries. To support home practice, patients received CD's with guided meditations and exercises. Group size varied between 8-14 participants. After completing MBCT, participants were invited to attend monthly one hour booster sessions and silent days of consecutive MBCT groups.

Three different MBCT instructors participated in the study: a psychiatrist and cognitive behavioral therapist (AS), a clinical psychologist (NdH), and an occupational therapist (HJ). All had received at least 1,5 years of training in MBCT and were experienced in working with patients with a wide range of psychiatric problems and groups. Trainers were also experienced meditators, with meditation practice ranging between 2 to 20+ years.

Measures

As primary outcome measure, the Hamilton Rating Scale for Depression (HRSD-17) was used. The HRSD is a standardized 17-item interview to measure number and severity of depressive symptoms on a 0 - 52 score range (Bech, Kastrup, & Rafaelson, 1989; Hamilton, 1960). The HRSD has good psychometric properties (Morriss, Leese, Chatwin, & Baldwin, 2008).

In addition, the following questionnaires were administered:

- 1) Beck Depression Inventory (BDI), a 21-item self-report questionnaire to measure depressive symptoms, score range 0 - 63 (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Bouman, Luteijn, Albersnagel, & Van der Ploeg, 1985). The BDI has shown good psychometric properties (Beck, Steer, & Garbin, 1988).
- 2) Rumination on Sadness Scale (Dutch translation) (RSS-NL), a 13-item, 5-point scale, self report questionnaire designed to measure ruminative thought, (imagining) when one feels 'sad, down or depressed' (Raes, Hermans, & Eelen, 2003).
- 3) Penn State Worry Questionnaire (PSWQ), a 16-item, 5-point scale, self report questionnaire, designed to measure the concept of worry (Meyer, Miller, Metzger, & Borkovec, 1990; Van Rijsoort, Emmelkamp, & Vervaeke, 1999)
- 4) Kentucky Inventory of Mindfulness (KIMS) is a 39-item, 5-point scale self report questionnaire, developed to measure the level of proficiency in different mindfulness skills (Baer, Smith, & Allen, 2004; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). It covers four domains: Observe, Describe, Act with Awareness, and Accept without Judgment. Recently, it has been shown that the KIMS has good psychometric properties for clinical samples (Baum et al., 2010).
- 5) the World Health Organization Quality of Life, self-report questionnaire (WHOQOL-BREF), constructed to measure subjective experienced quality of life (De Vries & Van Heck, 1996). This version is a 26-item, 5-point scale covering 4 domains: Physical, Psychological, Social, and Environment. Only the first three domains are presented.

Statistical Analysis

All analyses were carried out using the intention to treat sample. As less than 3% of the data was missing, reported results are based on complete data. Sensitivity analysis based on worse case imputation revealed no difference in direction nor significance for all outcomes.

Post measurement scores were compared between the two groups, controlling for baseline depression levels. Additional analyses were performed within subgroups with and without a current depressive episode. To account for possible differences between therapy groups, we added a random group effect. All analyses were performed using

linear mixed models including an exploratory moderation analyses. A Cohen's d effect size was calculated based on the complete group ($n = 205$) baseline standard deviation to avoid a contamination of SD due to therapy effects.

Additional information about reliable change for the HRSD scores is provided, calculated and visually presented based on the work of Jacobson and Truax (Jacobson & Truax, 1991), using test - retest reliability to correct for measurement errors of the HRSD, again using the complete group baseline SD.

For the mediation analysis we followed the recommendations of Preachers and Hayes for multiple mediation models (Preacher & Hayes, 2008). In all mediation analyses, HRSD post-measurement scores were controlled for baseline depression by using pre-measurement HRSD scores as a covariate. Residual change scores for all potential mediators were calculated (MacKinnon, 2008). To explore whether the mediators (partly) effected the relation of condition on post treatment depression levels, the model including the potential mediators was compared with the model without mediators for both univariate and multivariate models. An advantage of a multivariate model over several univariate models is the possibility to determine the relative contribution of each indirect effect in relation with the other mediators (Preacher & Hayes, 2008). Subsequently, 95% bias corrected and accelerated confidence intervals ($CI_{95\%}$) were calculated to explore the contribution of each individual mediator and the group of mediators in total. SPSS macro command sets for indirect mediation were downloaded from <http://www.comm.ohio-state.edu/ahayes>. SPSS package 17.0 and R 2.9.1 (R Development Core Team, 2009) were used for analyses and graphs.

Results

Study Population

Of the 258 patients interviewed, 33 patients were excluded and 6 participants refused to participate. Reasons for exclusion were: 1) not having three or more previous depressive episodes ($n = 19$); 2) change in medication within 6 weeks before the start of the study ($n = 4$); 3) previous (hypo)manic episodes ($n = 2$); 4) current substance abuse ($n = 3$); 5) acute need of psychiatric treatment ($n = 2$); 6) problems to participate in a group therapy ($n = 2$); and 7) cognitive impairments ($n = 1$).

A total number of 219 patients were included and eventually 205 patients analyzed (MBCT $n=102$; TAU $n=103$), see figure 1 for a detailed description of the patient flow. Within each condition, the groups were divided into subgroups with and without a major depressive episode based on the MINI interview. As a result of incomplete or missing MINI interviews, for 20 patients the diagnosis of current depression was based on the available clinical information. For 4 patients it was impossible to do so and they were

excluded from the study. Another 10 patients were excluded from analysis due to one or more other missing critical values.

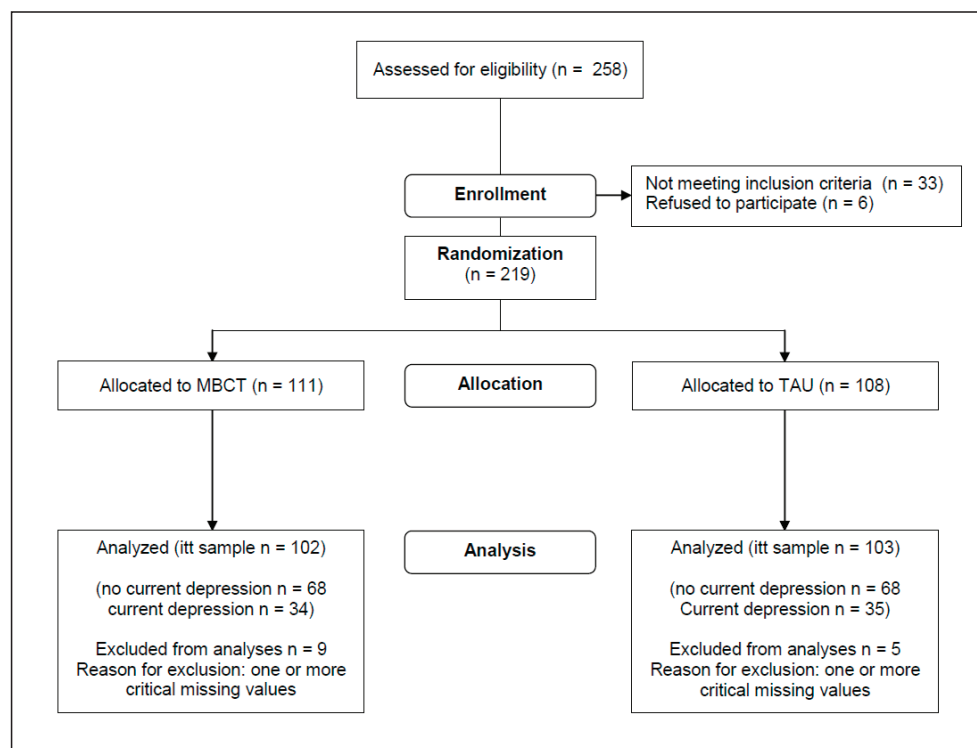


Figure 1. CONSORT flow diagram

There were no baseline differences between the groups with regard to age (MBCT: mean = 47.3 (SD = 11.5) years; TAU: mean = 47.7 years (SD = 11.1), or other socio-demographic or clinical characteristics (see Table 1).

The mean number of depressive episodes for the complete sample was 7.4 (SD = 7.0, modal number of episodes = 3) with no differences between the MBCT and TAU conditions, $t(195) = -0.61$, $p = 0.54$. Mean age at onset of the first depressive episode was 23.8 years (SD = 11.2, modal age of onset = 20 years), with a slightly higher age of onset in the MBCT than in the TAU condition (MBCT, $t(195) = -1.98$, $p < 0.05$).

When taking the three most severe depressive episodes into account, the mean time between the last episode and the start of the study for the non-depressed patients was 28 months (SD = 48.0, median = 8 months).

During MBCT, 9 patients (8.8%) dropped out (<4 sessions MBCT), for the following reasons: training elsewhere, terminal disease, care for disease mother, increasing tension (3), social phobia and for practical reasons (2).

A subsample of the MBCT group ($n = 94$) was asked to fill out homework diaries during the training, of whom 77 (82%) patients handed them in. The average number of days patients practiced was 30 (SD = 10.2; range 0 – 42 days). A modest correlation was found between formal practice (e.g. sitting meditation) and change of depression level during MBCT, $r = 0.26$, $p < 0.05$.

The period between baseline and end of treatment/waitlist assessment was significantly longer in the TAU mean = 83 days (SD = 33.9) than in the MBCT condition, mean = 59 days (SD = 12.9); $t(175) = 6.4$, $p < 0.01$.

Efficacy of MBCT

Depressive symptoms

At the end of treatment/waiting period, patients in the MBCT condition had significantly less depressive symptoms than those in the TAU condition according to both HRSD $F(1, 202) = 15.9$, $p < 0.001$, and BDI, $F(1, 44.8) = 20.9$, $p < 0.001$ (see Table 2). Controlling for baseline scores did not result in a change of differences between the intervention and control groups. Adding a random effect for the different therapy groups did not result in changes of outcome for any of the models either.

Exploratory moderation analyses were carried out for the complete sample with a selection of baseline variables: number of depressions, age of onset of the first depression and all baseline variables listed in table 1 except quality of life. Only previous meditation experience in the last six months prior to the study significantly moderated post measurement levels of depression $F(1, 192.0) = 6.92$, $p < 0.01$. Within the MBCT condition, patients without meditation experience showed lower end of treatment levels of depression compared to patients with recent meditation experience, $F(1, 96) = 4.29$, $p < 0.05$.

Rumination, worry and mindfulness skills

End of treatment/waiting period levels of rumination and worry were significantly lower in the MBCT condition than in the TAU condition, $F(1, 44.3) = 13.4$, $p < 0.01$ and $F(1, 83.2) = 17.5$, $p < 0.001$, respectively. Both showed a moderate effect size (see table 2a). Moreover, all mindfulness skills showed significant increased levels: Observe $F(1, 49.8) = 27.7$, $p < 0.001$; Act with Awareness $F(1, 47.4) = 39.5$, $p < 0.001$; Describe $F(1, 49.0) = 6.6$, $p < 0.05$ and Accept without Judgment $F(1, 192.0) = 22.9$, $p < 0.001$. Except for Describe, all domains showed moderate to large effect sizes (see Table 2).

Of the Quality of Life scores, only the psychological domain showed a significant increase in the MBCT condition compared to the TAU condition: $F(1, 153) = 9.2$, $p < 0.01$.

Table 1. Baseline Characteristics of Mindfulness-Based Cognitive Therapy (MBCT) and treatment as usual condition (TAU) for the total group of participants, and the two subgroups without and with a current depressive episode.

	Total group			No current depression			Currently depressed		
	MBCT (n = 102)	TAU (n = 103)	p-value ^b	MBCT (n = 68)	TAU (n = 68)	p-value ^b	MBCT (n = 34)	TAU (n = 35)	p-value ^b
Baseline characteristics; n (%)									
Female	71 (70)	74 (72)	0.73	48 (71)	52 (77)	0.56	23 (68)	22 (63)	0.68
Married/Cohabiting	66 (64)	66 (64)	0.57	19 (59)	44 (68)	0.61	22 (65)	22 (71)	0.67
Care for Children	43 (42)	36 (35)	0.40	28 (43)	23 (35)	0.37	13 (42)	15 (44)	0.86
Employed	52 (51)	51 (50)	0.66	34 (52)	41 (64)	0.37	18 (53)	10 (32)	0.29
Tertiary Education	67 (66)	55 (53)	0.44	45 (68)	39 (60)	0.79	22 (34)	16 (52)	0.37
Antidepressant medication	53 (52)	48 (47)	0.62	35 (57)	32 (53)	0.59	18 (58)	16 (57)	0.94
Previous Cognitive Behav. Therapy	61 (60)	58 (56)	0.56	45 (71)	40 (65)	0.41	18 (67)	16 (64)	0.84
Recent meditation experience ^a	49 (48)	48 (47)	0.94	33 (50)	30 (46)	0.66	16 (49)	18 (55)	0.62
Symptoms at baseline; mean (s.d.)			p-value^b			p-value^b			p-value^b
Depression (HRSD)	9.5 (6.2)	9.2 (5.6)	0.79	8.0 (5.7)	7.8 (6.3)	0.81	12.4 (6.3)	12.1 (6.4)	0.83
Depression (BDI)	14.9 (9.2)	16.2 (9.4)	0.30	11.9 (7.3)	13.8 (7.6)	0.15	20.7 (9.8)	21.3 (10.8)	0.81
Rumination (RSS)	28.0 (9.5)	28.4 (9.6)	0.74	27.2 (9.9)	28.3 (9.5)	0.52	29.4 (8.7)	28.7 (10.0)	0.76
Worry (PSWQ)	42.6 (12.3)	43.7 (11.5)	0.50	39.6 (12.7)	43.0 (11.9)	0.10	48.6 (9.1)	45.2 (12.4)	0.21
Mindfulness Skills (KIMS)									
Observe	19.0 (7.5)	18.7 (7.4)	0.76	19.3 (7.2)	18.0 (6.9)	0.31	18.6 (8.0)	20.1 (8.2)	0.44
Describe	18.4 (8.2)	18.3 (7.8)	0.91	19.7 (7.3)	18.7 (7.4)	0.45	15.9 (9.5)	8.6 (17.4)	0.50
Act with Awareness	15.9 (6.1)	16.8 (5.6)	0.31	16.7 (5.8)	17.4 (5.6)	0.51	14.4 (6.4)	15.6 (5.7)	0.43
Accept without Judgment	18.4 (6.2)	18.0 (6.4)	0.63	19.2 (6.5)	19.0 (6.3)	0.86	16.8 (5.5)	15.8 (6.0)	0.49
Quality of Life (WHOQOL-Bref) ^d									
Physical	22.0 (5.5)	20.8 (4.9)	0.14	23.7 (5.4)	22.1 (4.5)	0.09	18.8 (4.2)	18.1 (4.6)	0.56
Psychological	18.2 (3.5)	18.2 (3.4)	0.99	18.9 (3.3)	18.0 (3.1)	0.94	16.6 (3.3)	16.5 (3.5)	0.92
Social	9.7 (2.3)	10.3 (2.2)	0.12	9.7 (1.9)	10.4 (2.0)	0.05	9.7 (1.9)	9.8 (2.7)	0.88

^a Meditation and/or body focused experience < 6 months ago; ^b Chi²-tests; ^c Independent Sample t-tests; ^d Measured in a subsample: MBCT n = 89 (non-depressed n = 59, depressed, n = 30); TAU n = 74 (non-depressed n = 51, depressed n = 23).

Table 2. Depressive symptoms, rumination, mindfulness skills and quality of life at post-treatment of Mindfulness-Based Cognitive Therapy (MBCT) and treatment as usual (TAU) condition, controlling for baseline levels of symptoms.

Post measurement results; mean (S.D.) ^a	Total group		Group difference (CI _{95%}) ^b	Cohen's d
	MBCT (n = 102)	TAU (n = 103)		
Depression (HRSD)	7.5 (5.8)	10.5 (6.8)	-3.1 (-4.6 – -1.6) ^d	0.53
Depression (BDI)	10.3 (7.8)	16.2 (9.8)	-4.6 (-6.6 – -2.6) ^d	0.50
Rumination (RSS)	22.0 (8.6)	27.3 (10.6)	-4.8 (-7.4 – -2.2) ^d	0.50
Worry (PSWQ)	36.8 (12.0)	42.5 (10.7)	-5.1 (-7.6 – -2.7) ^d	0.43
Mindfulness Skills (KIMS)				
Observe	22.8 (7.4)	18.2 (7.1)	4.8 (3.0 – 6.7) ^d	0.65
Describe	19.7 (7.6)	17.9 (7.2)	1.6 (0.3 – 2.8) ^d	0.20
Act with Awareness	20.0 (5.6)	16.1 (6.0)	4.3 (3.0 – 5.7) ^d	0.74
Accept without Judgment	22.3 (5.5)	18.6 (6.7)	3.2 (1.9 – 4.5) ^d	0.51
Quality of Life (WHOQOL-Bref) ^d				
Physical	23.6 (5.3)	21.6 (5.1)	1.0 (-0.2 – 2.2)	0.19
Psychological	19.9 (3.4)	18.4 (3.7)	1.2 (0.4 – 2.1) ^d	0.36
Social	10.2 (2.1)	10.0 (2.3)	0.3 (-0.3 – 0.8)	0.13

^a unadjusted condition means and standard deviations (S.D.); ^b differences between conditions, corrected for baseline values; ^c Measured in a subsample: MBCT n = 89 (non-depressed n = 59; depressed, n = 30); TAU n = 74 (non-depressed n = 51; depressed n = 23); ^d statistical significant difference for p < 0.05

Table 3. Depressive symptoms, rumination, mindfulness skills and quality of life at post-treatment of Mindfulness-based cognitive therapy (MBCT) and treatment as usual condition (TAU), controlling for baseline levels of symptoms, for both subgroups without and with a current depressive episode, respectively

Post measurement results; mean (s.d.). ^a	No current depression			Cohen's d	Currently depressed			Cohen's d
	MBCT (n = 68)	TAU (n = 68)	Group difference (CI _{95%}) ^b		MBCT (n = 34)	TAU (n = 35)	Group difference (CI _{95%}) ^b	
Depression (HRSD)	6.2 (4.7)	9.1 (5.6)	-2.9 (-4.6 – -1.3) ^d	0.58	10.2 (6.7)	13.4 (8.1)	-3.3 (-6.6 – -0.1) ^d	0.53
Depression (BDI)	8.6 (6.3)	14.0 (8.0)	-4.2 (-6.2 – -2.2) ^d	0.56	13.7 (9.5)	20.4 (11.7)	-5.3 (-10.0 – -0.6) ^d	0.53
Rumination (RSS)	21.3 (8.6)	26.4 (10.4)	-4.4 (-7.6 – -1.3) ^d	0.46	23.4 (8.6)	29.2 (10.9)	-5.4 (-9.5 – -1.3) ^d	0.59
Worry (PSWQ)	34.6 (11.3)	41.6 (10.2)	-5.4 (-8.2 – -2.5) ^d	0.45	41.1 (12.5)	44.4 (11.5)	-4.8 (-9.8 – 0.1) ^d	0.49
Mindfulness Skills (KIMS)								
Observe	22.8 (7.4)	17.8 (7.1)	4.4 (2.3 – 6.5) ^d	0.62	22.9 (7.5)	19.0 (7.1)	5.2 (1.7 – 8.6) ^d	0.64
Describe	20.4 (7.1)	18.2 (7.0)	1.4 (0.0 – 2.7)	0.19	18.3 (8.5)	17.5 (7.7)	1.8 (-0.5 – 4.2)	0.20
Act with Awareness	20.7 (5.4)	16.7 (5.6)	4.3 (2.6 – 6.1) ^d	0.77	18.7 (6.0)	15.0 (6.8)	4.5 (1.9 – 7.2) ^d	0.74
Accept without Judgment	23.2 (5.4)	16.7 (5.6)	3.5 (1.9 – 5.1) ^d	0.52	20.4 (4.8)	16.9 (7.1)	2.8 (0.4 – 5.2) ^d	0.49
Quality of Life (WHOQOL-Bref) ^c								
Physical	25.0 (4.8)	22.5 (4.7)	1.2 (-0.3 – 2.7)	0.23	20.6 (5.3)	19.7 (5.3)	1.0 (-1.4 – 3.4)	0.22
Psychological	20.2 (3.3)	18.9 (3.3)	1.1 (0.1 – 2.1) ^d	0.33	19.2 (3.5)	17.3 (4.2)	1.5 (0.1 – 3.0) ^d	0.46
Social	10.2 (2.2)	10.3 (2.1)	0.2 (-0.5 – 0.9)	0.01	10.1 (2.0)	9.5 (2.6)	0.5 (-0.5 – 1.4)	0.17

^a unadjusted condition means and standard deviations (s.d.); ^b differences between conditions, corrected for baseline values; ^c Measured in a subsample: MBCT n = 89 (non-depressed n = 59; depressed, n = 30); TAU n = 74 (non-depressed n = 51; depressed n = 23) ^d statistical significant difference (p < 0.05)

^a unadjusted condition means and standard deviations (s.d.); ^b differences between conditions, corrected for baseline values; ^c Measured in a subsample: MBCT n = 89 (non-depressed n = 59; depressed, n = 30); TAU n = 74 (non-depressed n = 51; depressed n = 23) ^d statistical significant difference (p < 0.05)

Rumination and the mindfulness subscale 'Describe' did not differ significantly within the group without a current depressive episode in contrast with the group having a current episode. Also, psychological improvement of quality of life was only significantly different in the depressed group. Cohen's d effect sizes were comparable to the complete sample effect sizes. The depression related variables rumination and worry showed even higher effect sizes in the subgroup analyses, possibly due to smaller standard deviations. To further investigate whether depressive symptoms at baseline influenced the efficacy of MBCT, we performed an interaction analysis adding an interaction term between baseline depression levels (HRSD) and condition. We found no significant interaction for any of the outcome variables, indicating that the efficacy of MBCT is independent of baseline level of depression. Using split-file analyses for patients with and without a current depressive episode, no significant interactions were found between baseline depression levels (HRSD) and any of the outcome measures either. The result for the interaction analysis between baseline depression levels and end of treatment levels of depression (HRSD) is graphically presented in figure 2, showing baseline and end of treatment levels of depression in both conditions. From this figure it becomes apparent that the reduction of depressive symptoms as a result of MBCT is independent from the baseline level of depression.

Clinically significant change

Clinically significant change of the HRSD scores, the primary outcome measure, is presented in table 3, using both the Jacobson-Truax reliable change index and the absolute cut-off level of HRSD 10 as criteria (Jacobson & Truax, 1991), also illustrated in figure 3. If improvement is defined by a HRSD < 10 and having a reliable positive change in depression scores, table 4 illustrates that in the MBCT condition patients more frequently improved than in the TAU condition (15 v. 8). It also demonstrates that more patients in the TAU condition deteriorate than in the MBCT condition (5 v. 18). Overall, the MBCT condition significantly differs from the TAU condition in terms of individual change scores, $\chi^2(3) = 9.69, p < 0.05$.

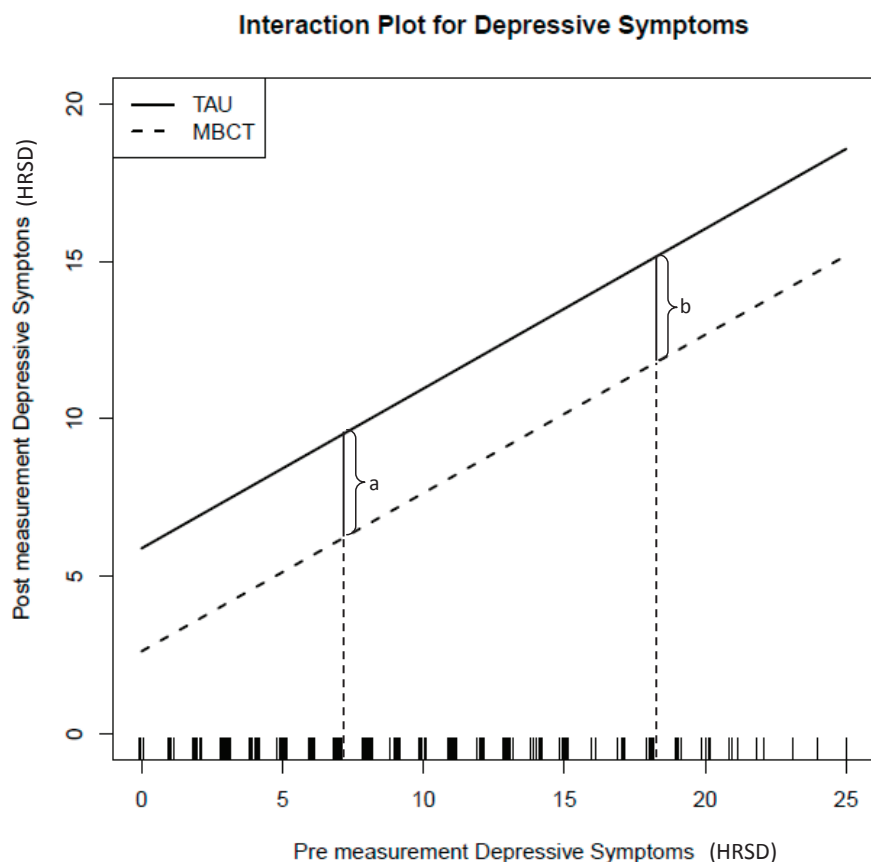


Figure 2. Interaction plot for pre- and post measurement depression levels (HRSD-scores) of Mindfulness-based cognitive therapy (MBCT) and treatment as usual (TAU) condition. The short vertical lines depicted on the x-axis represent the distribution of pre-measurement depression scores (HRSD; range 0-25). Note that independent of the pre-measurement level of depression, the post-measurement depression score difference between the MBCT and TAU condition is constant (for example 'a' = 'b').

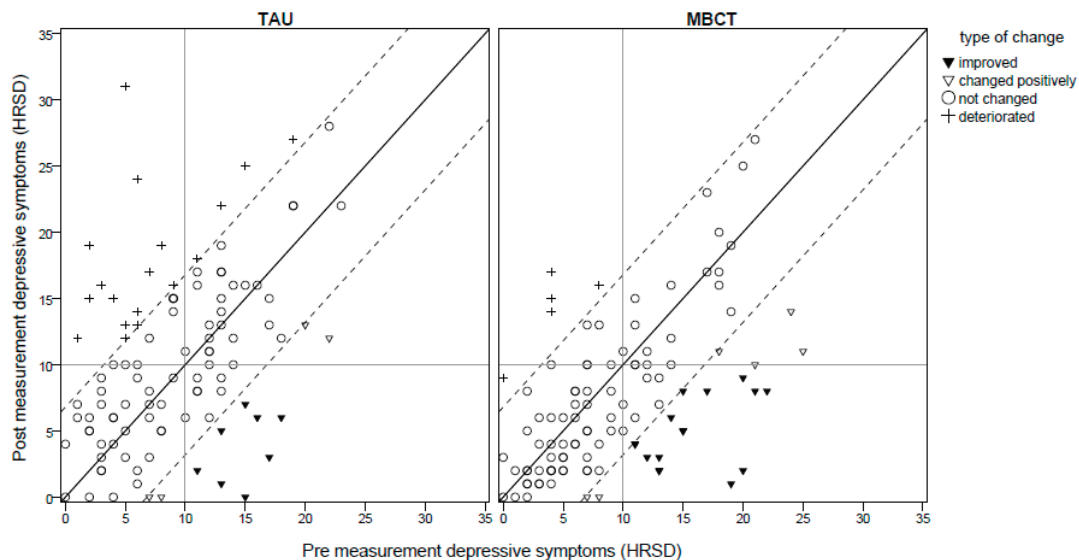


Figure 3. Change in depression scores between pre- and post measurement based on HRSD scores for TAU and MBCT condition. The diagonal line represent ‘no pre-post measurement HRSD change’ and the dashed upper and lower lines represent the bounds of the 95% CI of the Jacobson-Truax Reliable Change Index. The horizontal and vertical grey lines represent the HRSD cut-off score of 10. Improvement is defined as a pre-HRSD score above 10 and a post-HRSD score below 10 combined with meeting the criterion for reliable change. See Table 4 for accompanying numbers and percentages. Figure inspired on Evans et al., (1998).

Table 4. Numbers and percentages of depression change based on the Jacobson-Truax Reliable Change Index, calculated for HRSD scores, pre- and post measurement of the MBCT and TAU condition, stratified for amount of depressive symptoms, also displayed in figure 3.

Depression diagnosis at baseline	Past cut-off RCI criterion	Improved (▼)	Changed (▽)	Not Changed (○)	Deteriorated (+)
		+ +	+ -	- -	+ +
No current depression, <i>n</i> (%)	MBCT (<i>n</i> = 68)	10 (14.7)	3 (4.4)	52 (76.5)	3 (4.4)
	TAU (<i>n</i> = 68)	4 (5.9)	2 (2.9)	50 (73.5)	12 (17.6)
Current depression, <i>n</i> (%)	MBCT (<i>n</i> = 34)	5 (14.7)	2 (5.9)	25 (73.5)	2 (5.9)
	TAU (<i>n</i> = 35)	4 (11.4)	2 (5.7)	23 (65.7)	6 (17.1)
Total, <i>n</i> (%)	MBCT (<i>n</i> = 102)	15 (14.7)	5 (4.9)	77 (75.5)	5 (4.9)
	TAU (<i>n</i> = 103)	8 (7.8)	4 (3.9)	73 (70.9)	18 (17.5)

Mediation analysis

Rumination, worry, and the four separate mindfulness skills were expected to be mediators between the MBCT training and post-measurement levels of depression (HRSD). Predicted mediators were first analyzed using a univariate model, and if shown to be a contributing factor entered into a multivariate model.

The main analyses revealed that all the suggested mediators were related to condition (MBCT versus TAU). However, post-measurement depression level was only related to rumination, $Beta = 1.46$, $t(192) = 3.64$, $p < 0.001$, worry, $Beta = 1.68$, $t(196) = 4.31$, $p < 0.001$ and the mindfulness skill 'accept without judgment', $Beta = -1.18$, $t(194) = -2.85$, $p < 0.01$. The relation between condition and post-measurement levels of depressions, without a mediator yielded a $Beta$ of -2.81 , $t(192) = -3.58$, $p < 0.001$. Adding the mediators in three separate analyses showed a partial mediation effect for all, meaning smaller $Beta$'s and still significant but larger p -values compared to the model without the mediator: rumination, $Beta = -2.00$, $t(192) = -2.53$, $p < 0.05$, Worry, $Beta = -2.00$, $t(196) = -2.60$, $p < 0.01$ and the mindfulness skill 'accept without judgment', $Beta = -2.20$, $t(194) = -2.68$, $p < 0.01$.

Bootstrapping the indirect effect of condition on post-treatment level of depression with 5000 samples showed significant indirect effects for the mediators in the three univariate models: rumination (point estimate = -0.85 ; $CI_{95\%} = -1.66 - -0.36$), worry (point estimate = -0.94 ; $CI_{95\%} = -1.68 - -0.41$) and 'accept without judgment' (point estimate = -0.74 ; $CI_{95\%} = -1.48 - -0.20$).

With the multivariate model, after including rumination, worry and mindfulness skill 'accept without judgment', the relationship between condition and post-measurement level of depression was no longer significant, $Beta = -1.41$, $t(190) = -1.76$, $p = 0.08$. Bootstrapping showed that the total indirect effect of all mediators together was significant (point estimate = -1.40 ; $CI_{95\%} = -2.30 - -0.69$). Rumination (point estimate = -0.54 ; $CI_{95\%} = -1.30 - -0.06$) and worry (point estimate = -0.77 ; $CI_{95\%} = -1.42 - -0.27$) made independent and significant contributions to the mediation relationship between condition and post-measurement levels of depression. Mindfulness skill 'accept without judgment' did not make such an individual contribution (point estimate = -0.09 ; $CI_{95\%} = -0.69 - 0.49$). The indirect effect of 'accept without judgment' did not significantly differ from the indirect effects of worry and rumination, respectively. Exploring relationships between the different mediators showed that both rumination ($r = -0.56$, $p < 0.001$) and worry ($r = -0.47$, $p < 0.001$) were negatively correlated with 'accept without judgment'. The same analyses for the subgroups with and without a current depressive episode showed comparable direction of the outcomes, but mostly non-significant results due to small sample sizes.

Discussion

This study shows that for patients with three or more previous depressive episodes, MBCT results in a decrease of depressive symptoms, worry and rumination and improvement in mindfulness skills. Most importantly, we found no differences between patients with and without a current depressive episode in terms of reduction of depressive symptoms. The amount of formal practice seems to have some relation with decrease in depressive symptoms. The results suggest that post-measurement levels of depressive symptoms were mediated by a decrease in worry and rumination.

This study presents the first large-scale randomized controlled study showing MBCT to be efficacious in reducing depressive symptoms for patients with recurrent depression suffering from a current depressive episode. These results are in line with previous studies including one RCT (Barnhofer *et al.*, 2009 ($n = 28$)), one controlled but not randomized study (Kingston *et al.*, 2007 ($n = 19$)), and three uncontrolled studies with a range of 13 – 79 participants (Eisendrath *et al.*, 2008; Finucane & Mercer, 2006; Kenny & Williams, 2007). These studies showed that patients with current depressive symptoms might also benefit from MBCT. Note that the effect sizes found in our study were smaller than in the study by for example (Barnhofer *et al.*, 2009). One explanation for the reduced effect sizes study might be the inclusion of patients with recent meditation experience since this showed to be a moderating variable.

The fact that recent meditation experience showed to moderate the level of depressive symptoms supports the idea that the meditation component plays a key-role in the effects of MBCT but this has yet to be proven (Williams *et al.*, 2010).

Additional analyses and figures, especially figure 3, illustrates that not only more patients improved, but also fewer patients deteriorated in the MBCT condition compared to TAU alone. This is congruent with the prophylactic results of MBCT for depression shown in previous studies (e.g. Kuyken *et al.*, 2008; Ma & Teasdale, 2004).

Our finding that patients without a current depressive episode also showed reduced levels of depressive symptoms is encouraging considering the clinical relevance of residual symptoms in the prediction of relapse and recurrence of depression. Kennedy *et al.* (2004) showed that sub-syndrome levels of depression are common and persistent after severe episodes of depression. Residual depressive symptoms have been repeatedly shown as a predictor of depressive relapse (e.g. Hardeveld *et al.*, 2010; Paykel *et al.*, 1995; Rush *et al.*, 2006). This may contribute to the efficacy of MBCT preventing relapse. The exploratory mediation analysis lends valuable insights towards a better understanding of the working mechanism of MBCT. Congruent with our hypotheses, it seems that the efficacy of MBCT compared with TAU in reducing post-measurement levels of depression is mediated by a decrease in worry, rumination and an increase in the mindfulness skill ‘accept without judgment’. Our results are in line with the findings of Kuyken and colleagues (2010), who showed that one year follow-up levels of depression were mediated by mindfulness skills and self-compassion. Additionally, the

relation between cognitive reactivity and levels of depression was moderated by change in self-compassion during MBCT, suggesting that mindfulness training changes the way one relates towards vulnerability for depression. In addition, we found a negative relation between rumination and mindfulness skill acceptance what might implicate that acceptance decreases the space for ruminative thoughts as suggested by the designers of MBCT (Teasdale *et al.*, 1995). Based on our results, further questions can be generated, such as the relation in time between mindfulness skill 'accept without judgment', worry and rumination. However, these results must be interpreted with care. As a result of the cross-sectional nature of the findings, no firm conclusions can be made in terms of causality (Kazdin, 2007; Kraemer, Wilson, Fairburn, & Agras, 2002). For that purpose, future studies should use designs with repeated assessments, for example a midpoint assessment at session 4.

Although this study provides several important findings, there are a number of limitations to be considered. The design of this study was a pragmatic, randomized controlled trial. There might be a negative effect as a result of randomization in the TAU condition instead of MBCT resulting in higher post measurement symptom levels in the TAU condition. Based on the results of this trial, we do not know how MBCT compares with alternative active treatment conditions for recurrent depression, such as cognitive behavioral therapy to prevent relapse (Bockting *et al.*, 2005). Also, the influence of peer support cannot be ruled out since the TAU condition was not group-based. Furthermore, the results are limited to direct post-measurement results whilst it is also important to investigate whether currently depressed patients also benefit in the long term. As most of the patients were self-referred, the results of the study may have been influenced by selection bias. Participants of this study might have been better informed and more motivated compared to other patients receiving general mental health care. On the other hand, inclusion was not restricted to patients without antidepressant medication, previous CBT, and/or meditation experience. In this regard, our study population was more representative of routine clinical practice than some of the previous studies (Teasdale *et al.*, 2000; Ma & Teasdale, 2004).

Conclusions

The greatest merit of this study, is that it shows that MBCT is also efficacious in recurrent depressive patients with a current depressive episode. The study also gives some directions toward a better understanding of the mechanisms of action of MBCT. However, the exploratory nature of this justifies further investigation.

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CHAPTER

3

Long-term outcome of mindfulness-based
cognitive therapy in recurrently depressed
patients with and without
a depressive episode at baseline

Van Aalderen, J.R., Donders, A.R.T., Peffer, K., & Speckens, A.E.M. (2015).
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Abstract

Background: In a previous randomised controlled trial in patients with three or more previous depressive episodes, mindfulness-based cognitive therapy (MBCT) appeared to be equally effective in those who were depressed and those who were in remission at the start of the trial (Van Aalderen et al., 2012).

Aim: The aim of this study is to compare the 1-year outcome of MBCT in 124 remitted and 58 depressed patients who participated in the original trial and who were all offered MBCT either immediately or after a waiting period of three months.

Methods: The course of depressive symptoms, rumination, mindfulness skills and quality of life over the course of treatment and the 1-year follow-up period was analysed. Linear mixed modelling was used to compare the outcome between remitted and depressed patients at baseline.

Results: In the whole sample, levels of depression and rumination decreased and mindfulness and quality of life increased over treatment. Levels of depressive symptoms, mindfulness and quality of life remained stable over the 1-year follow-up period. Rumination further decreased. Remitted and depressed patients at the start of the trial did not differ in terms of outcome during or after treatment.

Conclusions: Long-term outcome after MBCT in depressed patients was comparable to those who were in remission at the start of the trial. These findings lend further support to the notion that recurrent depressed patients meeting the criteria of a depressive episode do not need to be excluded from MBCT.

Introduction

Major depressive disorder (MDD) is an important mental health problem with high personal and societal costs. The estimated life-time prevalence of MDD is 16.6% (Bijl et al., 1998; Kessler et al., 2003). The risk of recurrence is high, with figures ranging from 35% in depressed patients from the general population to 85% in depressed patients from clinical samples (Hardeveld et al., 2010). Important predictors of relapse and recurrence are number of previous episodes and residual depressive symptoms (Hardeveld et al., 2010). Several studies have shown that the risk of recurrence increases with each subsequent episode (Solomon et al., 2000), a phenomenon that has become known as the “kindling effect” (Judd et al., 2000; Mueller et al., 1999; Post, 1992).

Mindfulness-based cognitive therapy (MBCT) is an innovative psychological intervention aimed at preventing relapse or recurrence in patient with recurrent depression (Segal et al., 2002). Mindfulness is defined as: ‘the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment’ (Kabat-Zinn, 2003). MBCT is an 8-weeks group intervention, including both ‘formal’ and ‘informal’ meditation exercises, dialogue and cognitive behavioural techniques. A recent meta-analysis of six randomised controlled trials (Piet & Hougaard, 2011) showed that patients with three or more previous depressive episodes who had participated in MBCT had a 43% lower chance of relapse or recurrence than those receiving treatment as usual or placebo. MBCT appeared to be as effective as antidepressant medication in reducing the risk of relapse or recurrence. However, in a subsequent trial MBCT did not appear to be superior to clinical management except in particularly vulnerable subgroups such as patients in unstable remission (Segal et al., 2010) or with a history of childhood trauma (Williams et al., 2014).

All of the studies mentioned above were conducted in patients with recurrent depression who are in remission. In addition, reduced depression and anxiety symptoms were found in a recent randomized controlled trial including patients meeting the criteria of a mild to moderate depressive episode (Pots et al., 2014). These findings are in line with a recent meta-analysis showing that recurrent depressive patients with a depressive episode benefit of mindfulness-based interventions in terms of reduced depressive symptoms (Strauss et al., 2014). Most of the studies, however, were relatively small and most did not include a long-term follow-up.

Our trial of 205 patients with recurrent depression is the largest trial so far comparing the efficacy of MBCT between remitted patients and those who are currently depressed (Van Aalderen et al., 2012). Both groups were randomised to either MBCT or treatment as usual (TAU) for a period of three months. After three months, most of those allocated to the TAU condition were offered MBCT as well. The aims of this study are to: 1) investigate the treatment effect in terms of depressive symptoms, rumination, mindfulness skills and quality of life and its consolidation over the 1-year follow-up period in all recurrently

depressed patients who participated in MBCT; and 2) to compare the treatment effect and its consolidation between patients who had been remitted or depressed at baseline.

Methods

Study population

The inclusion criteria of the original trial were three or more previous depressive episodes according to DSM-IV criteria (Van Aalderen et al., 2012). Exclusion criteria for the study were: 1) one or more previous (hypo)manic episodes according to DSM-IV criteria; 2) current alcohol and/or drugs abuse; 3) suicidality or psychotic symptoms; 4) inability to participate in groups; 5) inability to complete questionnaires (due to, for example, cognitive impairments). Patients using antidepressant medication (ADM) were required to be on a stable dose for at least 6 weeks and requested to maintain on this for the duration of the follow-up period. The study was approved by the Medical Ethical Committee of local hospitals in Nijmegen, the Netherlands. All participants provided written informed consent.

Of the original study population of the trial, 190 patients were offered MBCT either as part of the intervention condition ($n = 101$) and or after completing the TAU condition of three months duration ($n = 81$). Of the 182 who accepted treatment and were included in the current study, 124 had been remitted and 58 were depressed at the start of the trial.

As in patients allocated to the TAU condition, the standardized psychiatric interview was not repeated at the end of this three months period, we do not know whether any change of depression status took place in the mean time. However, there did not appear to be any differences between the levels of depressive symptoms, rumination, mindfulness skills and quality of life between the start of the trial and the start of the MBCT course for this subgroup. Neither were there any significant differences between pre-MBCT levels of depressive symptoms, rumination, mindfulness skills and quality of life between the patients receiving MBCT as part of the intervention condition and those starting with MBCT after having completed the TAU period.

Procedure

The MBCT training consisted of 8 weekly sessions of 2.5 hours and a silent day according to the protocol described by Segal, Williams and Teasdale (Segal et al., 2002). The MBCT teachers were a psychiatrist and cognitive behavioral therapist (AS), a clinical psychologist and an occupational therapist. All teachers had received at least 1.5 years of training in MBCT and had a longstanding experience of working with patients with psychiatric problems and working with groups. They were also experienced meditators, with the duration of personal practice ranging between 2 to 20+ years.

Assessments took place before and immediately after completing MBCT. Subsequent follow-up assessments took place by postal questionnaires at 3, 6, 9 and 12 months post completion of the MBCT course. Depressive symptoms, rumination and mindfulness skills were assessed in the whole study population ($n = 182$), quality of life was introduced later and hence only administered to part of the sample ($n = 157$).

Outcome measures

Beck Depression Inventory (BDI). The BDI is a 21-item self-report questionnaire to assess depressive symptoms with a score ranging from 0 - 63 (Beck et al., 1961; Bouman et al., 1985). The BDI has shown good psychometric properties (Beck et al., 1988).

Rumination on Sadness Scale (RSS-NL). The RSS is a 13-item, 5-point scale self-report questionnaire designed to measure ruminative thoughts when one feels sad, down or depressed (Conway, Csank, Holm, & Blake, 2000; Raes et al., 2003).

Kentucky Inventory of Mindfulness (KIMS). The KIMS is a 39-item, 5-point scale self report questionnaire, developed to assess mindfulness skills (Baer et al., 2004; Baer et al., 2006). It covers four domains: Observe, Describe, Act with awareness, and Accept without judgment. The KIMS has been demonstrated to have good psychometric properties for clinical samples (Baum et al., 2010).

The World Health Organization Quality of Life, self-report questionnaire short version (WHOQOL-BREF) was constructed to assess subjectively experienced quality of life (De Vries & Van Heck, 1996). This version is a 26-item, 5-point scale questionnaire covering 4 domains: physical (e.g. work capacity, mobility), psychological (e.g. negative/positive feelings, self-esteem), social (e.g. personal relationships) and environment. Only the first three domains are reported. The WHOQOL-BREF has been shown to have good psychometric properties (Skevington, Lotfy, O'Connell, & Group, 2004).

Statistical analysis

Across all follow-up assessments, the mean proportion of missing data on our primary outcome measure, depressive symptoms, was 7%. For 31 patients one follow-up assessment was missing, for 26 patients two, for 6 patients three and for 8 patients four. Patients with missing data did not differ on any of the baseline characteristics and reported no significant different baseline levels of depressive symptoms, mindfulness skills and quality of life compared to those without missing data, using Chi-square tests and independent sample t-tests.

The effect of the MBCT was assessed with linear mixed models with depressive symptoms, rumination, mindfulness and quality of life as dependent variables and time between pre- and post-MBCT (at 3 months) and time between follow-up assessments at 6, 9, 12 and 15 months as two separate independent variables. A random intercept and a heterogeneous first-order autoregressive (ARH(1)) covariance structure were used. This covariance structure assumes that follow-up 1 and follow-up 2 are more strongly

correlated than follow-up 1 and follow-up 3, which are more strongly correlated than follow-up 1 and follow-up 4. This structure had the best fit with the data (better than polynomial models).

Analyses were initially conducted for the study population as a whole, subsequently with group (remitted versus depressed) and interaction between group and the two time variables (treatment and follow-up) as additional independent variables.

SPSS package 20.0 was used for analyses and graphs.

Results

Study population

The study population consisted of 182 patients with three or more previous depressive episodes who participated in the MBCT course, 124 of whom were remitted and 58 of whom were depressed at the start of the trial. Of these 182 patients, 170 (93%) attended 4 or more sessions MBCT and the mean number of sessions was 7.0 (SD = 1.7). To investigate if there were any differences due to original allocation (MBCT or TAU), the complete sample analyses were compared with the analyses of the initial TAU subgroup ($n = 81$) resulting in comparable Beta's and levels of significance. In addition, post-TAU levels of symptoms and pre-MBCT levels did not significantly differ. These results suggest that original allocation did not influence the results.

At the start of the trial, depressed and remitted patients did not differ in any of the sociodemographic characteristics. Participants who were depressed when starting treatment have had more previous episodes of depression ($t = 2.10, p < 0.05$) (see Table 1).

Compared to the depressed subgroup, the remitted subgroup had significantly lower baseline levels of depressive symptoms ($B = -4.98$; 95% CI = $-7.27 - -2.69$; $p < 0.001$) and significantly higher levels of mindfulness skills ($B = 7.04$; 95% CI = $1.96 - 12.11$; $p < 0.01$) and quality of life, both physical ($B = 3.00$; 95% CI = $1.59 - 4.41$; $p < 0.001$) and psychological ($B = 1.53$; 95% CI = $0.59 - 2.47$; $p < 0.01$). The remitted and depressed subgroups did not differ in baseline levels of rumination ($B = -1.47$; 95% CI = $-4.00 - -1.05$; $p = 0.25$) and quality of life in terms of social relationships ($B = 0.35$; 95% CI = $-0.24 - 0.93$; $p = 0.24$).

Effect of MBCT in remitted versus depressed patients

In the complete sample, MBCT appeared to be effective in reducing depressive symptoms and rumination (see Table 2a). In addition, it resulted in an improvement of mindfulness skills and quality of life in terms of physical and psychological symptoms and social relationships.

Interaction analyses between subgroup and treatment effect showed no significant differences in treatment effects between remitted and depressed patients at the start of the trial in depressive symptoms ($B = 1.72$; 95% CI = $-0.41 - 3.85$; $p = 0.11$), rumination ($B = .70$; 95% CI = $-2.08 - 3.48$; $p = 0.62$), mindfulness skills ($B = -.21$; 95% CI = $-4.94 - 4.52$; $p = 0.93$) and quality of life physical ($B = -.44$; 95% CI = $-1.89 - 1.01$; $p = 0.55$), psychological ($B = -0.56$; 95% CI = $-1.56 - 0.43$; $p = 0.27$) and social relationships ($B = 0.14$; 95% CI = $-0.50 - 0.79$; $p = 0.66$) (see also figures 1a, 1b and 1c).

In both remitted and depressed patients, MBCT appeared to be effective in reducing depressive symptoms and rumination. In addition, it resulted in an improvement of mindfulness skills and quality of life in terms of physical and psychological symptoms in both groups. Social relationships improved in the remitted, but not in the depressed (see Table 2a).

Table 1. Baseline characteristics of the complete sample and for the remitted and depressed subgroups.

Baseline characteristics	Complete sample (<i>n</i> = 182)	Remitted at baseline (<i>n</i> = 124)	Depressed at baseline (<i>n</i> = 58)	<i>p</i>
Age, mean (SD)	47.6 (11.3)	47.5 (11.3)	47.8 (11.4)	0.89 ^a
Female gender, <i>n</i> (%)	131 (72)	91 (73)	40 (69)	0.54 ^b
Married/cohabiting, <i>n</i> (%)	114 (64)	75 (63)	39 (68)	0.16 ^b
Care for children, <i>n</i> (%)	70 (40)	45 (38)	25 (44)	0.44 ^b
Employed, <i>n</i> (%)	93 (53)	68 (57)	25 (44)	0.67 ^b
Tertiary education, <i>n</i> (%)	111 (63)	76 (63)	35 (61)	0.72 ^b
Age at first onset, mean (SD)	23.8 (11.3)	23.2 (11.1)	25.0 (11.7)	0.35 ^a
Number of previous episodes, mean (SD)	7.4 (7.2)	6.6 (6.2)	9.1 (8.7)	< 0.05 ^a
Current antidepressant medication, <i>n</i> (%)	87 (54)	61 (55)	26 (53)	0.83 ^b
Previous cognitive behavioural therapy, <i>n</i> (%)	107 (66)	77 (67)	30 (64)	0.70 ^b
Recent meditation experience, <i>n</i> (%)	86 (49)	57 (48)	29 (52)	0.60 ^b

^a P-values of independent t-tests comparing remitted with depressed subgroups; ^b p-values of Chi-square tests comparing remitted with depressed subgroups

Table 2a. Depressive symptoms, rumination, mindfulness skills and quality of life at baseline and 3 months (post-MBCT). Results of separate multilevel models for each outcome measure are presented for the complete sample, remitted and depressed subsamples respectively.

Clinical variables, mean (SD)	baseline	3 months	B ^a	p	95% CI ^b
Complete sample	(n = 182)	(n = 178)			
Depression (BDI)	15.4 (9.2)	10.4 (8.2)	-4.64	< 0.001	-5.65 – -3.63
Rumination (RSS)	27.7 (9.7)	22.0 (8.5)	-5.85	< 0.001	-7.15 – -4.55
Mindfulness skills (KIMS)	70.9 (16.5)	84.6 (16.5)	12.83	< 0.001	10.62 – 15.03
Quality of life (WHOQOL-BREF) ^c	(n = 157)	(n = 163)			
Physical	21.9 (5.2)	23.8 (5.4)	1.84	< 0.001	1.17 – 2.52
Psychological	18.2 (3.5)	20.0 (3.4)	1.71	< 0.001	1.25 – 2.17
Social relationships	9.8 (2.3)	10.3 (2.1)	0.41	< 0.01	0.11 – 0.71
Remitted at baseline	(n = 124)	(n = 122)			
Depression (BDI)	13.2 (7.7)	8.6 (6.2)	-4.09	< 0.001	-5.29 – -2.89
Rumination (RSS)	26.9 (9.7)	21.5 (8.2)	-5.62	< 0.001	-7.19 – -4.04
Mindfulness skills (KIMS)	73.1 (15.5)	87.0 (14.2)	12.77	< 0.001	10.09 – 15.44
Quality of life (WHOQOL-BREF) ^c	(n = 109)	(n = 113)			
Physical	23.0 (5.1)	24.9 (4.9)	1.71	< 0.001	0.91 – 2.51
Psychological	18.8 (3.3)	20.5 (3.2)	1.54	< 0.001	0.99 – 2.08
Social relationships	9.9 (2.0)	10.5 (2.1)	0.46	< 0.05	0.10 – 0.81
Depressed at baseline	(n = 58)	(n = 56)			
Depression (BDI)	20.1 (10.4)	14.4 (10.3)	-5.81	< 0.001	-7.57 – -4.05
Rumination (RSS)	29.3 (9.6)	23.1 (9.2)	-6.32	< 0.001	-8.60 – -4.03
Mindfulness skills (KIMS)	65.9 (17.8)	79.4 (19.7)	12.98	< 0.001	9.07 – 16.88
Quality of life (WHOQOL-BREF) ^c	(n = 48)	(n = 50)			
Physical	19.5 (4.8)	21.2 (5.5)	2.15	< 0.01	0.93 – 3.36
Psychological	16.9 (3.6)	19.0 (3.6)	2.10	< 0.001	1.27 – 2.93
Social relationships	9.6 (2.7)	9.8 (2.0)	0.31	0.25	-0.22 – 0.85
^a Beta's expressed in 3 months units, measured over 3 months; ^b 95% Confidence Intervals; ^c Quality of life was administered in a subgroup					

Table 2b. Depressive symptoms, rumination, mindfulness skills and quality of life at 6, 9, 12 and 15 months follow-up and results of multilevel analyses over the course of follow-up. Results of separate multilevel models for each outcome measure are presented for the complete sample, remitted and depressed subsamples respectively.						
Clinical variables, mean (SD)	6 months (n = 160)	9 months (n = 158)	12 months (n = 153)	15 months (n = 146)	B^a	p 95% CI^b
Complete sample						
Depression (BDI)	11.1 (9.2)	11.1 (9.7)	9.6 (8.6)	9.2 (9.2)	-0.19	0.17 -0.46 – 0.08
Rumination (RSS)	20.0 (10.5)	19.6 (10.7)	18.9 (10.0)	18.0 (10.5)	-1.00	<0.001 -1.31 – -0.69
Mindfulness skills (KIMS)	82.9 (18.7)	84.0 (19.9)	85.7 (18.6)	85.5 (18.6)	0.33	0.20 -0.17 – 0.83
Quality of life (WHOQOL-BREF) ^c	(n = 130)	(n = 126)	(n = 100)	(n = 102)		
Physical	24.0 (5.4)	23.6 (6.2)	24.2 (5.5)	24.7 (5.2)	0.16	0.11 -0.04 – 0.37
Psychological	20.0 (3.7)	19.9 (4.0)	20.6 (3.4)	20.5 (3.6)	0.06	0.38 -0.07 – 0.19
Social relationships	10.2 (2.1)	10.6 (2.3)	10.8 (2.0)	10.6 (2.2)	0.07	0.14 -0.02 – 0.16
Remitted at baseline						
Depression (BDI)	9.7 (7.7)	9.7 (8.7)	8.2 (7.6)	8.4 (8.2)	-0.09	0.59 -0.42 – 0.24
Rumination (RSS)	19.7 (10.3)	19.4 (10.6)	18.5 (10.2)	18.5 (10.8)	-0.91	<0.001 -1.29 – -0.54
Mindfulness skills (KIMS)	84.8 (16.4)	86.3 (18.6)	88.0 (18.5)	86.7 (17.9)	0.28	0.37 -0.33 – 0.88
Quality of life (WHOQOL-BREF) ^c	(n = 93)	(n = 86)	(n = 69)	(n = 73)		
Physical	24.5 (4.8)	24.3 (6.0)	24.7 (5.2)	25.3 (5.1)	0.11	0.38 -0.13 – 0.35
Psychological	20.2 (3.4)	20.3 (3.9)	20.9 (3.5)	20.7 (3.7)	0.08	0.35 -0.08 – 0.23
Social relationships	10.2 (2.2)	10.7 (2.3)	10.9 (2.2)	10.6 (2.4)	0.08	0.15 -0.03 – 0.18
Depressed at baseline						
Depression (BDI)	14.1 (11.4)	13.9 (11.2)	12.6 (10.0)	12.2 (10.9)	-0.41	0.10 -0.90 – 0.08
Rumination (RSS)	20.5 (10.9)	20.1 (10.9)	19.7 (9.5)	17.1 (9.7)	-1.19	<0.001 -1.76 – -0.63
Mindfulness skills (KIMS)	78.7 (22.6)	78.9 (21.9)	80.9 (18.2)	82.8 (20.2)	0.44	0.34 -0.47 – 1.34
Quality of life (WHOQOL-BREF) ^c	(n = 37)	(n = 40)	(n = 31)	(n = 29)		
Physical	22.8 (6.4)	22.1 (6.5)	23.1 (5.9)	23.2 (5.3)	0.30	0.11 -0.07 – 0.68
Psychological	19.5 (4.3)	19.1 (4.2)	20.0 (3.2)	19.9 (3.5)	0.03	0.82 -0.22 – 0.27
Social relationships	10.4 (2.1)	10.5 (2.3)	10.6 (1.5)	10.6 (1.8)	0.04	0.60 -0.12 – 0.21
^a Beta's expressed in 3 months units, measured over 12 months; ^b 95% Confidence Intervals; ^c Quality of life was administered in a subgroup						

Consolidation of treatment effect in remitted versus depressed patients

In the study population as a whole, depressive symptoms, mindfulness skills and quality of life remained stable over the course of the 1-year follow-up period. Rumination appeared to further decrease over time (see Table 2b).

Overall, there were no significant differences between the remitted and depressed subgroups in the course of depressive symptoms ($B = 0.32$; 95% CI = $-0.26 - 0.91$; $p = 0.28$), rumination ($B = 0.28$; 95% CI = $-0.40 - 0.96$; $p = 0.42$), mindfulness skills ($B = -0.16$; 95% CI = $-1.24 - 0.93$; $p = 0.78$) and quality of life physical ($B = -0.19$; 95% CI = $-0.64 - 0.25$; $p = 0.39$), psychological ($B = 0.05$; 95% CI = $-0.24 - 0.34$; $p = 0.75$) and social relationships ($B = 0.03$; 95% CI = $-0.16 - 0.23$; $P = 0.74$) (see also figures 1a, 1b and 1c).

Looking at them separately, the subgroup levels of depressive symptoms remained stable over the course of the 1-year follow-up. Rumination significantly decreased over the follow-up period in both the remitted and depressed groups. Mindfulness and quality of life remained stable over the course of the follow-up period in both subgroups (see Table 2b).

Discussion

This study is a 1-year follow-up study of a trial comparing MBCT and TAU in patients with three or more previous depressive episodes who were either remitted or depressed at the start of the trial (Van Aalderen et al., 2012). Patients allocated to the TAU condition were offered MBCT after a period of 3 months. The aim of this study was to examine the treatment effect and its consolidation in the 182 recurrently depressed patients who participated in the MBCT, either as part of the intervention condition or after having completed the TAU period of three months.

MBCT was effective in reducing depressive symptoms and rumination and improving mindfulness and quality of life in both remitted and depressed patients with recurrent depression.

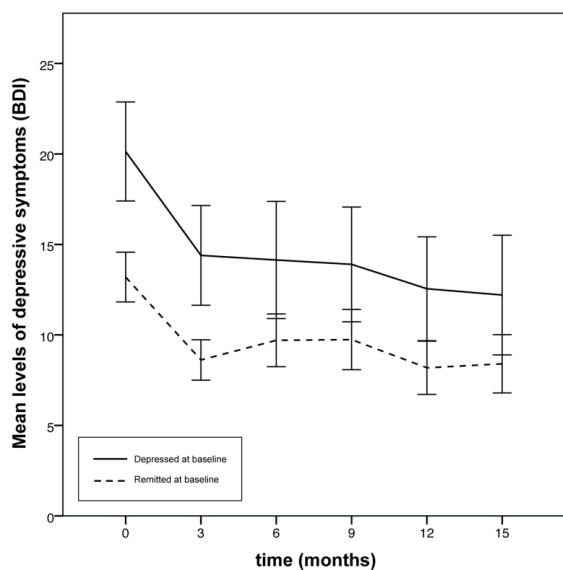


Figure 1a. Mean levels of depressive symptoms (BDI) for baseline remitted and depressed subgroups, measured every 3 months over a 15 months period. The first 3 months represent the MBCT training period.

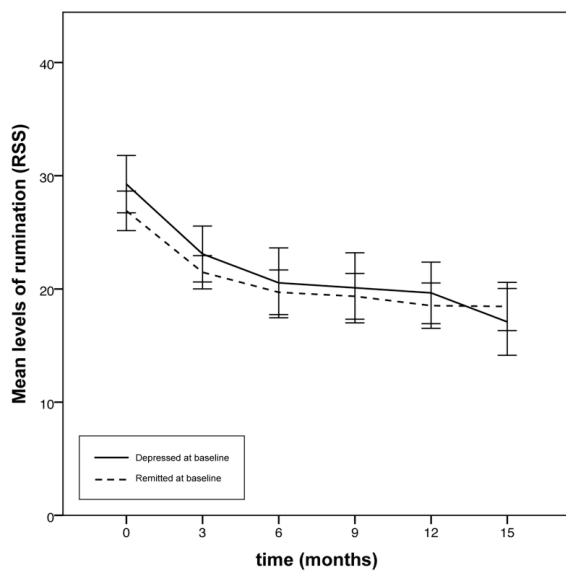


Figure 1b. Mean levels of rumination (RSS) for baseline remitted and depressed subgroups, measured every 3 months over a 15 months period. The first 3 months represent the MBCT training period.

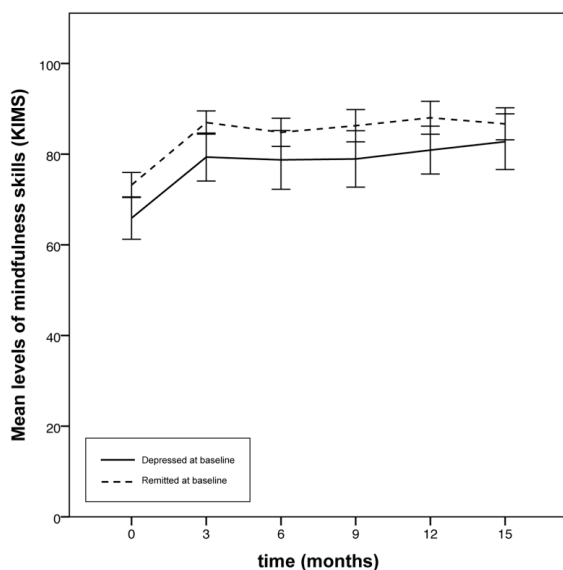


Figure 1c. Mean levels of mindfulness skills (KIMS) for baseline remitted and depressed subgroups, measured every 3 months over a 15 months period. The first 3 months represent the MBCT training period.

Baseline levels of rumination did not differ in both subgroups, suggesting that rumination is a vulnerability factor in recurrent depressive patients independent of their current depressive status. This corresponds to studies on rumination reporting that rumination is relative stable even when levels of depressive symptoms change over time (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008).

With regard to the consolidation of treatment effects over the 1-year follow-up period, there were no differences between the two subgroups either. Depressive symptoms, mindfulness skills and quality of life remained stable over time, rumination further decreased during the 1-year follow-up period. When looking at the consolidation of treatment effect in the remitted and depressed patients separately, symptom levels remained relatively stable in the remitted group but appeared to decrease over the 1-year follow-up period in the depressed group, especially depressive and ruminative symptoms. Although these differences between the subgroups were non-significant, it might be a reflection of a larger room to improve in the depressed subgroup.

The strength of this study is that it is one of the largest studies so far comparing the effect of MBCT in recurrently depressed patients who are either remitted or depressed at baseline. In our previous trial, we have shown that the immediate effect of MBCT is similar in depressed and remitted patients (Van Aalderen et al., 2012). In the current study, we are able to show that these results are maintained over the course of the 1-year

follow-up period. In the depressed subgroup depressive symptoms seem to even further reduce over time. Consequently, there is no need to exclude patients with recurrent depression from MBCT who are experiencing a depressive episode, even though this has been advocated by the original developers of MBCT and been routine clinical practice since.

One of the main limitations of our study is that, as patients in the TAU condition were offered MBCT after three months, this follow-up study is an observational rather than a randomised controlled one. Although the reduction of symptoms is maintained at follow-up in this vulnerable sample, it remains uncertain if this is the effect of participating in MBCT.

As in all follow-up studies, selective drop-out and resulting bias of the results cannot be ruled out. As almost all of the patients who were offered MBCT actually participated, MBCT appeared to be acceptable in this population.

In addition, we did not repeat the standardized psychiatric interview at the end of the TAU period, so we cannot be sure that in that subgroup the depression status at the start of the trial was the same as at the start of the MBCT. However, as there were no differences between symptom levels at the end of TAU and pre-MBCT in the TAU group and between the original intervention and control condition pre-MBCT, it is quite probable it is.

One need also be aware that the levels of depressive symptoms in our sample, even in the patients who met criteria for depressive disorder at the start of the trial are moderate. So it is unknown whether these results are generalizable to patients with more severe depressive disorder. Further randomized controlled trials in patients with current depression are obviously needed to establish the efficacy of MBCT in this population. To improve reliability of future findings, it is important to include more observational measures like interviews, or methods such as experience sampling (Geschwind, Peeters, Drukker, van Os, & Wichers, 2011) in addition to self-report questionnaires.

Conclusions

Long-term outcome after MBCT in depressed patients was comparable to those who were in remission at the start of MBCT. These findings lend further support to the notion that recurrent depressed patients, meeting the criteria of a depressive episode do not need to be excluded from MBCT.

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CHAPTER

4

Prediction of short and long-term outcome of
mindfulness-based cognitive therapy
in patients with recurrent depression

Van Aalderen, J.R., Donders, A.R.T., & Speckens, A.E.M. Prediction of short and long-term outcome of mindfulness-based cognitive therapy in patients with recurrent depression. *(Submitted for publication)*.

Abstract

Background: Mindfulness-based cognitive therapy (MBCT) has been shown efficacious in reducing the risk of depressive relapse and in reducing depressive symptoms in patients with recurrent depression.

Aim: Our aim was to explore whether potential predictors at baseline were associated with changes in depressive symptoms over treatment and over the course of a 1-year follow-up period in patients with recurrent depression treated with MBCT (n =182).

Methods: Ten potential baseline predictors were selected: gender, age, age of onset of first depressive episode, number of previous episodes, recent meditation experience, rumination and four different mindfulness skills. Each predictor was separately entered into one model exploring association at baseline, association with reductions of depressive symptoms over the course of treatment and association with reduction of depressive symptoms over the course of the 1-year follow-up. Subsequently, a final model was created including all statistically significant predictors.

Results: In the final multivariate model, baseline depressive symptoms were negatively related to Acceptance. Reduction of depressive symptoms over treatment was associated with absence of previous meditation experience and lower Acceptance at baseline. Over the 1-year follow-up, female patients showed more reductions in depressive symptoms than males.

Conclusions: Patients without meditation experience and with less Acceptance improved most over the course of MBCT. In the long run, female patients did better than male ones.

Introduction

Major depressive disorder (MDD) is considered to be an important health problem, both in terms of personal and societal costs (Judd, 1997). In the general population the risk of relapse/recurrence is up to 35% after 15 years, in clinical populations this risk is up to 85% (Hardeveld et al., 2010). About 15% to 20% of patients from a general population having a first episode of MDD show a chronic course of depressive symptoms (Eaton et al., 2008; Spijker et al., 2002).

Previous research has established several risk factors that are associated with a more chronic and severe course of depression (Judd & Akiskal, 2000; Judd et al., 2000): age of onset (Eaton et al., 2008), number of previous episodes and residual symptoms (Hardeveld et al., 2010). When the number of prior episodes increases, patients become more sensitive for a subsequent relapse/recurrence (Post, 1992; Solomon et al., 2000). Hypothesized depression inducing mechanisms like rumination have been shown to predict the course of depressive symptoms (Koster, De Lissnyder, Derakshan, & De Raedt, 2011; Nolen-Hoeksema et al., 2008).

Mindfulness-based cognitive therapy (MBCT) is an eight weeks group intervention designed to target underlying cognitive and behavioural processes responsible for recurrence of depression. MBCT was especially designed for remitted patients who are at risk for depressive recurrence/relapse (Segal et al., 2002). Various studies have now demonstrated that mindfulness has prophylactic effects for patients vulnerable to relapse/recurrence (Piet & Hougaard, 2011). In addition, several studies have shown that MBCT is also efficacious in recurrently depressed patients with a current depressive episode (Strauss et al., 2014; Van Aalderen, Donders, Peffer, & Speckens, 2015).

Until now, several attempts have been made to identify predictors of the treatment outcome of MBCT, predominantly with time to depressive relapse/recurrence and relapse rates as the primary outcome measures.

A pattern emerging from recent MBCT studies shows that especially patients with severe symptoms seem to benefit from MBCT. In two previous randomized controlled trials, patients with three or more depressive episodes had lower relapse rates after MBCT than those with two episodes (Ma & Teasdale, 2004; Teasdale et al., 2000). Patients with three or more prior episodes reported a lower age of onset (Ma & Teasdale, 2004; Teasdale et al., 2000) and a more negative parenting style. In another trial comparing MBCT to antidepressant medication, MBCT proved most efficacious in recurrently depressed patients in unstable remission (Segal et al., 2010). Finally, two recent large-scale randomized controlled trials comparing MBCT to a group intervention without meditation and maintenance antidepressant medication showed that MBCT was

particularly effective recurrently depressed patients with a history of severe childhood trauma (Williams et al., 2014) (Kuyken et al., 2015).

Williams et al. (2014) found that neither gender nor suicidality or current antidepressant use was predictive of time to relapse. Potential moderators at baseline not reaching the final model were: episodes of major depression, Beck Depression Inventory, Beck Hopelessness Scale, and Beck Scale for Suicide Ideation. Higher baseline depressive symptoms using the Hamilton Rating Scale for Depression however, was associated with shorter time to relapse (Williams et al., 2014). This result had previously also been found by Godfrin & Van Heeringen, who showed that higher baseline levels of depressive symptoms measured with the Hamilton rating scale for depression were predictive of a shorter time to relapse (Godfrin & Van Heeringen, 2010). However, Kuyken et al. (2015) did not find this when comparing MBCT condition to antidepressant medication.

Possibly, the use of depressive relapse as only outcome measure might not fully cover the variety of course patterns in high risk samples as included in most MBCT trials (Judd, 1997). Kuyken et al. (2010) reported that cognitive reactivity was not predictive of depressive relapse but did appear to be predictive of depressive symptoms at follow-up. In the MBCT condition of this trial, female patients reported less depressive symptoms at follow-up than males. Age, marital status, religion, level of education, social class, status of remission (total versus partial), comorbid disorders, number of previous episodes, age of onset and baseline Hamilton Rating Scale for Depression scores did not appear to have prognostic significance.

In a previous trial, we investigated MBCT in a recurrently depressed sample with depressive symptoms as the primary outcome measure. Depressive symptoms were assessed both before and directly after MBCT (Van Aalderen et al., 2012), and over the course of a 1-year follow-up period (Van Aalderen et al., 2015). This enabled us to explore whether certain baseline characteristics were associated with the change of depressive symptoms over the MBCT treatment period and over the course of a 1-year follow-up. Besides socio-demographic characteristics as gender and age, also age of onset, number of previous depressive episodes and rumination were included. Furthermore, we explored whether recent meditation experience before the trial, and mindfulness skills prior to the start of MBCT were associated with the course of depressive symptoms over the course of treatment and the 1-year follow-up period.

Methods

Study population

The inclusion criteria of this study were three or more previous depressive episodes according to DSM-IV criteria.(Van Aalderen et al., 2012) Exclusion criteria were: 1) one or more previous (hypo)manic episodes according to DSM-IV criteria; 2) current alcohol and/or drugs abuse; 3) suicidality or psychotic symptoms); 4) inability to participate in groups; 5) inability to complete questionnaires (due to, for example, cognitive impairments). Patients using antidepressant medication (ADM) were required to be on a stable dose for at least 6 weeks and requested to maintain on this for the duration of the study. The study was approved by the Medical Ethical Committee of local hospitals in Nijmegen, the Netherlands. All participants provided written informed consent.

Design and Procedure

Of the original study population of the trial, 182 patients were offered MBCT either as part of the intervention condition (n = 101) or after completing the TAU condition of three months duration (n = 81). At baseline, patients were invited for a research interview including the section on recurrent depression according to the Structural Clinical Interview for DSM-IV axis I Disorders (SCID-I) (First et al., 1995; Groenestijn et al., 1999). Subsequent follow-up assessments took place by questionnaires directly after MBCT and at 3, 6, 9 and 12 months after completion of the MBCT course.

The MBCT training consisted of 8 weekly sessions of 2.5 hours and a silent day according to the protocol described by Segal, Williams and Teasdale (Segal et al., 2002). The MBCT teachers were a psychiatrist and cognitive behavioral therapist (AS), a clinical psychologist and an occupational therapist. All teachers had received at least 1.5 years of training in MBCT and had a longstanding experience of working with patients with psychiatric problems and working with groups. They were also experienced meditators, with the duration of personal practice ranging between 2 to 20+ years.

Outcome measure

Beck Depression Inventory (BDI). The BDI is a 21-item self-report questionnaire to assess depressive symptoms with a score ranging from 0 - 63 (Beck et al., 1961; Bouman et al., 1985). The BDI has shown good psychometric properties (Beck et al., 1988).

Possible predictors

Predictors as gender, age, age of onset, number of prior episodes, ADM, recent meditation experience and remission were assessed at baseline. Recent meditation experience was

defined as having meditated by oneself and/or participating in any form of meditation course or lessons in the six months before baseline.

Rumination on Sadness Scale (RSS-NL). The RSS is a 13-item, 5-point scale self-report questionnaire designed to measure ruminative thoughts when one feels sad, down or depressed (Conway et al., 2000; Raes et al., 2003).

Kentucky Inventory of Mindfulness (KIMS). The KIMS is a 39-item, 5-point scale self report questionnaire, developed to assess mindfulness skills (Baer et al., 2004; Baer et al., 2006). It covers four domains: Observe, Describe, Act with awareness, and Accept without judgment. The KIMS has been demonstrated to have good psychometric properties for clinical samples (Baum et al., 2010).

Statistical analysis

The outcome of MBCT was assessed with linear mixed models with depressive symptoms as dependent variables, measured pre- and post-MBCT and three-monthly during the 1-year follow-up period. Association between each predictor and baseline depressive symptoms were modelled. In addition, changes during MBCT and over the 1-year follow-up period were added to the model. To test both change during MBCT and over the 1-year follow-up in one model, two dummy variables were used. These variables were entered as covariates together with the interaction between these variables and the predictors.

A random intercept and a heterogeneous first-order autoregressive (ARH(1)) covariance structure were used. This covariance structure assumes that follow-up 1 and follow-up 2 are more strongly correlated than follow-up 1 and follow-up 3, which are more strongly correlated than follow-up 1 and follow-up 4. This structure had the best fit with the data (better than polynomial models). After testing each predictor separately, a selection of statistically significant predictors ($p \leq 0.10$) were entered into one model. SPSS package 20.0 was used for analyses and graphs.

Results

Study population

Of the 182 who accepted treatment and were included in the current study, 124 (68%) were in partial or total remission and 58 (32 %) currently depressed at the start of the trial. Our previous studies have shown that patients who are currently depressed did not differ from remitted patients in terms reduction of depressive symptoms after MBCT and that this reduction remained stable over 1-year follow-up in both groups (Van Aalderen et al., 2012; Van Aalderen et al., 2015).

The mean age of the sample was 47.6 years ($SD = 11.3$) (see Table 1). About three quarters were female and slightly more than half were employed at the start of the trial. The majority received tertiary education. The mean number of previous depressive

episodes was 7.4 (SD = 7.2) and the mean age of first onset was 23.8 years (SD = 11.3). About half of the patients reported recent meditation experience. Of all 182 patients, 170 (93%) attended 4 or more sessions MBCT and the mean number of sessions was 7.0 (SD = 1.7).

Table 1. Baseline characteristics ($n = 182$)

Gender (female), n (%)	131 (72)
Age, mean (SD)	47.6 (11.3)
Age of onset, mean (SD)	23.8 (11.3)
Number of previous episodes, mean (SD)	7.4 (7.2)
Recent meditation experience, n (%)	86 (49)
Rumination, mean (SD)	27.7 (9.7)
Mindfulness skills	
Observe, mean (SD)	18.5 (7.1)
Describe, mean (SD)	18.0 (7.7)
Act with Awareness, mean (SD)	16.0 (6.0)
Accept without judgment, mean (SD)	18.4 (6.3)

Across all follow-up assessments after baseline, the mean proportion of missing data on our primary outcome measure, depressive symptoms, was 7%. Patients with missing data did not differ on any of the baseline characteristics and reported no significant different baseline levels of depressive symptoms, mindfulness skills and quality of life compared to those without missing data, using Chi-square tests and independent sample t-tests. The means and standard deviations or percentages of all predictors are provided in table 2. The observed means and standard deviations of depressive symptoms at all time points are represented in table 2, showing a reduction in depressive symptoms after MBCT compared with baseline levels ($B = -4.64$, $p < 0.001$). This reduction was consolidated over the 1-year follow-up ($B = -0.19$, $p = 0.17$), measured 3-monthly.

Table 2. Observed mean levels and standard deviations of depressive symptoms^a before MBCT, after MBCT and during 1-year follow-up, measured 3-monthly.

baseline (pre-MBCT)	3 months (post-MBCT)	6 months	9 months	12 months	15 months
$n = 182$	$n = 178$	$n = 160$	$n = 158$	$n = 153$	$n = 146$
15.4 (9.2)	10.4 (8.2)	11.1 (9.2)	11.1 (9.7)	9.6 (8.6)	9.6 (9.2)

^a Depressive symptoms measured with the Beck Depression Inventory (BDI)

Associations with baseline depressive symptoms

In Table 3, associations with each predictor are shown. Every line in the table summarizes one prediction model. At first, the association between the possible predictor and depressive symptoms at baseline is shown. Secondly, the associations of possible baseline predictors with change of depressive symptoms during treatment are presented. Finally, association of the baseline predictor with the course of depressive symptoms during the 1-year follow-up period is presented. Subsequently, all statistically significant associations ($p \leq 0.10$) were entered into one model and the results are summarized in table 4.

Baseline levels of depressive symptoms were positively associated with rumination and negatively with the mindfulness skills Describe, Acceptance and Act with Awareness. In addition, more previous depressive episodes at the start of the trial tended to be associated with higher baseline levels of depressive symptoms. Gender, age, age of onset and recent meditation experience were not significantly associated with baseline level of depressive symptoms.

Controlling for other associated variables, the only variable which was independently associated with baseline level of depressive symptoms was Acceptance. Higher levels of Acceptance were significantly associated with lower levels of depressive symptoms. Number of previous episodes, rumination and the other mindfulness skills were no longer significantly associated with baseline level of depressive symptoms.

Prediction of reduction of depressive symptoms over the course of treatment

Predictors associated with change of depressive symptoms over the course of treatment were previous meditation experience, rumination, and Acceptance. Absence of recent meditation experience at the start of the trial was associated with larger reductions in depressive symptoms during treatment. Higher rumination levels were related with larger reductions in depressive symptoms over the course of treatment. Lower Acceptance at baseline was associated with larger reductions in depressive symptoms over treatment. Gender, age, age of onset, number of previous episodes, and the mindfulness skills Observe, Describe and Act with awareness were not significantly associated with change of depressive symptoms over the course of treatment.

Table 3. Summary of prediction models for depressive symptoms (BDI), $n = 182$. Predictors were tested in separate models and each line summarizes the result of one model including Beta's, Standardized Errors and p -values. For each model, the association at baseline, the interaction with treatment effect and the interaction with 1-year follow-up are presented.

Predictor	association at baseline			interaction with treatment effect			interaction with follow-up ^a		
	B	S.E.	p	B	S.E.	p	B	S.E.	p
Gender (female)	0.05	1.56	0.750	0.76	1.14	0.507	-0.50	0.31	0.104
Age	0.03	0.06	0.430	0.03	0.05	0.480	-0.01	0.01	0.235
Age of onset	-0.10	0.06	0.147	0.04	0.05	0.358	-0.01	0.01	0.310
Number of previous episodes	0.17	0.10	0.103	-0.05	0.07	0.505	0.03	0.02	0.168
No recent meditation experience	2.39	1.41	0.265	-2.01	1.04	0.054	-0.01	0.29	0.966
Rumination	0.27	0.07	0.005	-0.19	0.05	0.000	0.03	0.01	0.034
Mindfulness skills									
Observe	-0.10	0.10	0.548	0.10	0.07	0.183	-0.00	0.02	0.824
Describe	-0.32	0.09	0.000	0.03	0.07	0.608	0.01	0.02	0.540
Act with Awareness	-0.23	0.12	0.093	0.13	0.09	0.135	0.01	0.02	0.606
Accept without judgment	-0.60	0.11	0.000	0.33	0.08	0.000	-0.02	0.02	0.261

^a the 1-year follow-up was measured in time units of 3 months.

Table 4. Summary of multivariate prediction model for depressive symptoms (BDI), $n = 182$. Each line summarizes the result including Beta's, Standardized Errors and p -values. For each predictor, the association at baseline, the interaction with treatment effect and the interaction with 1-year follow-up are presented.

Predictor	association at baseline			interaction with treatment effect			interaction with follow-up ^a		
	B	S.E.	p	B	S.E.	p	B	S.E.	p
Gender (female)	-0.27	1.46	0.818	1.11	1.18	0.348	-0.72	0.33	0.030
Number of previous episodes	0.10	0.09	0.239	-0.01	0.07	0.895	0.03	0.02	0.186
No recent meditation experience	1.10	1.32	0.976	-2.13	1.07	0.047	0.01	0.30	0.976
Rumination	0.06	0.08	0.922	-0.11	0.07	0.100	0.03	0.02	0.080
Mindfulness skills									
Describe	-0.24	0.09	0.001	-0.03	0.07	0.700	0.02	0.02	0.318
Act with awareness	0.06	0.12	0.548	-0.01	0.09	0.932	0.04	0.03	0.108
Accept without judgment	-0.47	0.13	0.002	0.23	0.11	0.031	-0.01	0.03	0.827

^a the 1-year follow-up was measured in time units of 3 months.

In the multivariate analysis, baseline predictors independently predictive of change of depressive symptoms over the course of treatment were previous meditation experience and Acceptance. Both absence of recent meditation experience and lower levels of Acceptance at baseline were associated with larger reductions in depressive symptoms over the course of treatment. Higher rumination levels tended to be related with larger reductions in depressive symptoms over the course of treatment, but this association did not remain significant.

Prediction of reduction of depressive symptoms over the course of 1-year follow-up

The only predictor at baseline significantly associated with change of depressive symptoms over the course of 1-year follow-up was rumination. In the long term, higher baseline rumination levels were associated with slightly but significantly smaller decreases in depression levels during follow-up (see figure 1). Females tended to have larger decreases of depression depressive symptoms over the course of 1-year follow-up. Age, age of onset, number of previous episodes, recent meditation experience and mindfulness skills were not significantly associated with change of depressive symptoms over the course of 1-year follow-up.

In the multivariate analysis, the only predictor at baseline significantly associated with change of depressive symptoms over the course of 1-year follow-up was gender. Females showed larger reductions in depressive symptoms over 1-year follow-up. Higher baseline rumination levels tended to be associated with slight but non-significantly higher depressive symptoms during follow-up.

Discussion

Our aim was to explore whether a set of selected baseline variables enabled us to predict the level of depressive symptoms at baseline, over the course of treatment and over 1-year follow-up.

At baseline, high levels of rumination and low levels of Acceptance were associated with the severity of depressive symptoms. Higher numbers of previous depressive episodes at the start of the trial also tended to be associated with higher baseline depressive symptoms. When controlling for other associated variables, higher Acceptance and Describe were associated with baseline depressive symptoms. In this final model, rumination was no longer significantly associated.

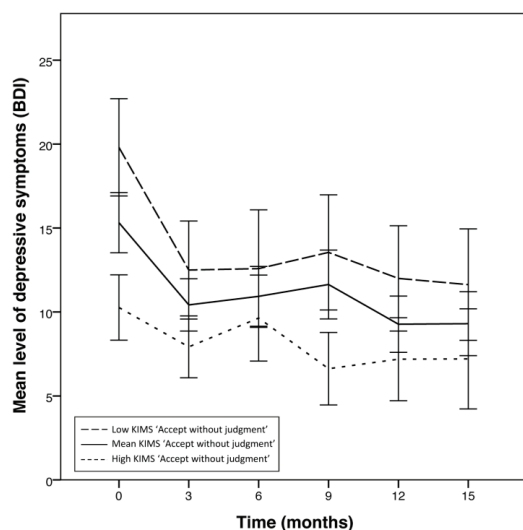


Figure 1 Mean levels of observed depressive symptoms over time for patients with low, moderate and high baseline levels of mindfulness skill Accept without judgement. Low represents the lowest quartile, moderate the 2nd and 3th quartiles and high the upper quartile. Time is measured in 3-months units, whereas the first 3 months covers the MBCT intervention period

Individual baseline predictors associated with reductions of depressive symptoms over the course of treatment were high levels of rumination and low levels of Acceptance. In addition, patients without recent meditation experience showed also larger reductions of depressive symptoms during treatment. When entered into one multivariate model, the absence of recent meditation experience and Acceptance remained significantly associated. Higher baseline levels of rumination showed a somewhat weaker and no longer significant relation with reductions in depressive symptoms.

Over the course of 1-year follow-up, higher levels of rumination at baseline were associated with slightly higher depressive symptoms. Females had a tendency to show larger reductions of depressive symptoms over the 1-year follow-up compared to males. In the final model, only gender appeared significantly associated and rumination only showed a trend.

Patients with less Acceptance at the start of MBCT showed more reduction of depressive symptoms over the course of MBCT. Baseline Acceptance is also negatively related with baseline depressive symptoms and thus might offer protection against depression inducing mechanisms like rumination. This is underlined by the finding in the final model that Acceptance contributed independently to change of depressive symptoms over treatment even controlling for rumination. Accept without judgment thus seems an important factor in MBCT and might need even more attention in MBCT training. However, Acceptance did not appear to be related to change of depressive symptoms

over the 1-year follow-up. The baseline differences in Acceptance might be levelled by the MBCT training and baseline Acceptance might therefore no longer predictive over the 1-year follow-up period. This is supported by the notion that patients with lower levels of Acceptance benefitted most of MBCT in terms of depressive symptoms reductions. However, the small changes in depressive symptoms over the course of follow-up might also be an explanation why no associations between Acceptance and depressive symptoms were found.

The relatively greater improvements in the patients without meditation experience and with low levels of Acceptance might be the result of floor effects in the subgroups with relatively less depressive symptoms at baseline. Also, relapse inducing mechanisms like negative self judgments might be more prominent in those with low levels of Acceptance and might make them more prone to an intervention like MBCT (Teasdale & Chaskalson, 2011; Teasdale & Chaskalson, 2011). In this context, an interesting line of evidence emerges from literature, showing that MBCT might be more effective in vulnerable subgroups, for example those in unstable remission (Segal et al., 2010) or having suffered from childhood trauma (Kuyken et al., 2015; Williams et al., 2014).

The result that females might have greater improvements after MBCT in reduction of depressive symptoms was in line with the findings of Kuyken et al. (2010). Other studies, however, did not find an association between gender and effects of MBCT (Kuyken et al., 2015; Williams et al., 2014). Since the prevalence of depression is substantial higher in females (Piccinelli & Wilkinson, 2000), possible differences between males and females in how MBCT might work is an interesting topic for future research and might also have implications for clinical practice.

Strengths and limitations

One of the main strengths of this paper is the longitudinal design with multiple 3-monthly follow-up assessments of depressive symptoms in a relatively large sample. By creating prediction models with the treatment period as well as the follow-up period over 4 time points in one model, this study provides insight into the influence of baseline characteristics on how depressive symptoms develop over time in patients with recurrent depression treated with MBCT. It would be interesting however, to follow patients for an even longer time period of time.

Another strength is that the study included both patients in remission and those currently depressed, resulting in more variability in depressive symptoms which might have made it easier to find possible predictors of MBCT outcome.

An important limitation of this study is the lack of a control group, which hinders conclusions about differential predictors for MBCT and TAU. Although the sample is relatively large compared to other MBCT studies, replication with larger samples would be helpful, possibly by aggregating data from different studies on MBCT.

Furthermore, there is always the risk of selective drop-out, what might result in outcome biases like over- or underestimation of the effects. However, as patients with missing data did not differ on any of the baseline characteristics with the others, we have no reason to believe this might have had a major effect on our findings.

Implications

As discussed above, prediction studies often yield different results, making it difficult to translate the outcome of these studies to clinical practice (Steketee & Chambless, 1992). Taken this into account, the results of this study highlight specific areas which might benefit from extra attention during the training. Acceptance and to a lesser extend rumination seem to be both related to severity of depressive symptoms at baseline, but also to a better treatment outcome.

Our results indicate that depressive symptoms remain relatively stable after MBCT independent of most baseline predictors, possibly due to the mitigating effect of MBCT on well known risk factors like number of depressive symptoms, age of onset and amount of depressive symptoms.

Focus on self-compassion (Gilbert, 2014; Raes, 2010) could for example be incorporated in follow-up sessions or training as a way to maintain and deepen mindfulness skills as a way to further improve MBCT.

In the context of patient-centered care, gender is still an interesting subject for future research. Although gender is not always found as a predictor for relapse after MBCT (Hardeveld et al., 2010), it might reflect differences in how MBCT works between males and females. MBCT might also be more acceptable to females than to males. We need to consider ways in which we can make MBCT more appealing to men. One possibility might be to address typical questions or hesitations of men about mindfulness beforehand in information material. Another option to explore could be the possibility to offer MBCT in homogeneous male and female groups.

Conclusion

Patients without meditation experience and with lowest baseline levels of Acceptance show greatest changes in depressive symptoms over the course of MBCT. Acceptance might play a key role in interrupting or weakening the influence of depression maintaining processes like rumination. In addition, since female participants of MBCT reported lower depressive symptoms in the long term, more attention might need to be paid to possible gender differences in both clinical application and research of MBCT.

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CHAPTER

5

An investigation of the role of attention in
mindfulness-based cognitive therapy
for recurrently depressed patients

Van den Hurk, P.A., Van Aalderen, J.R., Gionmi, F., Donders, A.R.T., Barendregt, H.P., Speckens, A.E.M. (2012). An Investigation of the Role of Attention in Mindfulness-Based Cognitive Therapy for Recurrently Depressed Patients *Journal of Experimental Psychopathology*, 3(1), 103-120.

Abstract

Mindfulness-based cognitive therapy (MBCT) has been shown to be efficacious in reducing relapse rate and depressive symptoms in patients with recurrent depression. To date, little is known about the underlying cognitive mechanisms. We investigated the role of attention with the attention network test in a randomized controlled trial with 34 MBCT patients and 37 waiting-list control patients. In the MBCT group depressive symptoms and ruminative thinking decreased and mindfulness skills increased. However, no differential changes in either specific, basal components of attentional processes (alerting, orienting and executive attention) or more general attentional functioning were observed. These results seem to fit in the pattern, emerging from recent research findings, that suggests that it might be especially the second component of mindfulness as described by Bishop (Bishop et al., 2004) - a shift towards an attitude with more openness and acceptance - that mediates the efficacy of short-term mindfulness interventions.

Introduction

Over the last decade, mindfulness-based cognitive therapy (MBCT) has been shown to be efficacious in reducing relapse rates and depressive symptoms in patients with recurrent depression (Kuyken et al., 2008; Ma & Teasdale, 2004; Segal et al., 2010; Teasdale et al., 2000). MBCT is an 8-week group program based on an integration of elements of cognitive-behavioral therapy (Beck, Rush, Shaw, & Emery, 1979) with the mindfulness-based stress reduction (MBSR) program (Kabat-Zinn, 1990). So far, research has mainly been focused on the effect of MBCT on clinical outcome variables, such as relapse rates and depressive symptoms (Kuyken et al., 2008; Ma & Teasdale, 2004; Segal et al., 2010; Teasdale et al., 2000). Only few studies have investigated (changes in) cognitive processes that could subserve, mediate these clinical improvements (Anderson, Lau, Segal, & Bishop, 2007; Chambers, Lo, & Allen, 2008; Gionni et al., 2006; Heeren, van Broeck, & Philippot, 2009; Jha, Krompinger, & Baime, 2007; Kuyken et al., 2010). Therefore, to date, only a limited and preliminary understanding in the underlying mechanism(s) driving the beneficial effect of MBCT has been obtained.

To our knowledge, Heeren et al. (2009) have been among the first (Anderson et al., 2007; Chambers et al., 2008; Gionni et al., 2006; Heeren et al., 2009; Jha et al., 2007) to study important changes in cognitive processes during short-term mindfulness trainings such as MBCT. The aim of the study by Heeren et al. (2009) was to examine the role of executive processes, which are necessary when a situation requires more than a routine execution of automatic and overlearned schemata, on the impact of mindfulness on autobiographical memory specificity. Their results suggested that the effects of mindfulness training on autobiographical memory specificity are mediated by executive processes and, further, that effects of mindfulness training are enhanced by cognitive flexibility (the ability to switch behavioral response according to the context of the situation).

Besides changes in the cognitive processes mentioned above, changes in attentional processing might also be expected after MBCT, for the training of attention is one of the core practices in the program. The following description of the mindfulness practice during MBCT by Teasdale et al. (1995, p.33) illustrates the central role of attention training: "In formal mindfulness practice, the student sits quietly in an erect and dignified posture and attempts, non-strivingly, to maintain attention on a particular focus, commonly his or her own breathing. When the attention wanders from the breath to the thoughts and feelings that inevitably arise, the student 'acknowledges and accepts' the thoughts or feelings, 'lets go' of them, and gently re-directs attention back to the breath. This procedure is repeated many times, whenever the student notices that the attention has wandered. In informal practice, students apply the same general approach as often as possible during the course of their normal day, bringing the attention back to the 'here and now', using a focus on the breath as an 'anchor', whenever they notice that attention has been diverted to streams of thought, worries, reverie, or general lack of

awareness". Given this central focus on the training of attention during MBCT, one could expect participation in the program to result in an improved self-regulation of attention, i.e., a more flexible disengaging from irrelevant stimuli and improved general attentional processing of relevant stimuli. Our interest is in whether such improvements in attention have a mediating role in the efficacy of the MBCT program.

In recent years, the effect of mindfulness training on attentional processing has been investigated at the level of specific components of attention (alerting, orienting and executive attention) as well as at a more integrated level of general attentional processing (Anderson et al., 2007; Chambers et al., 2008; Chan & Woollacott, 2007; Jha et al., 2007; Moore & Malinowski, 2009; Slagter et al., 2007; Van den Hurk, Giommi, Gielen, Speckens, & Barendregt, 2010) and a distinction between short-term (like MBCT) and long-term (very intense training for months or years of experience) trainings seems warranted. In studies on the effect of short-term trainings no improvements in specific components of attention have been found (Anderson et al., 2007; Chambers et al., 2008; Giommi et al., 2006). On the contrary, the long-term practice of mindfulness meditation has been associated with improvements in specific, basal components of attention (Chan & Woollacott, 2007; Slagter et al., 2007; Van den Hurk et al., 2010). For example, in the study by van den Hurk et al. (2010), expert, long-term mindfulness meditators showed improvements in orienting and executive attention. Both short-term and long-term trainings have been associated with improvements in attention at a more general, integrated level (Anderson et al., 2007; Chambers et al., 2008; Van den Hurk et al., 2010). For example, in the study by van den Hurk et al. (2010) an improved overall performance on the attention network test (ANT) was found, as reflected by the lower amount of errors made by the meditators for equally fast responses. Importantly, only healthy participants have been tested in all the studies mentioned above and, to our knowledge, just one study has been done that investigated the effect of mindfulness training on attention in clinically depressed and anxious patients (Giommi et al., 2006). Therefore, to date, it is not clear whether a clinical sample of recurrently depressed patients shows improvements in attention after either short-term or long-term mindfulness trainings. Since impairments in attentional processing are a hallmark in the psychopathology of depression (Joormann & Gotlib, 2007; Koster, De Lyssnyder, Derakshan, & De Raedt, 2010; Merriam, Thase, Haas, Keshavan, & Sweeney, 1999), there seems room for improvement in attentional processing in recurrently depressed patients. Given this idea of room for improvement in attention and considering the fact that attentional training is a central element in the MBCT program, we hypothesized that MBCT might result in improvements in attention in a sample of recurrently depressed patients, both remitted and currently depressed. In more detail, in a recent paper on the underlying cognitive mechanisms of depressive rumination by Koster et al. (2010), the 'impaired disengagement' hypothesis was proposed. According to the authors the core tenet of their model is that prolonged processing of self-referent material is due to impaired

attentional disengagement from negative self-referent information. In light of this impaired attentional disengagement underlying depressive rumination and the central role of improving the self-regulation of attention during mindfulness practice, we hypothesized to find specific improvements in orienting and executive attention after MBCT. Both these components of attention are related to the concept of disengaging attention from irrelevant information and directing attention to relevant information. In addition, considering the hypothesized improvements in general attentional processing, we expected improvements in general attentional performance after MBCT. Finally, we were interested in whether such improvements in attention have a mediating role in the efficacy of the MBCT program.

In order to probe both orienting and executive attention as well as more general, overall attentional processing, the ANT was used (Fan, McCandliss, Sommer, Raz, & Posner, 2002). The ANT probes the functioning of three separate components of attention: i.e. the alerting, orienting and executive attentional networks. Alerting is defined as achieving and maintaining an alert state; orienting is the selection of information from sensory input; and executive control is defined as resolving conflict among responses (Fan et al., 2002). In addition, the overall performance on the ANT - in terms of speed and accuracy in responding and target detection rate - provides a more general and integrated view of attentional functioning (Van den Hurk et al., 2010). The current study was embedded in a larger randomized controlled trial comparing MBCT and a treatment as usual (TAU) condition in 205 patients with recurrent depression. In order to probe changes in depressive symptoms, severity of rumination and mindfulness skills, by means of questionnaires, depression, rumination and mindfulness skills scores were obtained.

To summarize, MBCT has been shown to be efficacious in reducing relapse rates and depressive symptoms in patients with recurrent depression (Kuyken et al., 2008; Ma & Teasdale, 2004; Segal et al., 2010; Teasdale et al., 2000). Yet, very little is known about the (changes in) cognitive processes that subserve, mediate these effects. It is well known that impairments in attention are a hallmark in the psychopathology of depression (Joormann & Gotlib, 2007; Koster et al., 2010; Merriam et al., 1999), suggesting room for improvement in attentional functioning in recurrently depressed patients. Considering the fact that attention training is a core practice in the MBCT program, we predicted to find improvements in attention in a sample of recurrently depressed patients after MBCT. In more detail, improvements in orienting and executive attention were expected, which are components of attention related to disengaging attention from irrelevant information and directing attention to relevant information. Improvements in these attention networks would be shown by decreased orienting and executive attention network scores on the ANT. In addition, in light of the hypothesized improvements in general attentional processing due to the mindfulness practice, we expected to find greater improvements in overall attentional processing for the MBCT

group. Such improvements would be shown by enhanced target detection and increased response accuracy after MBCT. We hypothesized that such improvements in attentional functioning have a mediating role in the efficacy of the MBCT program. Finally, in accordance with previous studies (Kenny & Williams, 2007; Kingston, Dooley, Bates, Lawlor, & Malone, 2007; Michalak, Heidenreich, Meibert, & Schulte, 2008), we predicted to find decreased depression and rumination scores and increased mindfulness scores for the MBCT group, which would show the efficacy of the MBCT program. Altogether, this study shows our attempt to investigate the role of attention in the efficacy of MBCT and hence it seems an adequate response to the recent suggestion by Kuyken and colleagues who indicated that future studies should evaluate different dimensions of mindfulness including attentional control in the context of MBCT (Kuyken et al., 2010).

Method

Participants

This study was part of a larger clinical randomized controlled study comparing MBCT (+ TAU) and a TAU condition in patients with recurrent depression (Van Aalderen et al., 2012). Patients were recruited by media announcements or referred by their general practitioner or psychiatrists and psychologists in and around the city of Nijmegen. Alternatively, they were self-referred, informed by local and national advertisements. Patients were then screened by telephone and, if applicable, invited for a research interview including the Mini-International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998; Van Vliet et al., 2000), including the section on recurrent depression according to the Structural Clinical Interview for DSM-IV axis I Disorders (SCID-I) (First et al., 1995; Groenestijn et al., 1999). The research interviews were used to confirm in- and exclusion criteria, and were conducted by a psychologist or psychiatrist in training, supervised by an experienced psychiatrist. Patients with three or more previous depressive episodes according to DSM-IV criteria (APA, 2000) were eligible for the study. Patients with a hypo-manic or manic episode, psychotic symptoms or severe substance abuse were excluded. A random subset ($n = 71$) of the initial study population ($n = 205$) was asked to participate in the attention network test (ANT; described in detail below) and agreed upon participation in the experiment. With respect to age, gender, baseline level of depression and depression diagnosis the group of participants that agreed upon participation was representative for the whole group of participants that was studied. The MBCT group consisted of 34 patients [mean (SD) age 49.8 (12.2), range 24 – 84 years, 11 male], whereas the control group (TAU condition) consisted of 37 patients [mean (SD) age 49.2 (10.0), range 32 – 71 years, 9 male]. Sixteen patients (47%) in the MBCT group and 17 patients (46%) in the control group had prior experience with meditation. Twenty-two patients (65%) in the MBCT group and 25 patients (68%) in the control group took medication at the start of the treatment. Groups did not differ on age, $t(69) = 0.208$, $p = 0.836$; gender $\chi^2(1) = 0.564$, $p = 0.452$; meditation experience

$\chi^2(1) = 0.009, p = 0.925$; or medication intake at start of treatment $\chi^2(1) = 0.006, p = 0.936$. Of note, 14 participants in the TAU group and 11 participants in the MBCT group were at baseline diagnosed with a current depression according to DSM-IV axis I Disorders criteria (NS). No significant difference between groups was present regarding the number of participants diagnosed with a current depression, $\chi^2(1) = 0.234, p = 0.629$.

Procedure

At first contact, patients were asked to sign an informed consent form. Patients were requested to keep their antidepressant medication stable for the duration of the study and to refrain from any additional psychological treatment. After being assessed for suitability, participants were randomized into either the MBCT group or the TAU condition. Randomization was stratified for Hamilton (HRSD) depression scores of lower than 10 or of 10 or higher (Hamilton, 1960).

All participants were asked to fill out a number of self-report questionnaires before completing the ANT. Assessments took place directly before and after the training/3-months control period. Afterwards, MBCT was also offered to patients in the TAU condition.

Intervention

MBCT was offered according to the protocol developed by Segal and colleagues (Segal et al., 2002). It consisted of 8 weekly sessions of 2.5 hours each, with an all-day retreat between the 6th and 7th session. The MBCT training was taught by three different trainers (one male, two female). One of the teachers was a consultant psychiatrist and cognitive behavioral therapist with 5 years of meditation experience, 4 years experience guiding MBCT groups who trained at the Insight Meditation Society (IMS; Barre, MA, USA). Another teacher was an occupational therapist with 26 years of meditation experience and 1.5 years experience guiding MBCT groups. The other teacher is a clinical psychologist with 21 years of meditation experience and 3 years experience guiding MBCT groups. The groups consisted of up to 15 participants each.

Measures

Hamilton Rating Scale for Depression (HRSD)

The HRSD (Hamilton, 1960) was used to assess depressive symptoms. The HRSD is a 17-item interview-based measure, widely used in clinical care. The Dutch version of the HRSD has shown good internal consistency, Cronbach's $\alpha = 0.82$ (Hermans, van Ree, Betgem, & Westenbrink, 1981).

Rumination on Sadness Scale (RSS) The level of rumination was measured with the RSS (Conway et al., 2000). The RSS is a self-report questionnaire measuring ruminative

response to depressed mood on 13 items, scored on a 5-point Likert-type of scale. The Dutch translation of the RSS by Raes et al. (2003) showed good psychometric properties, Cronbach's $\alpha = 0.84$ (Raes, Hermans, & Eelen, 2003).

Kentucky Inventory of Mindfulness Skills (KIMS)

The KIMS (Baer et al., 2004) was used to measure levels of mindfulness skills and has been shown to be applicable in clinical populations (Baum et al., 2010). This questionnaire consists of 39 items measuring four domains (observing, act-with-awareness, describing, and accepting-without-judgment), consistent with four of the five mindfulness facets as identified by Baer et al. (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Participants indicated their responses on a Likert-type scale from 1 ((almost) never) to 5 ((almost) always). A comparable Dutch version of the KIMS has been shown good psychometric properties, Cronbach's $\alpha = .77-.91$ for the different subscales (Dekeyser, Raes, Leijssen, Leysen, & Dewulf, 2008).

Attentional Network Test

Participants were seated in front of a computer screen at a distance of 65 cm. Stimuli were presented and responses were collected with Presentation software (version 10.1 Neurobehavioral Systems, Albany, USA). Participants were instructed to respond as fast and as accurately as possible to a target stimulus that was presented in the center of a horizontal row with five stimuli (fig.1C). The target stimulus was an arrow pointing either to the left or to the right and was flanked by two flanker stimuli on each side. Participants were instructed to press the left mouse button with their left thumb or the right mouse button with their right thumb as fast as possible when the target arrow pointed to the left or right, respectively. The four surrounding flanker stimuli were all arrows pointing in the same or the opposite direction of the target stimulus or were just neutral stripes. The condition in which all five arrows pointed in the same direction was called the congruent target condition. The condition in which the flanker arrows pointed in the direction opposite to the target arrow was named the incongruent target condition. The condition when the four flanker stimuli were stripes was called the neutral target condition. The target stimulus and the flanker stimuli were presented at a visual angle of 1.1 ° above or below a fixation cross presented in the middle of the screen.

The target stimulus could be cued in four different ways (see Figure 1B). In the first cueing condition, an asterisk was presented at the location of the fixation cross (= center cue condition) and the target configuration was presented above or below the center of the screen, with equal probability. In the second cueing condition, two asterisks were presented (= double cue condition); the two asterisks were presented at the fixed locations of 1.1 ° of visual angle above and below the center of the screen. Since the cue appeared 500 ms before target onset (see Figure 1A), the cue provided information on the timing of the target stimulus. In the third cueing condition, an asterisk was presented

at the future location of the target stimulus above or below the center of the screen (= spatial cue condition). In this case, participants were informed both on the timing and the location of the target configuration. In the fourth cueing condition, no cue was given and, as a consequence, participants had no information about the timing and the location of the upcoming target symbol.

The attention network test consisted of one training block with 24 trials and three test blocks with 96 trials each. After the first and second block, participants took a short break, before starting the next block of the attention network test. A single trial consisted of the following: during a variable interval (VI, see figure 1A), ranging from 400 - 1 600 ms, a fixation cross was presented in the middle of the screen. Then, depending on the cue condition, a cue could be presented for 100 ms. Thereafter, a central fixation cross was presented for 400 ms, followed by the target stimulus, which was presented for 1 700 ms, or shorter if a response was given within 1 700 ms.

Finally, a fixation cross was presented during a variable delay. The length of this delay was determined by subtracting the reaction time (RT) plus 400 ms from the constant trial duration that was 3 500 ms (fig. 1). All 12 combinations of cueing (4) and target (3) conditions were presented in random order within each block. Both RT and error scores (ES; percentage of incorrect responses) were measured for each condition.

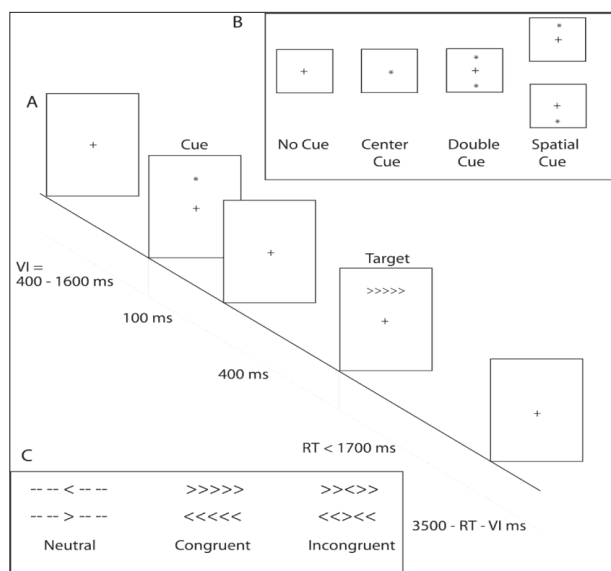


Figure 1. During a variable interval (VI = 400 - 1 600 ms) a central fixation cross is presented and the participant is instructed to look at it. Then a cue can be presented for 100 ms. In part B the four cue conditions are shown: No Cue, Central Cue, Double Cue, and Spatial Cue. After presentation of the cue, a central fixation cross is shown and is followed by the target stimulus. In part C the three different target configurations are depicted: the Neutral, Congruent and Incongruent target configurations. The target is depicted until the participant responds with a maximum of 1 700 ms. If the reaction time (RT) is shorter than 1 700 ms, the stimulus is replaced by the central fixation cross.

Attention Networks Calculations and Analyses

For each participant, all RT of correct responses of a specific condition outside the range of the mean RT $\pm$ 2.5 SD of that specific condition and RT shorter than 100 ms were excluded from analysis. Then, the average RT for each of the 12 conditions (4 cue conditions $\times$ 3 target conditions) was recalculated. Determination of the network effects was based on these RT data. ES of the 12 conditions were calculated by dividing the number of incorrect responses by the total number of responses for the specific condition and multiplying this number by 100.

To calculate the alerting network effect mean RT and ES of the double cue condition were subtracted from the mean RT and ES of the no cue condition. In such a way, the potentially beneficial effect of an alerting cue on RT and ES was probed. The orienting network effect was calculated by subtraction of the mean RT and ES of the responses in the spatial cue condition from the mean RT and ES of the responses in the center cue condition. This allowed us to probe the beneficial effect of spatial information, in addition to timing information. The executive network effect was calculated by subtracting the mean RT and ES in the congruent target condition from the mean RT and ES in the incongruent target condition. In this way, the advantage of congruence over incongruence in the target condition was determined. Mean RT and ES of the three target conditions were averaged to calculate the orienting and alerting network effects, whereas mean RT and ES of the 4 cueing conditions were averaged to calculate the executive network effect. Normalized network effects were determined by dividing the raw network effect by the mean of the two conditions involved in the calculation of the network effect. (Raw effect: $R = RT_A - RT_B$; Normalized effect: $n = R / ((RT_A + RT_B) / 2)$ with RT_X representing mean RT for condition x)¹. For all group data, participant scores outside the range of the mean $\pm$ 2.5 SD of that group were removed from analysis.

Statistical analyses

Depression, rumination and mindfulness skills scores

ANCOVAs were run to test whether groups differed on depressive symptoms, rumination and mindfulness skills on the post-measurement. Group (MBCT versus TAU) was the between-subject factor of interest and either depression, rumination or mindfulness on the post-measurement was the dependent variable. In addition, either depression, rumination or mindfulness on the pre-measurement was entered as a covariate in the analysis to correct for possible differences between groups on these measures. In order to check whether depression diagnosis at the pre-measurement interfered with the effect of treatment on clinical outcome, depression diagnosis was entered as a fixed factor in the model. Of note, depression diagnosis did not interact with the effect of treatment as probed by either Hamilton or rumination scores (p -values of depression diagnosis $\times$ group interaction > 0.1).

Attention network scores

ANCOVAs were run to test whether groups differed on ANT network scores (expressed in normalized RT and ES) at the post-measurement. One of the ANT networks was the dependent variable and group (MBCT versus TAU) was the between-subject factor of interest. In addition, Hamilton and attention network score of the pre-measurement were entered as covariates in the analysis to correct for possible differences between groups on these variables.

Overall attentional processing

Logistic regression analyses on overall data (all conditions combined) were run to test whether groups differently changed over time on more general, integrated attentional performance (see also Van den Hurk et al. (2010)), indexed by the performance on either target detection or response accuracy. In the first logistic regression analysis the aim was to probe the ability to detect the targets and so the dependent variable was response (yes versus no (= miss)) and the predictors were time and group. Of note, because the ANT has not been designed as a signal detection task, we expected to find very low numbers of misses in both groups (floor effects). However, we decided to run the analysis to check whether groups did not differ with respect to detection rates. In the second logistic regression analysis the aim was to probe the accuracy in responding and so the dependent variable was response (correct versus incorrect) and the predictors were time (pre versus post), group (MBCT versus TAU) and RTcen. RTcen is a variable of which the scores were obtained by a transformation of the variable RT. Each RT score was recalculated into a RTcen score by subtracting the overall mean RT score from this score. As such a new RTcen distribution was obtained with a mean RTcen score of zero. Because of this transformation, the outcomes of the logistic regression analyses show effects for the overall mean RT (instead of an RT of zero) and as such meaningful interpretations of the outcomes of the regression analysis were allowed for. The variable RTcen was included in the model as a predictor because RTcen is likely to explain much of the variance - RTcen is related to (predicts scores on) the dependent variable as reflected by the fact that with increasing reaction time the chance to respond accurately increases - improving the power of the analysis.

Results

Depression, rumination and mindfulness skills scores

ANCOVA with HRSD post-scores showed a significant difference between groups, $F(1,65) = 10.01$, $p < 0.01$, $\eta^2 = 0.13$. MBCT participants showed lower depression scores than controls on the post-measurement when corrected for differences in HRSD pre-scores (see Table 1). In line with the relief of depressive symptoms, ANCOVA with rumination post-scores showed significantly lower rumination scores for the MBCT

group after treatment, $F(1,63) = 11.25$, $p < 0.01$, $\eta^2 = 0.15$. ANCOVA with trainer as between-subject factor, either HRSD or rumination post-score as dependent variable and either HRSD or rumination pre-score as covariate, revealed no differences between trainers in clinical outcomes, $F(2,29) = 0.32$, $p = 0.73$ for HRSD scores and $F(2,28) = 0.15$, $p = 0.86$ for rumination scores. Finally, the MBCT patients scored higher on the observe, $F(1,65) = 18.61$, $p < 0.001$, $\eta^2 = .22$; act-with-awareness, $F(1,64) = 24.76$, $p < 0.001$, $\eta^2 = 0.28$; and accept-without-judgment, $F(1,65) = 22.10$, $p < 0.001$, $\eta^2 = 0.25$, scales after treatment (see Table 1). On the describe scale MBCT patients did not score significantly higher after treatment, $F(1,66) = 1.72$, $p = 0.20$.

Table 1. Estimated marginal means (SE) of the MBCT and control group at the post-measurement, F-values, p-values and effect sizes (η^2) for HRSD, rumination and mindfulness skills are shown.

	Control	MBCT	F-value	p	η^2
HRSD	11.59 (0.95)	7.12 (1.03)	10.01	< 0.01	0.13
Rumination	28.39 (1.14)	22.72 (1.24)	11.25	< 0.01	0.15
Observe	16.60 (0.91)	22.46 (1.00)	18.61	< 0.001	0.22
Describe	17.35 (0.56)	18.42 (0.61)	1.72	0.20	0.03
Act-with-awareness	14.90 (0.79)	20.63 (0.84)	24.76	< 0.001	0.28
Accept-without-judgment	18.10 (0.69)	22.95 (0.77)	22.10	< 0.001	0.25

Attention Networks analyses

Normalized RT scores

None of the ANCOVAs with normalized RT data of the attentional networks on the post-measurement showed a significant difference between groups: for alerting, $F(1,65) = 2.88$, $p = 0.10$, for orienting, $F(1,67) = 0.26$, $p = 0.62$ and for executive attention, $F(1,65) = 0.65$, $p = 0.42$ (see Figure 2).

Error scores

None of the ANCOVAs with ES data of the attentional networks on the post-measurement showed a significant difference between groups: for alerting, $F(1,66) = 1.30$, $p = 0.26$, for orienting, $F(1,65) = 1.01$, $p = 0.32$ and for executive attention, $F(1,63) = 0.53$, $p = 0.47$ (see Figure 3).

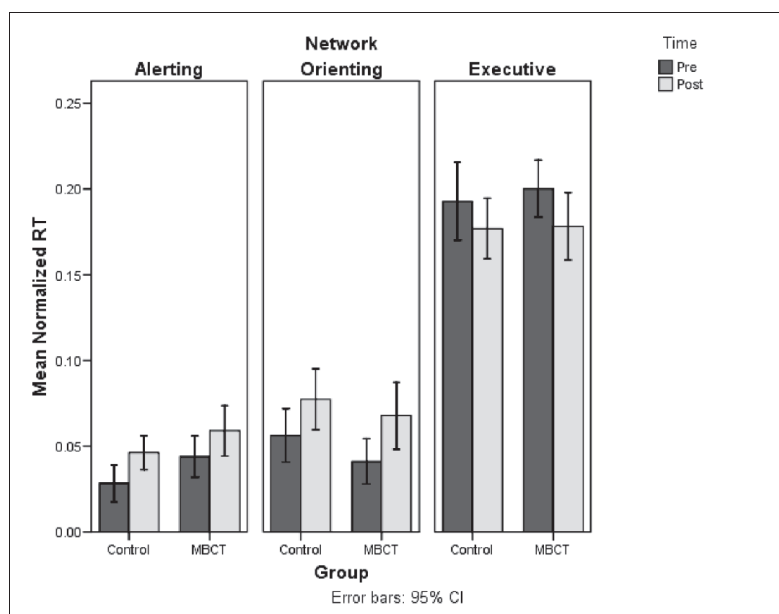


Figure 2. Normalized RT data of both groups, MBCT (+TAU) versus control (TAU), for the alerting, orienting and executive attention network of the pre- and post-measurement. Error bars indicate 95% confidence intervals (CI). For all networks, ANCOVA showed no difference between groups in attention network scores on the post-measurement when corrected for differences in attention network and Hamilton scores on the pre-measurement.

Overall attentional performance

Probability of detections and misses

The first logistic regression analysis was run to test whether overall attentional performance (expressed in terms of the chance of a response/miss) of the MBCT group differently changed over time. A significant Group (MBCT versus TAU) x Time (pre versus post) interaction would show this to be the case. In order to optimize the regression analysis for testing the significance of the Group x Time interaction, the other terms Time and Group were included. Neither Time, $p = 0.64$, nor Group, $p = 0.40$, nor the Group x Time interaction, $p = 0.48$, was a significant predictor. Thus, these results - the terms Group, Time and Group x Time not being significant predictors - showed that both groups did not differ from each other and did not (differently) change over time with respect to the number of misses, respectively.

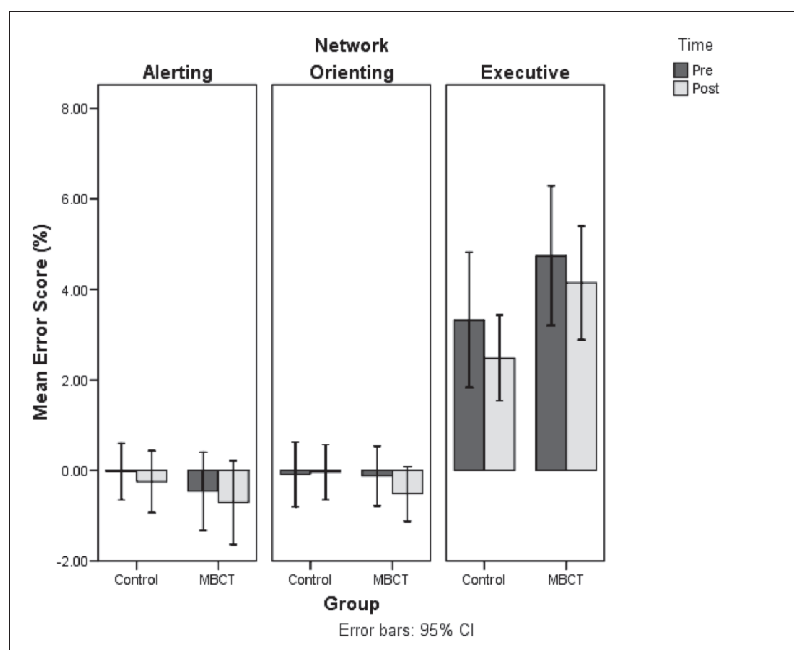


Figure 3. Error score data (%) of both groups, MBCT (+TAU) versus control (TAU), for the alerting, orienting and executive attention network of the pre- and post-measurement. Error bars indicate 95% confidence intervals (CI). For all networks, ANCOVA showed no difference between groups in attention network scores on the post-measurement when corrected for differences in attention network and Hamilton scores on the pre-measurement.

Probability of correct and incorrect responses

The second logistic regression analysis was run to test whether overall attentional performance (expressed in terms of accuracy of response) of the MBCT group differently changed over time as compared to the control group. A significant Group (MBCT versus TAU) x Time (pre versus post) interaction would show this to be the case. In order to optimize the regression analysis for testing the significance of the Group x Time interaction, the other terms RTcen, Time, RTcen x Time, Group, Group x RTcen and Group x RTcen x Time were included. As expected, RTcen was a significant predictor, $\beta = 0.011$, $p < 0.001$, $\text{Exp}(B) = 1.011$. No significant Group x Time interaction was found, $p = 0.30$, so the MBCT group did not show a different change in overall attentional processing over time. In summary, when either the chance of a miss or the accuracy of the response was considered, the MBCT group did not show a different change over time as compared to the TAU group.

Discussion

The aim of this study was to investigate whether attentional improvements are seen after MBCT in a sample of recurrently depressed patients and whether these improvements in attention mediate the efficacy of the MBCT program. The results show reductions in depressive symptoms and ruminative thinking and an increase in mindfulness skills after MBCT. These results are in line with previous studies that also showed lower depression and rumination scores and increased mindfulness skills after a short-term mindfulness intervention (Anderson et al., 2007; Gionni et al., 2006; Kenny & Williams, 2007; Kingston et al., 2007; Michalak, Hölz, & Teismann, 2011) and point to the efficacy of MBCT for recurrently depressed patients. Contrary to the clinical improvements, no differential changes in either specific, basal components of attention (alerting, orienting and executive attention) or in more general, integrated attentional processing are seen. The finding of no improvements in specific components of attentional processing in our study is in line with the results obtained in other studies involving healthy participants that also did not show improvements in specific, basal components of attentional functioning after a short-term mindfulness training (Anderson et al., 2007; Chambers et al., 2008). To our knowledge, only in the study by Jha et al. (2007) a short-term mindfulness training (MBSR) has been associated with a change in a specific component of attentional processing (Jha et al., 2007), however limited to the orienting of attention. Long-term mindfulness practices, on the other hand, have consistently been associated with improvements in specific, basal components of attentional processing (Chan & Woollacott, 2007; Moore & Malinowski, 2009; Valentine & Sweet, 1999; Van den Hurk et al., 2010). In these studies, participants had significantly more meditation experience than the amount that can be acquired during either the eight weeks of MBCT, MBSR, or short-term mindfulness retreats. The larger amount of meditation experience in these studies might explain the improvements in basal components of attentional functioning, suggesting that such improvements might only be expected after extended periods of training, in both healthy and clinical populations. Further research is needed to investigate whether long-term mindfulness training can improve attentional processing in a clinical sample of recurrently depressed patients.

Both short-term and long-term mindfulness trainings have been associated with improvements at a more general, integrated level of attentional functioning (Anderson et al., 2007; Chambers et al., 2008; Slagter et al., 2007; Van den Hurk et al., 2010). Chambers et al. (2008) and Anderson et al. (2007) found changes in the overall performance on attention tasks – as reflected by improved information processing speed – after short-term mindfulness trainings, whereas Slagter et al. (2007) and van den Hurk et al. (2010) found similar improvements after long-term trainings. The outcome of the object detection task – during which participants had to indicate whether or not a common object was present in either a consistent or inconsistent scene – used to measure non-directed attention in the study by Anderson et al. led them to suggest that

mindfulness may be more closely associated with changes in the 'quality of awareness of present moment experience' than with changes in specific, basal components of attentional functioning (Anderson et al., 2007).

In the present study, participation in MBCT was not associated with a differential improvement in more general, integrated attentional functioning as measured with the ANT. The lack of finding a differential improvement in overall attentional processing is in contrast with our hypothesis and the results of the studies on short-term mindfulness trainings by Chambers et al. (2008) and Anderson et al. (2007). We speculate that the ANT might not be the appropriate task to probe improvements in overall attentional processing similar to those found by Chambers et al. (2008) and Anderson et al. (2007). In the study by Chambers and colleagues differences in sustained attention were shown by improved information processing speed in the internal switching task (IST) due to the intensive practice of mindfulness meditation. For the IST participants were instructed to maintain a silent mental count of either neutral or affective words belonging to two different categories and had to press the spacebar as soon as they had updated their mental count and were ready for the next word. In the study by Anderson and colleagues improvements in mindfulness after MBSR were correlated with improvements in object detection, as probed with the object detection task described above. Hence, these two attention tasks seem to be very different from the ANT in the way attentional processing is probed. The fact that the studied sample consisted of recurrently depressed patients might be an alternative explanation, as only healthy participants were tested in the studies by Chambers et al. (2008) and Anderson et al. (2007). Nonetheless, it seems likely that there is more room for improvement in attentional processing in a clinical sample of recurrently depressed patients that has previously been shown to have impairments in attentional processing than in a sample of healthy individuals (Koster et al., 2010).

Contrary to our predictions, neither in basal components of attention nor in more general attentional processing were improvements observed after MBCT. It seems unlikely that the ANT was not the appropriate task to detect such improvements in attention as previous research, in which the ANT was also used, has related such improvements to the practice of mindfulness meditation by comparing the performance of only twenty mindfulness meditators to the performance of twenty matched controls (Van den Hurk et al., 2010). Furthermore, it seems unlikely that low quality of delivery of MBCT might play a role in the null findings on attentional processing, since highly experienced MBCT trainers guided the groups. Moreover, the clinical results are compelling in showing the ability of the trainers to transfer the essentials of the MBCT teachings to the participants, as both depressive symptoms and rumination decreased after MBCT. Finally, also the lack of sufficient home practice seems not the reason for the null findings on attentional processing, since on average participants indicated to be engaged in formal as well as informal meditation for around 30 days during the MBCT program, i.e., every other day.

Of note, the amount of home practice was not correlated to any of the attention network scores on the post-measurement (all p -values $> .05$, not reported in results section).

Altogether, the results of our study suggest that improvements in attentional processing might not have a significant role in mediating the efficacy of MBCT for recurrently depressed patients. At this point, it might be meaningful to consider the operational definition of mindfulness as proposed by Bishop et al. (2004). In their seminal paper, the psychological construct of mindfulness was conceptualized to consist of two components: the first component involves the self-regulation of attention so that it is maintained on immediate experience, thereby allowing for increased recognition of mental events in the present moment. The second component involves adopting a particular orientation toward one's experiences in the present moment, an orientation that is characterized by intentional curiosity, openness, and acceptance. Such an orientation seems tightly linked to the well-known idea of equanimity, i.e., reduced emotional reactivity, which is assumed to be associated with the practice of mindfulness meditation (Bodhi, 1993). As the first component seems closely related to the measurements of attentional functioning in our study, our data suggest that it might be especially the second component of mindfulness that has a mediating role in the efficacy of MBCT.

The suggestion that it might be the second component of mindfulness that is responsible for the positive clinical changes seems supported by the results of the studies by Kohls and colleagues and Kuyken and colleagues (Kohls, Sauer, & Walach, 2009; Kuyken et al., 2010). The findings by Kohls et al. suggested heuristic value in a two-factorial mindfulness construct, consisting of a 'presence' and an 'acceptance' factor and showed that the negative association between mindfulness and depression was completely due to the acceptance factor. Likewise, the study by Kuyken and colleagues showed that the effects of MBCT are mediated by enhancement of mindfulness and self-compassion, which are concepts that are strongly related to an attitude that is characterized by accepting and not judging oneself for having (negative) thoughts, emotions and inner feelings. In line with these findings, MBCT participants in our study also showed increases in mindfulness skills including, among others, accept-without-judgment. Moreover, the ability to accept-without-judgment was found to mediate the relationship between participation in MBCT and reduction of depressive symptoms in the total sample of recurrently depressed patients that was studied (Van Aalderen et al., 2012).

Koster and colleagues (2010) propose the impaired disengagement of attention to be central to the psychopathological mechanisms involved in depression, linking attention, rumination and clinical depression. According to their framework, depression seems characterized by *valence-specific* impaired attentional control and that brooding - the more pathogenic aspect of rumination - has been correlated particularly with *valence-specific* inhibitory deficits. Thus, the cultivation of the second component of mindfulness - promoting an attitude of acceptance, openness and curiosity towards thoughts and emotions and fostering reduced emotional reactivity - appears a good candidate

therapeutic factor able to specifically target this psychopathological mechanism. Further research is needed to investigate this hypothesis in more detail. In addition, it would be interesting to study the self-regulation of attention in the presence of emotional stimuli in recurrently depressed MBCT patients.

Noteworthy, a relatively large number of participants had previous experience with meditation: 17 out of 37 participants in the control group and 16 out of 34 participants in the MBCT group. No group difference was present regarding the number of participants with previous meditation experience ($p = .93$), ruling out the possibility that differences in previous meditation experience account for the observed group differences on the clinical outcome variables. Still, it might be possible that previous meditation experience does interfere with the effect of treatment. In other words, the effect of treatment might be largest for the group of participants without any previous meditation experience. By means of additional analyses (ANCOVA with previous meditation experience as additional factor; not reported in results section) we checked whether previous meditation experience did interact with the effect of treatment on clinical outcome. It turned out that previous meditation experience did not interact with the effect of MBCT on either depressive symptoms or rumination (p -values > 0.1). The latter finding might be due to the fact that the majority of participants with previous experience had only relatively little experience; 27 out of the 33 participants with previous experience had only less than 5 years of experience.

Concluding remarks

Altogether, the results of the present study suggest that improvements in attentional processing, observed after long-term mindfulness trainings, are not found after a short-term training (MBCT) in a clinical sample of recurrently depressed patients. These findings suggest that the clinical improvements, seen after MBCT, might not be primarily mediated by improvements in the self-regulation of attention (i.e., the first component of mindfulness according to Bishop et al. (2004)). Together with recent, converging research findings they suggest that it might be mostly the second component of mindfulness according to Bishop et al. (2004) – referring to the cultivation of an attitude that is characterized by openness and acceptance and related to reduced emotional reactivity – that mediates the efficacy of MBCT for recurrently depressed patients. It would be interesting for future research to inquire this hypothesis more deeply and to explore whether this hypothesis can be generalized to mindfulness-based interventions for other clinical samples.

Footnotes

- ¹ Normalized network data were calculated by dividing the absolute network effect by the mean RT of the two conditions used to calculate the network effect. See Wang et al. for similar analyses of RT network scores (Wang et al., 2005).
- ² With specific, basal components of attentional processing the specific attentional functions of alerting, orienting and executive attention are referred to, whereas with more general, integrated attentional processing the overall performance in attention tasks is meant.
- ³ For a further elaboration on these clinical and mindfulness skills data, please see the study by van Aalderen et al. (2012).

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CHAPTER

6

The Role of the Teacher in Mindfulness-Based Approaches: A Qualitative Study

Van Aalderen, J.R., Breukers, W.J., Reuzel, R.P., & Speckens, A.E.M. (2014). The Role of the Teacher in Mindfulness-Based Approaches: A Qualitative Study. *Mindfulness*, 5(2), 170-178.

Abstract

Introduction: In the last decade, mindfulness-based interventions have been shown to be effective interventions for both psychiatric disorders and chronic and severe physical conditions, such as cancer. The literature consistently stresses the importance of mindfulness teachers having an ongoing experiential engagement with mindfulness meditation practice in addition to theoretical knowledge in order to be effective as a teacher. However, there has been little systematic investigation of the role of the mindfulness teacher. This study explores the role of the mindfulness-based teacher from the perspective of both participant and teacher.

Method: Three qualitative techniques are used to obtain information: in-depth interviews of mindfulness training participants (n=10) and teachers (n=9); a focus group consisting of mindfulness teachers (n=6) and observation by participation in an Mindfulness-based Cognitive Therapy course (MBCT). These three sources of information enabled us to use triangulation to come to our conclusions. A thematic analysis approach was used to derive central themes from the interviews.

Results: Analyses resulted in four overarching themes characterizing the teacher-participant relationship in MBCT: embodiment, empowerment, non-reactivity and peer support.

Conclusions: The embodiment of the method by the teacher, the teaching of an empowering way of dealing with problems and group-processes are mentioned as key-factors. Group-processes seem to be underestimated by the teachers in our study. Further quantitative research is necessary to validate the results of this explorative study.

Introduction

Mindfulness-based interventions have increasingly been established in general and mental health care. Several studies have now shown the efficacy of mindfulness interventions in a range of different mental and physical conditions (e.g. Bohlmeijer, Prenger, Taal, & Cuijpers, 2010; Fjorback, Arendt, Ørnbøl, Fink, & Walach, 2011; Hofmann et al., 2010; Piet & Hougaard, 2011). In this study we primarily focus on mindfulness-based cognitive therapy (MBCT). MBCT was designed as a prevention strategy for patients having had three or more depressive episodes (Segal et al., 2002). Research shows that MBCT is efficacious in reducing the risk of relapse (Godfrin & Van Heeringen, 2010; Ma & Teasdale, 2004; Teasdale et al., 2000) and is as effective as maintenance antidepressant medication, the most common intervention to treat recurrent depression (Kuyken et al., 2008; Segal et al., 2010).

As a result, treatment guidelines have adopted MBCT as a prophylactic treatment for recurrent depression. For example, in the UK the National Institute for Health and Clinical Excellence (NICE) recommend MBCT as treatment option for relapse prevention in patients suffering from three or more depressive episodes and currently in remission (NICE, 2009). Also in The Netherlands, the multidisciplinary guidelines for mental health care recommend MBCT as treatment option for relapse prevention after a severe depressive episode (Landelijke Stuurgroep Multidisciplinaire Richtlijnontwikkeling GGZ, 2010). Recent evidence also shows that MBCT is efficacious in recurrent depressive patients when they are still depressed (Manicavasgar, Parker, & Perich, 2011; Van Aalderen et al., 2012).

In addition to quantitative studies, several qualitative studies have investigated MBCT in patients with depression (Allen, Bromley, Kuyken, & Sonnenberg, 2009; Finucane & Mercer, 2006; Mason & Hargreaves, 2001; Smith, Graham, & Senthinathan, 2007). These qualitative studies concentrated on getting detailed information about participant experiences with MBCT and possible factors that might help us to understand how MBCT might work.

Although these studies used slightly different ways in analyzing the qualitative data, including grounded theory (Mason & Hargreaves, 2001), thematic analysis (Allen et al., 2009; Smith et al., 2007) and a framework approach (Finucane & Mercer, 2006), they all resulted in similar themes which might be important.

All four studies mention the role of a change towards a more accepting attitude of patients in relation to both themselves and their depressive symptoms. The cited studies highlight that during MBCT, participants become more aware of the warning signals for an upcoming depressive episode, resulting in an increased capacity to intervene. This is part of the hypothesis why MBCT might work in preventing relapse (Segal et al., 2002).

Other common themes are relaxation as a result of the training (Finucane & Mercer, 2006; Mason & Hargreaves, 2001; Smith et al., 2007), reduced symptoms of depression

(Finucane & Mercer, 2006; Smith et al., 2007) and the importance of group support (Mason & Hargreaves, 2001; Smith et al., 2007).

Surprisingly, the role of the teacher is barely touched on by the qualitative studies discussed. However, how mindfulness interventions are taught is very different from most other psychological therapies like cognitive behavioural therapy (CBT). There is an ongoing debate about the influence of therapist competency in psychotherapies in general. In a review of several studies, Shafran and colleagues (2009) conclude that the amount of training appears to be positively correlated to treatment outcome. Moreover, therapist experience seems to marginalize the non specific therapist factors in cognitive therapy (Shafran et al., 2009). So, therapists' competency seems an important factor in therapy success.

In mindfulness literature, therapist competency is an often mentioned point. Crane and colleagues (Crane, Kuyken, Hastings, Rothwell, & Williams, 2010) emphasize the importance of embodiment of mindfulness by the teacher, which not only requires adequate training but also an intensive personal practice in daily life (Crane et al., 2011). This emphasis on embodiment of mindfulness is mentioned in almost all the literature about the teaching of mindfulness (e.g. Kabat-Zinn et al.; McCown, Reibel, & Micozzi, 2010) and is seen as a prerequisite to be an adequate teacher. McCown et al. (2010) state that while considering to become a MBSR or MBCT teacher, a key question for every teacher is about the degree of 'existential commitment'. Segal and his colleagues (2004, p. 62) call this '... demand placed upon therapists to acquaint themselves personally with mindfulness practice', perhaps the most radical part within MBCT.

As far as we are aware, there is only one quantitative study suggesting that mindfulness meditation by therapists influences the therapeutic relationship (Grepmaier et al., 2007). In this sophisticated but relatively small study, psychotherapists in training, practicing 30 minutes Zen meditation at the beginning of the day, were more positively evaluated by their patients than therapists without daily meditation practice.

To our knowledge, no qualitative study so far has focused on the role of the teacher in mindfulness-based interventions, although it is hypothesized to play an important role. Therefore we intend to explore the views of both the participants and teachers on the role of the teacher in mindfulness-based approaches. Because of its explorative power and capabilities of capturing subjective experiences (Malterud, 2001), qualitative research was considered to be the most appropriate methodology to examine this area of interest.

Method

Context

The study was embedded in a recently published larger randomized controlled trial on the efficacy of MBCT for patients with recurrent depression by Van Aalderen et al. (2012), which has been approved by the local Commission for Human related Research.

Interviews

In total, ten MBCT participants ('participants') and nine MBCT teachers ('teachers') were interviewed in-depth.

The participants suffered from recurrent depression, having had at least three or more depressive episodes. Purposive sampling ensured variation over the following characteristics: time since completion MBCT course (range: 2 weeks – 2,5 year, mean: 1,1 year), sex (6 females and 4 males) and age (range: 26-62, mean: 49,5). One participant who did not complete the training program, was also invited to take part (see table 1 for the participant characteristics). In addition, 9 teachers were selected using the database of the annual national conference for mindfulness teachers, including one teacher who also participated in the clinical trial. Purposive sampling was used to create a variety in professional background and region within The Netherlands (see table 2 for teacher characteristics). All participants and teachers were Dutch. The interviews were conducted in their professional environment. All interviews lasted between sixty and ninety minutes and were recorded with a digital voice recorder.

Table 1. Characteristics of participants ($n = 10$)

Demographic characteristics	
Female (%)	6 (60)
Age (in years)	
Mean (SD)	47.2 (12.2)
Range	24 – 60
Married/cohabiting (%)	5 (50)
University degree (%)	6 (60)
Psychiatric characteristics	
Currently depressed (%)	1 (10)
Previous episodes	
Mean (SD)	4.4 (2.5)
Median	4
Age of first depression (in years)	
Mean (SD)	28.4 (7.9)
Treatment outcome	
BDI scores before MBCT	
Mean (SD)	15.4 (7.0)
BDI scores directly after MBCT	
Mean (SD)	9.5 (4.5)

After an introductory question about their experiences with the MBCT training, participants were asked the following question: 'What is your view on your teacher?'. This topic was elaborated by further questions, summaries and clarifications. Interviews with teachers were conducted in a similar way, with the following question about the therapeutic relationship: 'How would you characterise your relationship with the participant?'.

Focus group

After the interviews with the teachers, a focus group was held, led by WB. The teachers were recruited from the Nijmegen University Medical Centre for Mindfulness. In a sixty minute meeting, six teachers were asked to elaborate on themes which had come up in the interviews with teachers. One teacher of this focus group also participated in the in depth interviews.

The meeting was recorded with a digital voice recorder, while a second researcher took notes.

Observation by participation

The third method was observation by participating in an MBCT training of eight sessions. The meetings lasted two and a half hour each, and included a 'silent day' between the 6th and 7th meeting. Consent of the participants was acquired in advance. The group initially consisted of twelve participants (8 females and 4 males), one female participant left after session one. Notes were taken after each session. Special attention was given to the progress of participants and the interaction between teacher and participant. The observer (WB) had not participated in any previous mindfulness training or other meditation traditions.

Table 2. Characteristics of Mindfulness teachers (interviews and focus group)

	Interviewed teachers (<i>n</i> = 9)	Teachers in focus group (<i>n</i> = 6)
Demographic characteristics		
Female (%)	5 (56)	4 (67)
Age (in years)		
Mean (SD)	53.8 (8.4)	56.3 (7.9)
Range	44 – 60	44 – 64
Professional education (%)		
Registered Psychologist/Psychotherapist	4 (44)	1 (17)
Occupational therapist	4 (44)	4 (66)
General practitioner	1 (11)	1 (17)
MBCT/MBSR education (%) ^a		
Basic training	6 (67)	1 (17)
Advanced training	3 (33)	5 (83)
MBCT/MBSR training experience (in years)		
Mean (SD)	4.0 (1.7)	2.8 (1.3)
Range	2 – 7	1.5 – 5
Number of groups trained ^b		
Mean (SD)	11.2 (7.6)	12.7 (6.7)
Range	3 – 25	3 – 20
Personal meditation practice (in years) ^c		
Mean (SD)	14.9 (13.9)	12.0 (14.6)
Range	1 – 41	1.5 – 41
Daily meditation practice (times per week)		
Mean (SD)	10.6 (5.9)	6.2 (2.0)
Range	2 – 21	
retreats (%)	6 (67)	6 (100)
Number of days in retreat last 2 years ^d		
Mean (SD)	27.1 (47.4)	34.0 (38.7)
Range	8 – 150	8 – 100
^a Based on criteria used by the association of mindfulness teachers in The Netherlands and Belgium (VMBN)		
^b 4 teachers had experience with MBCT for recurrent depression; others trained different patient groups (e.g. cancer, anxiety)		
^c Personal meditation tradition consisted of: Vipassana (6); Zen (3) and 6 teachers combined these with other forms of meditation (e.g. body-oriented; object oriented, martial arts).		
^d Number of days in retreat calculated for the 6 six teachers who followed retreats in the past 2 years		

Analysis

The recordings of the interviews and the focus group were transcribed verbatim and anonymised before analysis. Summaries of the interviews were sent to the respondents for validation (member checking). Each transcript, the eight observations together, and the focus group were considered as 'bodies of information', enabling triangulation. These bodies of information were first analysed by WB using a thematic approach. After transcription, the bodies of information went through a process in which concepts were selected from the data and compared with previously emerged concepts. Second, on the basis of a core category, the original data were re-examined and discussed by WB and JvA, and further aggregated by JvA and AS, resulting in the final themes.

Results

After the analysis of the interviews, the focus group and the observational data, four converging themes were found: 'embodiment', 'empowerment', 'non-reactivity' and 'peer support' (see table 3).

Table 3. The four main themes of the interviews of the teachers, the interviews with the participants, the focus group and the observational study.

Themes	Short description
Embodiment	The teacher demonstrates a personal experience of mindfulness during the training
Empowerment	The perceived focus on developing autonomy by teachers and the participants
Non-reactivity	The role acceptance, non-judgement and non-reactivity plays in the interaction between teacher and participants
Peer support	Feeling supported by the group

Embodiment

Participants

Nine out of the ten participants considered that it is crucial for teachers to meditate themselves and know mindfulness meditation, from their own experience. In this way, teachers function as a role model of the attitudinal qualities of mindfulness such as acceptance and non-judgement: *'I just believe her (the teacher). She is calm, with her whole being, understanding and non-judging'*. And: *'If teachers would not have experience, they would be teaching 'theory from a book' and be less able to teach mindfulness'*; *'The teacher does not have to be an excellent meditator but has to know what is going on when meditating'*.

Seven participants mentioned it is important for a teacher to be a role model, also of compassion: *'The compassion for yourself develops to compassion for others... it is*

important that the teacher meditates herself'. Being understood is also mentioned as important: *'The understanding of the teacher is important, more important than kindness. A lot of people are kind, but not understanding. The mindfulness teacher is essential for the transmission of mindfulness'*.

A specific aspect of embodiment was the role of language used by the teacher, mentioned by five participants. Both the quality of the voice and the way the way language was used: *'The voice is important, I liked one voice over the other; it was stronger and more comfortable'*. One participant expressed a preference for plain language and remarked a teacher used too many *'Zen words'*.

Another aspect of embodiment by the teacher was the way the teachers motivated the participants by their attitude. *'As a result of the honest charisma of the teacher, I got confidence in the training'*. And: *'She (the teacher) was reliable and straight on. I found it admirable, inspiring and motivating'*.

This subtheme 'motivation' was mentioned by several participants ($n = 7$) but only twice by teachers.

Teachers

All nine teachers emphasized the importance of *'internalising', 'embodying', or 'living'* the method. In doing so, some underlined the importance of formal meditation or exercises, while others spoke about having a *'mindful attitude'*; *'Meditation experience is essential for a teacher... You can only embody mindfulness when you practice yourself.'* One teacher claimed that integrating mindfulness into daily life is required: *'People doing only sitting-meditation without weaving it into the rest of their life are doing it in vain'*.

Many teachers added that internalisation is not achieved at once, but has to be recaptured by daily practice: *'The method must become part of yourself, that does not happen overnight'*. Internalisation of mindfulness was considered to be important because the work of the teacher is based on daily experiences with mindfulness: *'If teachers do not have daily meditation experiences, they do not have any 'material' to work with and consequently do not know what they are talking about'*.

The teachers ($n = 7$) also mentioned the use of language, in particular the use of metaphors: *'Every meditation we use different images and metaphors and I think that for one person, a specific metaphor will work better than for another. So we use different ways'*. Others stressed the importance of language in general: *'I try to avoid vague language like 'energy'. I give specific examples from my daily life'*.

Focus group

There was considerable consensus in the focus group that teachers need to embody mindfulness. *'By giving examples from your own live, it becomes natural, people begin to understand how to integrate it in their lives'*. A new point of view was brought up: *'Having a lot of meditation experience does not automatically make you a good teacher'*. It was

believed that being a good teacher also requires therapeutic and social skills: *'Without my experience as a group therapist it would have been much harder'*.

Observational study

In observation, the teacher was perceived as practicing personally. *'The teacher shares own experiences, this provides confidence and gives her authority. Without being authoritative, it is a result of her experience. She teaches from her own experience'*.

The observant also noticed a specific use of her voice by the teacher: *'Her voice is typical, especially during the exercises: quiet, soft, gentle, somewhat slow and friendly'*. According to the observant, the teacher also picked her words carefully and avoided 'why' questions.

Empowerment

Participants

Six participants described a difference between their relationship with their MBCT teacher and their psychiatrist, therapist, or general practitioner.

'You are put to work. You start working on it and you have to'. 'This is the opposite of the 'garage model' as in the medical world: you have a problem, get it fixed with medication and your problems are gone' . Or: 'At the end of the day, it is your responsibility. The teacher brings that about immediately, there is no space for being the victim'.

The relationship was described as *'less personal'* and *'without dependence'*:

'The relationship was less personal than with my psychiatrist, which is good however. In the end, you have to do it yourself.' Another participant described *'It is a training and not therapy. You participate not as a patient but to learn something. This leads to a much more constructive relationship.'*

Three participants mentioned equality in the relationship between the teachers and the participants. This seemed a result of remarks of teachers stressing that they also are in an ongoing process: *'Teachers emphasize facts like: 'we ourselves are also still learning'*.

Teachers

All teachers emphasized the difference between the teacher-participant relationship in MBCT and other relationships in (health) care, commonly described as relationships between therapist and client, or physician and patient. They did not need to *'solve problems'* or to *'take care'* anymore, they had a *'less important role'* and the relationship is experienced as *'less burdensome'*.

One teacher described it as follows: *'I don't have to fix anything anymore; I can just be there and watch. And I think it is sometimes really amazing the way something is happening while you are watching like that, when you just stay with it, and that it takes place independent of me.'* Another teacher explained: *'The role of the patient elicits expectations like 'I am*

here to get treatment'. (...) Mindfulness invites so much the non-patient role, more than any other treatment'.

According to the teachers, participants had to decide for themselves, they have to 'use their own compass' or 'find their own wisdom' which created autonomy.

Five teachers spoke about equality, which they considered being a special feature of the teacher-participant relationship, resulting in increased autonomy of the participant. In MBCT, teacher and participant are more equal than in other (health-) care settings, teachers claimed: *'It is more equal than in other therapies because, in fact, you share more experiences with each other'.* A few teachers experienced less 'hierarchy' and the relationship is characterised as being *'from human to human'.* This is seen as the consequence of doing the same exercises, sharing experiences, learning from participants, and an emphasis on similarity rather than differences.

Some teachers remarked that although the relationship is more equal, the teacher still has more knowledge and experience and has a different role than the participants: *'You as a teacher are the one who is responsible for safety, holding the group, something you have to do. This is a difference, even though in the experience I feel equality'.*

Focus group

The participants of the focus group described the teacher participant relationship in MBCT as *'A relationship in which you pay attention to form and not to content'.* Both differences and similarities between teachers and participants were mentioned. A difference between participants and teachers was formulated in terms of: *'participants want answers of the teachers'.* One teacher stated: *'It (the relationship) is quite equal, sometimes I am impressed by the things participants bring in. Then I learn more from them than they from me'.*

Observational study

During observation it was found that while the training progressed, participants spoke more freely. They also started taking more and more initiative, for instance by choosing what position to adopt during the exercises or by sharing their experiences.

Non-reactivity

Participants

The non-reactive manner of dealing with personal problems by the teachers in MBCT was discussed by five participants and seemed to play an important role in the relationship between the teachers and the participants. According to one participant, the only difference between a previous therapist and her teacher was: *'that in the training, you don't go into details about personal problems'.* This difference of not dwelling on the personal histories of (for example depressive) problems was mentioned by several

participants and this was experienced as both positive and negative. One participant for example, experienced the teacher as too distant, she would have liked a more warm and friendly relationship. Another participant noted that he was struck by the neutral reaction of the teacher to success stories of participants. He also noted that the teacher was a *'kind of mirror'*.

Teachers

Six teachers discussed the style of responding to MBCT participants. They said that they laid down their *'therapeutic'* or *'doctors' perspective*, *'keep their hands behind their back'*, *'lean backward'*, *'step back'*, *'relax'*, and *'enjoy'*, in contrast with other treatment contacts. Some teachers said they felt less responsibility for the participant in solving their problems, others stress the reduction of dependence of the participant. One teacher stated that by *'not intervening'* teachers emphasize similarities (mindful experiences) rather than differences (depression) between them and the participants.

Focus Group

The major task of mindfulness teachers was seen to be to support participants in observing in an accepting and non-reacting way what is happening in the present moment. It was considered to be important to embody an accepting and non-reacting attitude as a teacher, even when discussing difficult issues with participants, for example non-compliance with the homework exercises. According to one teacher: *'If you approach this (i.e. not practicing) in an accepting manner than it (i.e. mindfulness training) is starting to work'*.

Observational study

During the observational study, the teacher accepted every thought and emotion that surfaced in participants and prevented participants from being reactive towards each other.

Peer support

Participants

Nine participants explicitly considered the group to be very important. The group was a motivating factor in staying with the course: *'The group gives some sort of pressure, to keep sitting and practicing'*. Another aspect was mutual recognition of suffering from depressive symptoms and the provision of support: *'Recognition of the group gives trust and makes you feel at ease. You feel understood and free from prejudice by the society. So much understanding is a new experience'*. Also, the group was mentioned as a way to enhance reflection on your own process by recognition of the same processes in

others. The group results also in a less dependent relationship with the teacher, which is experienced as positive. One participant stressed another point of mindfulness-groups, *'Although it is important to feel accepted by the group, you are in the group purely for yourself'*. She felt little influence of the group although it gave some recognition and some involvement. Several participants felt the desire to continue practising mindfulness with the group after the training.

Teachers

Compared to the participants, fewer teachers explicitly mentioned the influence of the group. Four teachers spoke about the role of the group. Two teachers stressed the difference with group therapy in which the group dynamic is the way change is achieved. However, the group was seen as essential for support during and after the training. The group was also stimulated enhanced awareness of participants' own processes. The group was also perceived as motivating and stimulating: *'The group creates a safe environment for own experiences'*.

Focus group

The group aspect of the mindfulness training was not discussed in the focus group as a separate issue.

Observational study

During the sessions, the interaction with the teacher and the interaction between the group members increased in intimacy, especially in session 7 and 8. Participants felt more freedom to react and had more and more experiences to share. This seemed the result of the integration of mindfulness in their personal lives. The group seemed to stimulate this process by exchanging these experiences.

Discussion

The goal of this study is to explore the role of the teacher within MBCT training. This is the first study with the role of the teacher as specific study object, taking both teacher and participant experiences into account. A focus group and observational study were added to enable triangulation of the data with the purpose of more robust outcome. The analysis of the data resulted in four themes, related to aspects of the teacher-participant relationship: 'embodiment', 'empowerment', 'non-reactivity' and 'peer support'.

One of the most important outcomes of this study is the emphasis on embodiment of mindfulness meditation by the teacher. This is mentioned not only by the teachers and focus group, but also by the participants and the observer. This finding is in line with the experiences and theoretical framework, summarized by for example Crane et al., (Crane et al., 2010; Crane et al., 2011) stressing that embodiment is unique and indispensable

compared to other therapies. The therapeutic tradition coming closest to this radical focus on embodiment might be the psychoanalytic tradition, with its strong emphasis on personal development work (see for a short discussion on this topic: McCown et al., 2010). An interesting question still to answer is whether embodiment is restricted to mindfulness interventions or if it functions as a mediator in all kinds of (therapeutic) relations in mental and somatic health care.

Although our results point towards the importance of teachers integrating the method into their own lives, this aspect of embodiment is not mentioned so clearly in previous qualitative studies. This is probably due to the fact that our study focused more on the role of the teacher and less on the way mindfulness interventions might work.

The focus on the role of the teacher could also account for the absence of a clear theme of acceptance in our study, a compelling theme when looking at the previous qualitative studies about mindfulness. However, both teachers and participants brought up the importance of the embodiment of a non-judgmental and compassionate stance by the teacher.

Related to acceptance is the often mentioned change in attitude towards oneself, others and the psychiatric symptoms suffering (e.g. Lau & McMain, 2005). This change in attitude seems to be reflected by the themes 'empowerment' and 'non-reactivity'. One could argue that besides acceptance, a non-reactive stance is the first step towards autonomy. Interestingly, the empowering aspects in mindfulness training are perceived as positive by both participants and teachers. They describe the shift from responsibility for the participants to train them to be aware of their own thinking patterns as a relief. Although the participants stress the influence of the empowering aspect of the training and the equality in the relationship, the non-reacting stance of the teachers was not always perceived as positive but also as 'distant' and sometimes as confusing.

Several explanations are possible for this difference between the perception of participants and teachers. Patients' expectations of MBCT might have been shaped by previous experiences in mental health care. As stressed by different authors, a thorough introduction with expectation management before the start of the training is important (Crane & Williams, 2010). Also, it is possible that there is a variance in personal style that might explain why some teachers have been experienced as distant and indifferent (see table 2).

A final theme, identified in the analysis is the peer support experienced by the participants, both during and after the training. In contrast with the previous discussed themes 'embodiment', 'empowerment' and 'non-reactivity' in which the information of the interviews, the focus group and observational study largely converged, the perceived peer support was mostly mentioned by the participants and to a lesser extent by the individual teachers and observer and not at all in the focus group. As in two previous qualitative studies (Finucane & Mercer, 2006; Mason & Hargreaves, 2001), being in a group is perceived as encouraging and also makes participants less dependent on

the teacher. Although some teachers are aware of the importance of the group, the importance might be an underestimated factor in the MBCT training and might need more attention in training teachers.

Study limitations

There are several issues to take into account with respect to the interpretation of the results of this study. First, all qualitative data analysis has the vulnerability of subjectivity. The selection of the themes, even though digital analysis procedures were used, are influenced by the researchers involved. An important strength of this study is the data triangulation with two different groups that were interviewed (teachers and participants), a focus group and a participant observer. In this study, however, WB was both participant observer, interviewer and also had a role in the data-analysis. In future research, more independent data acquisition of the different sources for triangulation and data analysis would be desirable. Another important question is to what extent the results of this study can be generalized. Important to note is that the participants were trained by three different teachers, all in the same hospital. Two of these three teachers were part of the focus group and another teacher was interviewed. The other eight teachers might have slightly different ways of teaching, so even the impressions of the participants might not be generalizable to all the teachers in this study. In addition, although the teachers all had relatively a large amount of meditation experience, not all had the same level of training to teach MBCT. This could also have led to different interpretations of what a mindfulness teacher has to offer.

Conclusions

With these limitations in mind, the current study is informative about the role of the teacher in MBCT. Based on this study, four general aspects relating to this role seem particularly important. First and most convincing is the agreement about the importance of embodiment of mindfulness by mindfulness teachers. This outcome raises many questions about the impact of practicing what you teach, to be answered in future studies. This might not be restricted to the mindfulness framework but is also interesting for therapeutic relationships in general. Furthermore, the empowerment and non-reactivity aspects of mindfulness are acknowledged by all, but perceived differently by teachers and participants. Finally, the importance of peer support, mentioned by participants, seems to be underestimated by mindfulness teachers, and might therefore receive special attention in teacher training programs.

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CHAPTER

7

Mindfulness: A need for integration
or facilitation within a
Christian view on life and psychology?

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Mindfulness: integreren of faciliteren binnen christelijke levensbeschouwing en psychologie? *Psyche & Geloof*, 24(4), 246-261.

Abstract

In the first part of this article, the results of an empirical study are presented, investigating the views on mindfulness from the perspectives of both Christian therapists (n = 70) and non-Christian therapists (n = 39), working in mental healthcare institutions.

The results showed important differences between Christian and non-Christian perspectives on the use of mindfulness. Mindfulness raises more questions within the Christian therapist group. These therapists indicate that they are willing to explore mindfulness training in line with their own beliefs.

Based on these results, mindfulness is considered from a Christian point of view. Is a Christian mindfulness training a solution for Christian therapists – based on existing mindfulness-based therapies, offered within the context of mental healthcare? Or is there an alternative needed, one rooted in Christian meditation tradition?

Introduction

The term 'mindfulness' has been heard increasingly often over the past few years, both in society and in (mental) healthcare. The term mindfulness derives from Buddhist tradition. This tradition originated in the 'enlightenment' of Buddha, 531 years before Christ, and is thus many centuries old (see for more information, e.g. Hellemans in Psyche & Geloof, 2009).

The rising popularity of the term is largely due to the work of Jon Kabat-Zinn. At the end of the seventies, he developed an eight-week meditation training course at the University of Massachusetts, based on his own experiences with meditation. Kabat-Zinn called this training course Mindfulness-Based Stress Reduction (MBSR) (Kabat-Zinn, 1982).

In various publications, Kabat-Zinn refers to Thera (1962), who identifies mindfulness as being at the heart of Buddhist meditation (e.g. Kabat-Zinn, 2003). According to Kabat-Zinn, a working definition of mindfulness is: the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment (Kabat-Zinn, 2003). Kabat-Zinn describes a profound longing for a life full of an accepting way of awareness, which he thinks may be achieved by meditation practice.

MBSR offers a broad range of exercises: sitting meditations with breathing, or the body as an 'anchor point', yoga and informal exercises. Informal exercises take several minutes and their aim is to bring regular focus throughout the day on what fills awareness. It is advised to practice thirty to forty-five minutes every day. The training is regarded as an introduction serving to subsequently continue this training individually, in a way that suits the participant best.

In the journal *Contemporary Buddhism*, Teasdale & Chaskalson (2011) describe the practice of a conscious and accepting attitude as being one of the effective factors of MBSR, as a result of which suffering is eliminated.

In Kabat-Zinn's view, however, the effects of a conscious life and the healing powers thereof are not restricted to Buddhism. He refers to various other traditions in which life is cultivated with attention, including the Christian tradition (Kabat-Zinn, 1982).

In Europe and Canada Mindfulness-based Cognitive Therapy (MBCT) was developed as an alternative version of MBSR in order to treat recurrent depression (Segal, Williams & Teasdale, 2002). MBCT has since been included in the English guidelines for healthcare, the NICE guidelines (NICE, 2009). In the revised guidelines for depression of the Dutch Association of Mental Health and Addiction Care (Dutch abbreviation: GGZ), MBCT has also been included as an option for relapse prevention with depression (Landelijke Stuurgroep Multidisciplinaire Richtlijnontwikkeling GGZ, 2010). The result of the growing popularity of mindfulness is that virtually every GGZ institution in the Netherlands offers mindfulness training courses. In many primary psychologists' practices and healthcare centres, too, a MBCT or MBSR training may be pursued.

Meanwhile, scientific research provides growing evidence that the practice of mindfulness can reduce human suffering, for example by reducing the risk of as well as the duration of the relapse into depression (Piet and Hougaard, 2011), and may provide an alternative to maintenance antidepressants (e.g. Kuyken, 2008; Segal et al., 2010). At the same time, it is also noted that the quality of research needs to be further improved (including Williams, 2012; Khoury et al., 2013; Gotink et al., 2015).

The relationship between mindfulness and the Christian philosophy of life

The result of the broad application of mindfulness training is that Christian therapists and patients in mental healthcare are confronted with the question of how they need to deal with mindfulness. In contrast to conventional forms of therapy, the explicit Buddhist origin of the training raises various questions with Christians. Are the links with Eastern meditation in conflict with the Christian faith? Does it tie in with Christian spirituality? Or how does mindfulness training actually take place in practice? And are there therapists who run mindfulness training courses based on a Christian philosophy of life? With the Christian philosophy of life, there are varying views ranging from rejection to acceptance (Ludwick, 2012; Maex, 2008).

Christian sceptics have indeed written articles relating to mindfulness, but these are largely non-scientific pieces. Scientific articles have been written in which a Christian alternative to mindfulness is offered, such as by Blanton (2010) and Knabb (2012). They argue that in scientific literature and clinical practice, there is a considerable focus on mindfulness, while centering prayer may also be successfully applied within mental healthcare. Centering prayer is a form of prayer that involves deepening the relationship with God by seeking silence. Meditation occurs via a word as a result of which God's presence is experienced.

Bastiaan Visser also initiated a debate on mindfulness in the journal *Psyche & Geloof* [*Psyche & Faith*] (Visser, 2008). This article describes that mindfulness may offer opportunities for Christian clients. He comments here that the issue is to what extent Christian spirituality may be used methodically in a psychotherapeutic setting, without compromising the focus on God. Visser recently published his experiences of applying a 'christianised' mindfulness training, which he offered in a Christian GGZ institution (Visser, 2012). He describes how he replaced, among others, the occasion of the training, names as well as Buddhist wisdom and parables with alternatives that are acceptable to Christians.

This debate about mindfulness in the Christian field was reason for the prof. dr. G.A. Lindeboom Institute¹ to conduct explanatory research into views or attitudes in respect of mindfulness for both Christian and secular therapists² in mental healthcare training courses.

A description will follow below of the method and results as well as a discussion of the key results. The question will subsequently be reflected upon of how mindfulness

training courses are applied in (Christian) practice and to what extent this is acceptable to Christians.

Method

The research was an explorative study. This form of research was selected because there are indeed ideas on possible links between religion and mindfulness. However, there was a lack of hypotheses and assumptions on mindfulness and its application by Christian therapists. The objective of the research was to discover what views there are of mindfulness, both among Christians and non-Christians. It was subsequently checked with Christian and non-Christian therapists whether these views are applicable in practice.

In order to answer the research question, the following steps were taken, where the results of each step provided input for the structure of the next one:

Step 1. Literature research

The aim of this first research step was to ultimately be able to answer the question of how the relationship between psychology and philosophy is perceived among Christian and non-Christian therapists, assuming that mindfulness at least partly relates to one's outlook on life. The literature research concerned a systematic analysis, where both national and international literature was consulted. These articles were retrieved via the search engine Pubmed, via the journal *Psyche & Geloof*, but also via opinion-forming articles on various websites. The results of the literature research served as a basis for the topic list of the interviews from step 2.

Step 2. Expert interviews

It was decided to conduct interviews with key figures³ in the field of mindfulness, thus obtaining insight into recent developments in the area of mindfulness and into the views Christians and non-Christians have of these developments. By means of these interviews, an answer was sought to the research questions: to what extent is mindfulness rooted in the Buddhist philosophy of life? Are there differences between original mindfulness and the Western variant? Can mindfulness as a method be separated from the Buddhist context?

In the interviews, a semi-structured, in-house-developed questionnaire was used, in which the results of the literature research were processed. Subjects included personal experiences with mindfulness, the view of mindfulness and the possibility of an alternative for mindfulness. During the interview process, there was continuous evaluation of whether the saturation point had been reached. In total, six interviews each of approximately sixty minutes were conducted. More Christians were interviewed, for it appeared that opinions were more divided among Christians.

The content of the interviews was labelled by two independent experts and used for drawing up the survey (step 3).

Step 3. Surveys among both Christian and non-Christian therapists

The aim of the surveys was to obtain an answer to the question: when is and when isn't mindfulness training applied? And do Christian therapists distinguish themselves from secular therapists where the application of and ideas or attitudes towards mindfulness training are concerned? The survey consisted of both open and closed questions.

The research focused on both Christian and non-Christian therapists working in Dutch mental healthcare. A Christian therapist is defined as follows: a practitioner or mindfulness trainer who works within mental healthcare from a Christian outlook on life. A Christian therapist may work with both a secular and Christian institution. The definition of a secular therapist is: a practitioner or mindfulness trainer without a Christian background who works within mental healthcare.

The participants were recruited in various ways: via GGZ institutions such as Altrecht, Dimence, Eleos and STAGG, via the Christian Association of Psychiatrists, Psychologists and Psychotherapists (Dutch abbreviation: CVPPP), via the Han Fortmann Centre, via the Promise foundation and via the website of the Institute for Mindfulness (www.instituutvoormindfulness.nl).

The invitation to participate in the questionnaire was sent to approximately 80 non-Christians and approximately 300 Christians. The exact number of potential respondents cannot be determined because various institutions forwarded the invitation to their staff themselves. The questionnaires were completed anonymously and cannot be traced back to the institution for which the respondent works. Participants were sent the survey digitally and could only complete it once. The surveys were completed in the period April–June 2011.

Chi-square tests were carried out in order to analyse whether the answers of the Christian and non-Christian therapists differed from each other. The questionnaires were processed and analysed with the help of the software program SPSS version 18 and 20.

Results

Results from the literature

Three themes emerged from the literature where it concerns the question regarding mindfulness in relation to psychology and philosophy of life:

Technique and attitude

On the one hand, mindfulness can be characterised as a technique or a skill, and on the other hand as an attitude. The skill is determined by the ability to tune into the experience in this moment, to be non-reactive and to let the experience be as it is. The

attitude is characterised by, among others, the following factors: non-judgement, non-pursuit, acceptance, letting go, fresh view, trust and patience (Kabat-Zinn, 1990).

Disconnection from the Buddhist roots

It became clear that there has been an attempt to rid mindfulness of its Buddhist roots as much as possible in order to make it accessible to the widest possible audience. In Buddhism, mindfulness or meditation is part of the eightfold path to the cessation of suffering. Because references to Buddhism are omitted from the current mindfulness training courses as much as possible, a difference originated between 'original' mindfulness and current 'Western' variants such as MBSR. Yet the principles have remained largely the same.

Mindfulness in relation to the Christian philosophy of life

As described in the introduction, some literature on mindfulness from the perspective of the Christian philosophy of life exists. Sceptics of mindfulness have written articles, but these are largely non-scientific articles. Scientific articles have been written, however, in which a Christian alternative for mindfulness is provided, such as by Blanton (2010) and Knabb (2012). They argue that in scientific literature and in clinical practice, a great deal of attention is paid to mindfulness, while centering prayer can also be successfully applied within mental healthcare. Centering prayer is a form of prayer which focuses on deepening the relationship with God by seeking silence. Meditation takes place via a word as a result of which God's presence is experienced. These three themes were made operational in the interviews and the survey by translating them into the following four categories: 1) Familiarity with mindfulness; 2) View of mindfulness; 3) Application of mindfulness and 4) Definition of mindfulness.

Results from the interviews and the survey

The results from the interviews and the survey will be discussed below. In total, 109 respondents completed the survey, of which 70 respondents were from a Christian background, and there were 39 non-Christians, including Buddhists, non-religious people and an agnostic. Of the non-Christians, Buddhists formed the largest group (51.3%). Of the Christian therapists, 62.9% felt very strongly connected with their philosophy of life.

Familiarity with mindfulness training

A striking result was that non-Christians have been involved with mindfulness training for 8.1 years (SD = 8.0) on average, and for Christians this is 3.2 years (SD = 2.6) on average. This outcome supports the results below that non-Christians are more familiar with mindfulness than Christians (see table 1). In terms of percentage, too, more non-

Christians are affiliated to a professional association for mindfulness (76.9%; n = 30) than Christians (4.3%; n = 3).

Table 1. Familiarity with mindfulness

Are you familiar with mindfulness? % ^a (n)	Christians (n = 70)	Non-Christians (n = 39)
Yes	54.3% (38)	100.0% (39)
Somewhat	42.9% (30)	0.0% (0)
No	2.9% (2)	0.0% (0)
^a percentages in relation to the total within the group of Christian and non-Christian therapists respectively $\chi^2(2, n = 109) = 25.24, p < 0.001$		

Application of mindfulness

Christian therapists regard mindfulness as a tool more than non-Christian therapists, while non-Christians mainly regard mindfulness as an attitude to life (see table 2). It also emerged from the interviews that non-Christian therapists indicate some affinity with mindfulness and knowledge of Buddhism is necessary. 'Mindfulness trainers do have to know something about Buddhism, but do not need to have it as a philosophy of life.' Several Christian therapists indicate that they reject mindfulness because of the Buddhist background: 'I see mindfulness as a meditation exercise where the focus is not on God, but on yourself. Mindfulness is embedded in a different view of humankind and is therefore not suitable for implementation with Christians.' A number of Christian therapists regard mindfulness first and foremost as being self-centred, which is experienced as problematic. Because of this self-centredness, the idea is that less is expected of God and more of the personal practice of mindfulness.

Table 2. Views of mindfulness

What is your view of mindfulness? % ^a (n)	Christians (n = 68)	Non-Christians (n = 39)
Mindfulness is a tool	38.2% (26)	15.4% (6)
Mindfulness is a philosophy of life	16.2% (11)	2.6% (1)
Mindfulness is an attitude to life	20.6% (14)	61.5% (24)
Mindfulness is a form of therapy	14.7% (10)	2.6% (1)
Other	10.3% (7)	17.9% (7)
^a percentages in relation to the total within the group of Christian and non-Christian therapists respectively $\chi^2(4, n = 107) = 24.79, p < 0.001$		

Alternative to mindfulness?

‘The problem religious people have with mindfulness, is more a linguistic game than an actual problem’, according to a non-Christian interviewee. ‘Because different terms are used, people do not understand one another. Yet the perception is the same. It may be that people have a spiritual experience through the practice of mindfulness, causing them to continue to seek spirituality.’ Or as another interviewee phrased it: ‘Words are but approximations. People use the same words for various experiences. Everybody shapes this process of becoming aware in their own individual way.’

The question of whether mindfulness is in conflict with Christian faith is answered in different ways. Non-Christians hold the view that mindfulness does not clash with the Christian philosophy of life and therefore do not deem it necessary to disconnect mindfulness from Buddhism. ‘It is true, however, that the person can go through a certain faith development through mindfulness, as a result of which the participant becomes more mature and ends up freer in respect of church dogmas’, according to one mindfulness trainer. At the same time, many values of Buddhism and Christianity overlap, such as gentleness, friendliness and an increasing awareness of what is going on within you.

The survey shows that more non-Christians think mindfulness may be disconnected from Buddhism, while Christians are less emphatic about this. Ultimately, only a small section of both groups indicates they believe that mindfulness cannot be separated from Buddhism at all.

Table 3. Disconnection of mindfulness from Buddhism as a method		
Do you think that mindfulness can be separated from Buddhism as a method?	Christians (n = 70)	Non-Christians (n = 39)
%^a (n)		
Yes	47.1% (33)	61.5% (24)
Perhaps	31.4% (22)	5.1% (2)
No	10.0% (7)	15.4% (6)
Other	11.4% (8)	17.9% (7)
^a percentages in relation to the total within the group of Christian and non-Christian therapists respectively		
$\chi^2(3, n = 109) = 10.24, p < 0.05$		

One of the interviewees indicated that mindfulness is not a ‘gimmick’ and that therefore the context will always be important as regards the effect of the training. One Christian indicated that there are enough forms of Christian meditation and mindfulness is not necessary.

A number of Christian therapists felt compelled to develop a Christian alternative. One of the Christian interviewees indicated: ‘I have created a Christian variant of the MBCT.

If I had worked at a regular GGZ institution, I would have been able to offer the MBCT as described in the protocol without a problem. Yet I created a Christian version, because I know that there are Christians who may have a problem with it.'

Table 4. Alternative to mindfulness

If a mindfulness training was offered that matched with my philosophy of life, I would: % ^a (n)	Christians (n = 70)	Non-Christians (n = 39)
Be open to it, but investigate it first	62.9% (44)	25.6% (10)
Sign up for it	12.9% (9)	7.7% (3)
Not participate, but not discourage others	10.0% (7)	24.3% (9)
Not participate, and discourage others from participating	2.9% (2)	0.0% (0)
Other	11.4% (8)	43.2% (17)
^a percentages in relation to the total within the group of Christian and non-Christian therapists respectively $\chi^2(4, n = 109) = 22.94, p < 0.001$		

Table 4 confirms that more than half of the Christian therapists (62.9%) are receptive to an alternative training that ties in better with the relevant philosophy of life. It was noted here that such a training did have to be evaluated for effectiveness. Non-Christians more often provided the answer: 'other' (43.2%) to the question regarding a possible alternative to mindfulness training, because this question is not or is less relevant to them, because they do not espouse a philosophy of life, for example.

Definition of meditation

In view of the foregoing, it is interesting to see how Christians define meditation compared to non-Christians. In table 5, it is noticeable that between the groups and within the two groups, there is a great deal of variation in what is understood by meditation. Approximately a third of the Christians feel most related to the definition: 'relational prayer to a higher power'. During the interviews there were the following mentions: 'It is a prayer to God without any words'. 'Or a way to read the Bible and understand God's voice.'

Approximately a quarter of non-Christians feel most comfortable with the definition: 'concentration exercise to acquire an insight', and 11.4% of Christian people share this view of this definition. Of the non-Christians, 10.1% could relate to the definition 'listening to my inner self'. Moreover, 43.6% of non-Christians had entered a different definition of meditation, with a significant proportion describing meditation as 'awareness in the here and now. Several illustrative quotes: 'Training the mind'. 'A meeting of effort, mindfulness and concentration leading to wisdom', or 'a soft encounter with reality'.

Table 5. Definitions of meditation

With what definition of meditation do you feel the most affinity? % ^a (n)	Christians (n = 70)	Non-Christians (n = 39)
Concentration exercise to acquire an insight	11.4% (8)	23.1% (9)
Relational prayer to a higher power	34.3% (24)	0.0% (0)
Listening to a different reality	7.1% (6)	5.1% (2)
Listening to my inner self	5.7% (4)	10.1% (11)
Becoming calm in a hectic existence	17.1% (12)	10.3% (4)
Getting in touch with my body	4.3% (3)	0.0% (0)
Other	20.0% (14)	43.6% (17)
^a percentages in relation to the total within the group of Christian and non-Christian therapists respectively $\chi^2 (6, n = 109) = 26.81, p < 0.001$		

Discussion

The research shows that there are significant differences between non-Christian and Christian therapists.

One of the key differences between the groups investigated is the view of mindfulness. The surveys indicate that more than half of the non-Christian therapists consider mindfulness to be an attitude to life, while the majority of the Christian therapists regard it as a tool or a form of therapy.

Another important finding is that the therapists from both groups are of the opinion that mindfulness as a method may be disconnected from Buddhism, even though non-Christians are less emphatic about this.

A majority of the Christians say they are interested in a training where the Buddhist elements are replaced with similar Christian elements. The percentage is significantly higher than that for non-Christian therapists, with a number of them indicating in the interviews that they do not see the need for this.

In addition to the specified differences between the groups, it is interesting to note that the Christian therapists in particular differ from one another in terms of their view of mindfulness. The results demonstrate that there are variations between Christian therapists in relation to their view of mindfulness as well as in terms of their definition of meditation.

The differences between the investigated groups and the variances within the group of Christian therapists are possibly accounted for by the levels of familiarity, and in particular, by diverse experiences with mindfulness.

It is striking that virtually all respondents indicated they had some knowledge of mindfulness, which provides clues as to a possible selection bias towards therapists having an affinity with mindfulness. Another observation is the possibly different interpretation of notions used in the survey, such as the notion of 'meditation'. Differences in (religious) background possibly contribute to varying interpretation. The notion of meditation, for example, evokes widely differing associations with the various groups. Approximately a third of the surveyed Christian therapists, for example, interpret meditation as prayer rather than mindfulness meditation, and the use of the word 'mindfulness meditation' would have produced different results.

The results of this research are reason to consider meditation training from a Christian angle, as an alternative to MBSR/MBCT. We will explain these considerations below.

Reflection on mindfulness and a Christian philosophy of life

Firstly, it is important to establish that Christian therapists experience more tension in the practical application of mindfulness training than non-Christian therapists. Christian therapists indicate that they are open to an alternative form of mindfulness training; a training that is more in line with their view of life. It is not clear yet what such a training looks like. Based on the research, we present three considerations when choosing to apply a mindfulness training or considering a possible alternative.

Mindfulness training: technique or way of life?

A thought experiment: what would have happened if somebody like Jon Kabat-Zinn had stood up, and taken the core of Christian meditation as a starting point for a training focused on stress reduction, and had started applying it in healthcare? Would this have given rise to ethical objections? In any event, any reference to God would have to be omitted, in order make the training applicable outside Christian mental healthcare institutions and practices.

Jon Kabat-Zin brought about integration between Buddhism and Western healthcare, where he initially attempted to avoid any reference to Buddhism. This made mindfulness, which came from a Buddhist context, useful in conventional Western healthcare. At the same time, mindfulness is considered to encompass more than just a technique. John Teasdale, one of the developers of MBCT, describes mindfulness in the context of the Buddhist way of life. In the journal *Contemporary Buddhism*, he refers to mindfulness as being one of the eight elements on the path to redemption of suffering (Teasdale & Chaskalson, 2011)⁴. At the end of a mindfulness training, the last (eighth) meeting is also described as a symbol for the rest of your life: only then does the application of the exercises in everyday life commence. The internal contradiction of mindfulness as either a technique or a way of life does not seem to exist with MBSR/MBCT. Mindfulness is trained as a technique, which you are encouraged to apply in the remainder of life. This

makes the application of the technique a way of life where some trainers refer to the underlying Buddhist ideas about human suffering.

Integration of mindfulness in a Christian lifestyle?

Can the focus on God be omitted by Christians when attention and awareness become the subject of the training? This is a relevant question in the consideration of whether mindfulness may be integrated into a Christian way of life. Several participating therapists indicated in recent research that the omission of the dimension of God is possible in the mindfulness training. These experiences were gained by means of a 'Christian' mindfulness training by Visser (2012). He created a Christian variant of mindfulness, and emphasised the usability of mindfulness – as a technique – to enhance daily awareness. As such, this technique may also be used to become aware of how you deal with God. Visser places the training in a context of Christian mental healthcare, stripped of all references to Buddhism. He furthermore puts the training in perspective by deploying it to support ongoing treatment. An important note here is that scientific evidence of the effectiveness of such a treatment is lacking. This is also the case, incidentally, for a substantial part of the application of MBSR/MBCT in 'preliminary', primary and secondary mental healthcare, where the training is regularly applied with target groups that have not yet been sufficiently researched.

Yet various Christians are in doubt as to whether or not the application of mindfulness leads to the loss of a personal(ly) (experienced) relationship with God. Visser also entertains this doubt (Visser, 2008). It demonstrates that a personal relationship with God is important to a large proportion of the participating Christians. The importance of a personal relationship with God, on the other hand, cannot be found in the mindfulness literature. In the handbook for Christian meditation, for example, Brass asks the question: 'Will the use of Eastern forms lead to estrangement from the personal God?' He concludes that Eastern forms are valuable when they are included in order to arrive at contemplative, Christian meditation: 'being imbued with the silent presence, and in the presence of divine love, which is exalted above all human words, images and feelings, but nevertheless experienced as highly personal' (p. 73). To a number of Christians, allowing this presence to fill up is something that essentially differs from a life full of accepting awareness (Brass, 2011).

The purpose of mindfulness training

A third consideration concerns the purpose for which a mindfulness training is applied. The primary goal of mindfulness training as described by Kabat-Zinn is stress reduction. MBCT was initially developed to prevent the recurrence of depression. The means to achieve these ends is practising a life of awareness with attention focused on the here and now.

To a number of Christians, a permanent tension seems to exist between practising a life of awareness and the deployment thereof for the promotion of health. This is particularly the case with Christians who regard awareness training as being inextricably linked to practising a life focused on God. Blommestijn & Maas identify the following as a risk: if spirituality is used in the context of psychotherapy, a lasting impact will only be achieved if the basic attitude differs from the improvement in the quality of life per se. Key is the approach to God (KSGV, 2009; p. 101-103). They warn that, if this intention is not paramount, the practice will soon become 'empty'. They add to this the question of whether all human suffering may be overcome and reversed. They write: 'Sometimes suffering can be merely borne, not reversed. In this bearing, the suffering can become part of God's suffering from this world. God himself can and will eventually reverse it, as the faithful person offering up the prayer trusts' (Blommestijn & Maas, 2009).

Is an alternative possible?

In summary, there seems to be a clear difference between Christians and non-Christians regarding life with awareness. Omitting a focus on (a personal) God and the role that God plays in their lives and the world seems artificial to a number of Christians. This also changes the purpose of attention training. An alternative for Christians could be: broadly accessible meditation training, developed from the Christian meditation tradition, which is accessible for everybody and not just in the context of (mental) healthcare.

In such a training, the elementary values and elements may be identified within Christian meditation which lead to a transparent entry-level training. Although some exercises overlap with, for example, a sitting meditation from MBSR/MBCT, this training has an essentially different focus. Think, for example, of elements from the work of Henri Nouwen. He writes: 'It is not easy to disregard the many intrusive and demanding voices that permeate our daily reality, and to enter the silence where we hear the friendly, soft voice that says: "You are my beloved child, in whom I am well- pleased." But if we dare to seek solitude and to open up to the silence, then we will get to know this voice.' (Nouwen, 2005).

Such a Christian meditation training may have stress reduction as a 'side effect' and possibly also the prevention of depression and fear. In order to be able to claim these effects, empirical research will have to be conducted. A condition for investigating such a training is that this training should be carefully described so that it may be uniformly applied and so that research into this training may be replicated.

One consideration is whether or not a Christian attention training with a focus on God fits better in the domain of churches or pastoral care than in the context of health promotion. By placing the training in the context of pastoral care, you prevent questions about primarily deploying the relationship with God in order to achieve health promotion.

Conclusions

The enormous focus on mindfulness in the past decade, among Christians too, shows that there is a need for ways of living with more awareness and not being carried away by the mundaneness of everyday life. The outcome of this reflection is the idea of developing an accessible and transparent Christian attention training that may be integrated in the life of Christians, as an alternative to mindfulness training courses. This training could be provided in churches. This enables counsellors who treat Christians to specifically refer to this training. Christian meditation training allows participants to be equipped to not unnecessarily 'worry about tomorrow' and to grow in a life focused on God.

Notes

1. This is a scientific study centre that tries to influence the decision-making process regarding ethical issues in politics and healthcare from a Christian philosophy of life. It also assists physicians, nurses and care institutions with ethical and philosophical questions in care provision.
2. For the purposes of this article, a therapist is understood to mean: a practitioner or a mindfulness trainer who works within mental healthcare.
3. Key figures concerned two target groups: 1) A Christian target group, including a healthcare psychologist, a behavioural therapist and a mindfulness trainer; a psychiatrist, a professor of philosophy and psychiatry; a physiotherapist and a pastoral therapist; a professor of pastoral care and a theologian; a healthcare psychologist and an MBCT researcher; 2) non-Christian/secular target group, including the managing director of the Han Fortmann Centre for mindfulness; a professor of psychiatry who is involved in the centre for mindfulness.
4. See p. 222 of Teasdale & Chaskalon: 'The Mindful Way Through Depression: Freeing Yourself from Chronic Unhappiness'.

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CHAPTER

8

SUMMARY AND GENERAL DISCUSSION

Summary and general discussion

The main aim of this thesis is to examine the efficacy, long-term outcome, prediction and working mechanisms of mindfulness-based cognitive therapy (MBCT) in recurrent depressive patients with a high risk of relapse/recurrence. We were particularly interested in possible differences between recurrent depressive patients with and without a current depressive episode.

Main outcome

To investigate the efficacy of MBCT, we selected a large sample of patients with three or more prior depressive episodes, including both patients in remission as those currently depressed.

In comparison to treatment as usual (TAU), MBCT proved to be efficacious in reducing severity of depressive symptoms (chapter 2). Analyses of the secondary outcome measures showed that patients reported reductions in rumination, worry and an increase in mindfulness skills and quality of life after MBCT compared to TAU. Cohen's *d* effect sizes indicated medium to large changes. In addition, no interaction with depression diagnosis was found. In other words, remitted and currently depressed patients showed similar reductions of depressive symptoms after MBCT.

In terms of clinically significant change of depressive symptoms at an individual level (Jacobson & Truax, 1991), MBCT resulted in significantly more improved and less deteriorated patients. Mediation analyses revealed that the effect of MBCT on depressive symptoms was (partly) mediated by changes in rumination, worry and mindfulness skill accept without judgment.

Investigating home meditation practice between the sessions, formal practice (sitting meditation) was the only factor showing any correlation with reduction of depressive symptoms during MBCT.

By design, the original TAU group was also offered MBCT, resulting in a large sample of patients, all having participated in MBCT. At 1-year follow-up, the changes found after MBCT were consolidated over time (chapter 3). Again, patients with a current depressive episode and those in remission demonstrated similar changes over time. These results further build on the conclusion that depressed patients at the start of the study seem to benefit from MBCT as much as those in remission. In addition, rumination did not differ between depressed and remitted subsamples what adds to the notion that rumination has become a trait-like factor, relatively independent of mood state.

In the same sample of recurrent depressive patients, all having participated in MBCT, we found that patients with relative low baseline levels of mindfulness skills and without prior meditation experience, showed the strongest reductions in depressive symptoms

during MBCT (chapter 4). These results suggest that Acceptance plays an important role in MBCT, since Acceptance was associated with lower depressive symptoms at baseline while patients with relative lower Acceptance showed the strongest reductions in depressive symptoms after MBCT. On the long term, females showed significant lower levels of depressive symptoms over the 1-year follow-up, indicating that MBCT might work differently in females compared to males.

Besides the use of self report measures, two reaction time studies were carried out to investigate the role of attentional processes in MBCT. First, expected changes in non-emotional attention were investigated with the attentional network task (ANT) in a sample with recurrent depressive patients. No changes in basal attentional functioning were found in the MBCT condition compared to the control condition (chapter 5). Since other studies with extended periods of meditation like in a retreat did show changes in basal attentional functioning, 8-week MBCT training might be too short to find changes at this level of attention. However, a study of De Raedt et al., (2012), showed differences in negative affective priming after 8-weeks MBCT. These finding indicates that MBCT might intervene at an emotion processing level.

In addition, two qualitative studies have been performed. The first one focuses on the role of teacher investigated from the viewpoint of both MBCT participants and teachers (chapter 6). Several authors have stressed the importance of the mindfulness teacher being an example and the needs to live or embody the method (e.g. McCown et al., 2010). This makes the role of the teacher different to most other forms of (psychological) treatment. The results of the qualitative investigation of the role of the teacher indicate that embodiment is perceived as one of the key aspects of the mindfulness teacher. Also, empowerment and non-reactivity of the teacher were perceived as important. Peer support by other group members was highly appreciated by participants, providing some context to the importance of the role of the teacher in mindfulness group interventions. These results suggest that the effect of MBCT might be mediated by both the teacher and the group format.

Since mindfulness meditation has its roots in Buddhist meditation (Kabat-Zinn, 2003), we were interested how therapists with a Christian religious background perceive mindfulness interventions compared to colleagues without a Christian background (chapter 7). The results showed different views between the Christian and non-Christian therapists. The former saw mindfulness interventions as additional to other interventions and less as a life style, whereas a majority of non-Christian therapist perceived mindfulness as interwoven with their lives. Another important difference was that Christian therapists expressed an interest in a mindfulness training more akin to their religious background, suggesting that they did not feel completely at ease with

the regular mindfulness interventions. An awareness training rooted in the rich Christian meditation tradition is proposed as an alternative, which might be offered not only in the context of health care but also in Christian communities.

MBCT for current depression

The results we found suggest that in contrast to widely held beliefs about current depression being a reason to withhold MBCT from patients, it actually is also suitable for currently depressed patients. These results are in line with other studies (Pots et al., 2014). Our study is included in a recent meta analysis, demonstrating that currently depressed patients do benefit from mindfulness-interventions in contrast with patients having a current anxiety disorder (Strauss et al., 2014).

High risk subgroups show strongest improvements after MBCT

Our finding that patients with the highest risk levels of rumination and the lowest levels of Accept, benefit most of MBCT in terms of depressive symptoms reductions, is interesting in the light of an emerging line of evidence from literature. MBCT seems prophylactic for patients with higher numbers of prior depressive episodes (≥ 3 episodes) and lower age of onset, compared to patients with fewer episodes (Ma & Teasdale, 2004; Teasdale et al., 2000). However, Geschwind and colleagues (2012) found no differences in reduction of depressive symptoms between patients with two or less prior episodes compared to patients with three or more episodes in history. In addition, MBCT seems most effective in patients in unstable remission (Segal et al., 2010) or patients reporting a history of childhood abuse (Williams et al., 2014; Kuyken et al., 2015).

Results in relation with hypothesized mechanisms of action in MBCT

Mediation analyses in our main study revealed that the changes in depression after MBCT were (partially) mediated by changes in rumination, worry and mindfulness skills (accept without judgment in particular). Mindfulness skills and rumination were negatively correlated meaning that higher mindfulness levels were associated with lower levels of rumination.

The analyses of the 1-year follow-up period after MBCT showed that the level of rumination slightly decreased over time and did not differ between the depressed and remitted patients. Since rumination is seen as a risk factor for depression, rumination seems to be a vulnerability factor in our recurrently depressed sample, independent of current depressive state. MBCT however, seems to intervene in the process of rumination as hypothesized.

A recent systematic review also found that effects of MBCT were mediated by changes in rumination, besides changes in mindfulness, worry and compassion (Van der Velden

et al., 2015). These results underline the hypothesized role of rumination as described in the impaired disengagement hypothesis (De Raedt & Koster, 2010; Koster et al., 2011). When applying this model to MBCT, the effect of MBCT seems an increased access to attentional resources and thereby increased executive control together with reductions in ruminative processes. A recent review of neuroimaging studies indeed found preliminary evidence that brain-areas associated with attentional control, emotion processing and self-awareness (including more control over the default mode network in experienced meditators) are changed by (prolonged) mindfulness meditation (Tang et al., 2015).

Our results indicating that the ability to disengage from negative emotions increases after MBCT, is in line with the neurobiological finding that mindfulness influences the complex interplay between emotional areas and control areas in the brain. This seems also in line with the Interacting Cognitive Subsystem (ICS) model applied to MBCT (Teasdale et al., 1995), suggesting that intentionally paying attention to the present moment reduces ruminative cycles and leads to more attention/executive space and control. This increased control creates the opportunity to free oneself of the depressive interlock.

Attentional control over neutral stimuli is also expected to change although we did not found evidence in our subsample. Perhaps this effect only appears after longer periods of meditation.

Strengths and limitations

One of the main strengths of this thesis is the investigation of a relative large sample of recurrent depressive patients (chapters 2-4). As far as we are aware, no other study compared the results of MBCT in patients diagnosed with a current depressive episode compared to currently remitted patients at this scale. By creating mixed groups of currently depressed and remitted patient, we were able to present the results of both subgroups under the same treatment conditions.

Also, different study methodologies were used to investigate the effect of MBCT, varying from quantitative and qualitative towards more behavioural designs. Integrating these different sources of information provided a better understanding of the effects and potential working mechanisms of MBCT in recurrent depressive patients. In addition, four different MBCT trainers provided the MBCT training, all with notable experience, adding to the generalizability of the training.

In our study were no direct links with the developers of MBCT, so the main trial is an independent replication of the previous MBCT trials, and the first study of MBCT for recurrent depression in The Netherlands.

There are also several limitations to be taken into account. A potential limitation is the risk of a selection bias since most patients referred themselves to the study. This might be reflected in the high level of education of our sample. As a result, the participants might have been more motivated and have higher expectations than a regular sample in mental health, limiting the generalizability of our results to other settings. Also, the interest in MBCT might have resulted in disappointment when randomized in the TAU-alone condition although they had the perspective of attending MBCT after a period of three months. Although important, potential differences in expectation were unfortunately not assessed (Freedland, Mohr, Davidson, & Schwartz, 2011).

Furthermore, the severity of the depressive episode in the currently depressed subsample was mild to moderate. The question is whether the results are applicable to patients with a severe current depressive episode.

In addition, the lack of active control groups (chapter 2-4, 6 & 7) is an important limitation. This prevents conclusions about the effects of MBCT as a single intervention as well as conclusions about the efficacy compared to other interventions like cognitive behavioural therapy (Bockting et al., 2005). In addition, the follow-up part of the trial (chapters 3 & 4) did not include a control group since patients in the TAU condition were offered MBCT after a three months waiting period. Therefore, controlled replication studies are necessary in order to draw conclusions about the effect of MBCT compared to TAU or other forms of treatment over time.

Finally, a 1-year follow-up period is relatively short taking the recurrence pattern of most patients into account. Therefore, in future studies longer follow-up periods are needed, also including more than one study centre increasing generalizability.

Implications and direction for future research

Research implications

Firstly, the trial reported in this thesis needs replication including an active control group and longer follow-up period. This thesis also paves the way to further investigate the influence of MBCT on current depression, including patients having more severe depressive episodes. By using a multi-centre design, generalizability might be improved. Of interest is a multi-centre trial that been conducted in The Netherlands by Huijbers et al. (2012), investigating the combination of MBCT and maintenance anti-depressant medication.

Another area of interest is the increasing attention for chronic depression as a specific subtype of depression. Based on our results, MBCT is expected to be effective in this group of patients.

Future studies could also further investigate the working mechanism of MBCT, focussing on the role of rumination and attentional processes of emotional laden information. Adding repeated measurements during MBCT enables conclusions about causality.

Experience sampling methods (ESM), using many short repeated measurement over a period of time could be a method to investigate how different processes change over time (Csikszentmihalyi & Larson, 1987; Geschwind et al., 2011).

Clinical implications

The most far reaching implication of this thesis is that recurrent depressive patients having mild to moderate severe depressive symptoms need no longer be excluded from MBCT. This is important information since health insurance companies in The Netherlands restrict payment of MBCT to patients with three or more depressive episodes and in current remission.

In addition, rumination seems to be a vulnerability factor on the long term after MBCT, independent of depressive status. The interplay between Acceptance and rumination is interesting, since rumination seems to play a key role in the course of depressive symptoms since Acceptance seems to protect against the influence of depression maintaining processes like rumination. Room to improve MBCT therefore might be offering booster sessions with a focus on self-compassion (e.g. Gilbert, 2014; Raes, 2010) as a way to maintain and deepen mindfulness skills like Acceptance. The role of compassion training on recurrent depression is under study in the Radboud University Nijmegen Medical Centre for Mindfulness in The Netherlands.

Follow-up reunions sessions perhaps supported by the formation of online health communities (e.g. Kuckertz et al., 2014) could also be explored as ways to improve the results of MBCT, meeting also the perceived importance of group member support.

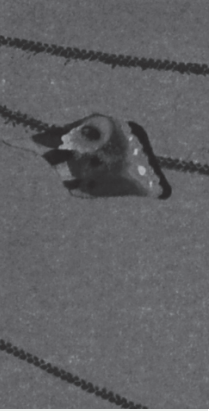
Finally, a next step in improving MBCT might be personalizing MBCT training, taking for example the role of gender, previous meditation experience, level of mindfulness skills, but also religious background into account.

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CHAPTER

9

SAMENVATTING (SUMMARY IN DUTCH)

Nederlandse samenvatting (summary in Dutch)

Dit proefschrift is een bundeling van verschillende studies naar het effect van Mindfulness-based cognitieve therapie (MBCT) bij mensen met terugkerende depressies. Een van de belangrijkste van vragen in dit proefschrift is of mensen met terugkerende depressies die *op dit moment* een depressie hebben ook baat kunnen hebben bij MBCT. De reden voor deze specifieke vraag is dat het onderzoek naar MBCT tot nu toe vooral gedaan is bij diegenen die geen last meer hadden van een actuele depressie. De algemene opvatting was dat mensen die depressief zijn niet optimaal kunnen profiteren van de beschermende werking van MBCT. Depressieve klachten, zoals concentratieproblemen zou de werking van MBCT in de weg staan, schreven de onderzoekers en ontwikkelaars van MBCT in de eerste editie van hun boek over MBCT voor terugkerende depressies (Segal, Williams & Teasdale, 2002).

Naast het onderzoeken van het effect van MBCT wordt in dit proefschrift ook gekeken naar het mogelijke werkingsmechanisme van MBCT. Om die reden zijn naast vragenlijsten die deelnemers voor en na de training invulden, ook kwalitatieve interviews en reactietijd taken afgenomen. Ten slotte is ook exploratief onderzoek gedaan naar in hoeverre MBCT acceptabel is voor therapeuten met een christelijk-religieuze achtergrond, aangezien MBCT deels zijn wortels vindt in de boeddhistische psychologie.

Een van de belangrijkste redenen om MBCT in de jaren 90 van de vorige eeuw te ontwikkelen, was de toenemende kennis over het recidiverend karakter van depressie. Een depressieve stoornis is gedefinieerd als een eenmalige periode van minimaal 2 weken met als belangrijkste kenmerken somberheid en/of verlies van interesse en plezier in activiteiten. In het veelgebruikte handboek de DSM-IV, worden naast deze 2 voorwaardelijke criteria, nog 7 andere kenmerken onderscheiden: belangrijk gewichtsverlies of toename of verandering van eetlust; toegenomen of afgenomen slaap; psychomotore onrust of vertraging; vermoeidheid of een verlies aan energie; gevoelens van waardeloosheid of een onrealistisch schuldgevoel; verminderd denk- of concentratievermogen of besluiteloosheid en terugkerende gedachten aan de dood of suïcidale gedachten of gedrag. Wanneer aan in totaal 5 van deze 9 genoemde kenmerken wordt voldaan en er sprake is van aanzienlijk lijden en/of beperkingen in sociaal en/of beroepsmatig functioneren, spreekt men van een 'depressieve stoornis'. Wanneer in dit proefschrift over 'depressie' of depressieve episode wordt gesproken, wordt hiermee een depressieve stoornis (Major Depressive Disorder) bedoeld. Er wordt van recidiverende depressie gesproken wanneer iemand meerdere onderscheiden episodes heeft meegemaakt.

Uit onderzoeken waarbij deelnemers meerdere jaren van hun leven werden gevolgd, blijkt dat bij ongeveer de helft van de mensen die een depressie doormaakt, nog één

of meerdere keren een depressie volgt. Ook wordt uit deze onderzoeken duidelijk dat bij het meemaken van elke depressieve episode het risico op een volgende depressie toeneemt, bij drie of meer depressies tot wel 80-90%. En waar eerst nog (ingrijpende) levensgebeurtenissen een aanleiding kunnen zijn voor het krijgen van een depressie, lijkt naarmate er meer depressies volgen, steeds minder nodig te zijn om in een volgende depressie te raken. Het beeld van een depressie veranderde met deze informatie van een eenmalige episode naar een recidiverende of zelfs chronische aandoening.

Tot in de jaren 90 van de 20^e eeuw was onderhoudsmedicatie de standaard voor terugvalpreventie bij een recidiverende depressie. Als alternatief voor medicatie ontwikkelden Segal, Williams en Teasdale (2002) een terugvalpreventieprogramma met behulp van inzichten uit zowel de mindfulness traditie als de cognitieve gedragstherapie. In de jaren daarvoor had Jon Kabat-Zinn in de Verenigde Staten op succesvolle wijze de 8-weekse Mindfulness-Based Stress Reduction (MBSR) geïntroduceerd. Hiervoor had hij onder meer geput uit zijn eigen ervaringen met (vipassana- of inzihts-) meditatie met 'mindfulness' als kernelement. Mindfulness definieerde hij als volgt: *'Mindfulness is het bewustzijn dat ontstaat door de aandacht te richten op een speciale manier: intentioneel, in het hier-en-nu en zonder te oordelen, aan wat er zich van moment tot moment voordoet.'*

Uit de eerste onderzoeken naar MBSR blijkt dat onder meer mensen met chronische pijnklachten als gevolg van somatische ziekten baat hadden bij deze training. Segal, Williams en Teasdale kwamen in aanraking met het werk van Kabat-Zinn en hadden in eerste instantie de nodige aarzelingen. Maar op het moment dat zij zelf ervoeren wat de training inhield, raakten zij enthousiast. Hun inzichten uit cognitieve gedragstherapie integreerden zij in de training, die ze Mindfulness-based cognitieve therapie (MBCT) noemden. Ze publiceerden in 2000 en 2004 twee belangrijke gerandomiseerde gecontroleerde studies (RCT's) naar het effect van MBCT bij terugkerende depressies. Uit deze RCT's bleek dat het risico op een terugval na het volgen van MBCT minder groot was, vooral bij mensen die 3 of meer depressieve episodes hebben meegemaakt.

MBCT is een 8-weekse training in groepsverband, met 8-14 deelnemers per groep. Het is een combinatie van aandachtsoefeningen en cognitief-gedragsmatige elementen zoals registraties van positieve of negatieve gebeurtenissen, uitleg over dat gedachten geen feiten zijn en het nadenken over signalen die kenmerkend kunnen zijn voor het begin van een terugval. De aandachtsoefeningen bestaan deels uit 'formele' oefeningen zoals de bodyscan of de zitmeditatie, waarbij geoefend wordt om voor langere tijd de aandacht te richten op bijvoorbeeld de ademhaling. Als de aandacht hierbij vanzelfsprekend afdwaalt, wordt geoefend met het hiervan bewust worden en weer op vriendelijke wijze teruggaan naar het richten van de aandacht op het ademen. Deels bestaan ze ook uit 'informele' oefeningen: het met aandacht de dingen doen die je in het dagelijks leven

toch al doet, zoals lopen, fietsen, afwassen en onder de douche staan. De groepsessies duren 2,5 uur en deelnemers worden gestimuleerd om tussen de training door dagelijks 30-45 minuten te oefenen.

De afgelopen jaren hebben meerdere onderzoeken aangetoond dat MBCT bij mensen die 3 of meer depressies hebben gehad, leidt tot een minder grote kans op een nieuwe depressie en een vergelijkbare werking heeft als antidepressieve medicatie. Mensen met traumatische ervaringen in het verleden (bijv. emotionele verwaarlozing of andere potentieel traumatische ervaringen) lijken het meest te profiteren van deelname aan MBCT (Williams et al., 2014).

De Raedt & Koster publiceerden in 2010 een theoretisch model dat probeert te verklaren hoe kwetsbaarheid voor terugval in depressie ontstaat en hoe MBCT daarop ingrijpt. In het model van De Raedt & Koster worden twee verschillende invalshoeken geïntegreerd. Aan de ene kant wordt gebruik gemaakt van kennis van de cognitieve psychologie, waarin aandacht besteed wordt aan de denk- en aandachtsprocessen die kunnen bijdragen tot depressie. Aan de andere kant wordt kennis afkomstig uit biologisch onderzoek of hersenonderzoek in relatie tot depressie gebruikt. Het model heeft als startpunt dat stressvolle gebeurtenissen (inclusief een depressie) kunnen leiden tot activatie van de HPA-as (hypothalamus–hypofyse–bijnierschors-as), waardoor het stresshormoon cortisol vrijkomt in het lichaam. Verhoogde niveaus van cortisol resulteren in een verhoogde gevoeligheid voor stresserende gebeurtenissen. Een ander gevolg van cortisol is een toename van serotonine in de hersenen, een stof (neurotransmitter) die geassocieerd is met verminderde werking van de prefrontale hersengebieden. Deze hersengebieden zijn verantwoordelijk voor controle van denk en aandachtsprocessen op verschillende niveaus. Zo is het verbonden met de amygdalae, twee kernen in de hersenen die een onderdeel zijn van het ‘alarmsysteem’ en primair reageren op stressvolle informatie uit de omgeving. Maar de prefrontale cortex is ook geassocieerd met de regulatie van denkprocessen. Een verminderde werking van de prefrontale hersenschors geeft kans op ontsporing van denkprocessen, zoals rumineren en het trekken van disfunctionele conclusies over zichzelf en de omgeving. Onder rumineren wordt het herhalen van gedachten verstaan, zonder dat dit leidt tot actieve verwerking van informatie. Het is het in cirkels blijven malen zonder eruit te komen. Een voorbeeld van een vraag uit een vragenlijst om rumineren in kaart te brengen is: ‘(wanneer ik me droevig, neerslachtig of triest voel) lig ik in bed en blijf ik maar nadenken over mijn gebrek aan motivatie en vraag ik me af of die ooit nog zal terugkomen’. Rumineren en verhoogde amygdala-activiteit worden beiden gezien als factoren die een belangrijke rol spelen in het ontstaan van verhoogde stress en het ontwikkelen van gedachtepatronen (schema’s), wat kan leiden tot toenemende kwetsbaarheid voor een depressie en uiteindelijk terugval in een depressie.

Een versterking van de werking van de prefrontale hersenschors wordt gezien als een belangrijk gevolg van MBCT, wat leidt tot toegenomen bewustzijn en ook toename van controle over aandachts- en denkprocessen, zoals rumineren.

In de hoofdstukken 2, 3 en 4 worden de uitkomsten van ons belangrijkste onderzoek beschreven, gericht op het effect van MBCT bij een groep van 205 mensen die 3 of meer depressies hadden gehad. Eenderde had ook een huidige depressie en tweederde niet. Op basis van toeval zijn de deelnemers verdeeld in 2 groepen. De ene groep kreeg naast de standaard behandeling die ze al kregen (zoals onderhoudsmedicatie) MBCT aangeboden. De andere groep kreeg alleen de standaard behandeling en werd 3 maanden later in de gelegenheid gesteld om de training te volgen. In hoofdstuk 2 laten we zien dat de deelnemers aan de MBCT na de training minder last hadden van depressieve klachten en rumineren en betere mindfulnessvaardigheden bleken te hebben dan de mensen in de vergelijkingsgroep. Dit is in overeenstemming met eerder onderzoek dat liet zien dat MBCT een positief effect heeft op depressie en processen die samenhangen met depressie. De spannende vraag was of deze veranderingen ook te zien waren bij de mensen die bij aanvang van de training depressief waren, want die werden immers niet eerder onderzocht. Onze resultaten laten zien dat dit het geval is en zelfs zo, dat we geen verschillen hebben gevonden in de afname van depressieve klachten en toename van mindfulnessvaardigheden tussen deze groepen. Uit aanvullende analyses bleek dat de afname van depressieve klachten na MBCT voor een deel verklaard kon worden door een afname in rumineren en piekeren en een toename van de mindfulnessvaardigheid 'acceptatie zonder oordeel'. We hebben ook gekeken naar de invloed van het doen van 'huiswerk', een belangrijk onderdeel van MBCT. Van het thuis doen van oefeningen blijkt vooral de formele zitmeditatie positief geassocieerd te zijn met het behandelresultaat.

Na drie maanden werd ook aan de mensen in de vergelijkingsgroep MBCT aangeboden en bij alle deelnemers werden na afronden van MBCT een jaar lang elke 3 maanden een telefonisch interview en vragenlijsten afgenomen. In hoofdstuk 3 beschrijven we dat de verschillen direct na MBCT blijven bestaan gedurende het jaar na de training. Ook hier vinden we gemiddeld genomen geen verschillen tussen de mensen die bij het begin van het onderzoek depressief waren en diegenen die niet meer depressief waren. Dit geeft verdere aanwijzingen dat MBCT ook toepasbaar is voor deelnemers met een actuele depressie.

Verder waren we geïnteresseerd of voorafgaand aan de training factoren te vinden zouden zijn die zouden kunnen voorspellen wie van de deelnemers het meest profiteren van MBCT. Dit is van belang om de training te verbeteren en meer af te kunnen stemmen op individuele kenmerken van de deelnemer. Belangrijke uitkomsten zijn dat deelnemers die geen eerdere meditatie-ervaring hadden en relatief weinig mindfulnessvaardigheden

rapporteerden, de sterkste afname in depressieve symptomen lieten zien. Interessant is ook om te zien dat vrouwen in het jaar na de training significant minder depressieve klachten rapporteerden dan mannen, wat de suggestie wekt dat MBCT mogelijk beter werkt bij vrouwen dan bij mannen.

Om niet alleen vragenlijsten als uitkomstmaat te gebruiken, hebben we in hoofdstuk 5 onderzocht of MBCT ook effect heeft op bepaalde computertaken. De taak die we gebruikten had ten doel basale aandachtsfuncties te meten (zoals oriënteren en controleren) en we waren benieuwd of er op dit onbewuste niveau ook veranderingen te zien waren na MBCT. De resultaten van dit onderzoek lieten echter geen verschillen in deze aandachtsprocessen zien tussen de groepen. Mogelijk is 8 weken te kort om dit soort verschillen te bewerkstelligen. Interessant is dat een studie van De Raedt (De Raedt et al., 2012), waar wij ook aan mee hebben gewerkt, laat zien dat het toevoegen van emotionele informatie aan een reactietijden taak, wel verschillen zichtbaar maakt 8 weken na MBCT-training. Dit suggereert dat MBCT mogelijk vooral op het niveau van emotieverwerking ingrijpt.

In hoofdstuk 6 belichten we een ander aspect van MBCT, namelijk de rol van de trainer die een groep deelnemers begeleidt. Het specifieke van deze rol is dat de trainer wordt geacht een voorbeeld te zijn in hoe mindful hij of zij zelf is en dat aangenomen wordt dat de werkzaamheid van de training hiervan afhangt. Door zowel trainers als deelnemers te interviewen werd duidelijk dat het 'doorleven van de methode' inderdaad door zowel trainers als deelnemers gezien werd als een centraal aspect van de training. Ook het niet-reageren door de trainer en het autonoom en krachtiger maken van deelnemers wordt door beide categorieën gezien als kernelementen. De deelnemers benadrukken daarnaast ook het belang van steun door andere groepsleden.

Tenslotte wordt in hoofdstuk 7 ingegaan op de vraag of er een verschil is tussen hoe christelijke en niet-christelijke therapeuten het toepassen van mindfulness interventies zoals MBCT ervaren. De achtergrond van deze vraag is dat een belangrijk deel van de MBCT-training bestaat uit meditatieoefeningen die afkomstig zijn uit de boeddhistische traditie. De uitkomst van dit onderzoek was dat er inderdaad verschillen waren tussen christelijke en niet-christelijke therapeuten in hoe ze mindfulness-interventies beleven. Het merendeel van de niet-christenen ervoer mindfulness als een leefwijze, terwijl christelijke therapeuten mindfulness meer zagen als een interventie. Christelijke therapeuten gaven aan interesse te hebben in een alternatieve training die meer aansluit bij hun eigen religieuze achtergrond. Misschien moeten we inderdaad nadenken over een dergelijke training die geworteld is in de christelijke meditatieve traditie en mogelijk ook toepasbaar is buiten de context van de GGZ.

De onderzoeken die beschreven zijn in dit proefschrift wijzen erop dat MBCT een positief effect heeft bij mensen met terugkerende depressies, dit is in lijn met uitkomsten van een groeiend aantal studies. Depressieve klachten en rumineren nemen af en bewustzijn en acceptatie nemen toe. De belangrijkste uitkomst van dit proefschrift is dat deelnemers met een actuele depressie evenveel van MBCT lijken te profiteren als deelnemers die niet meer depressief zijn, terwijl zij op theoretische gronden tot dusverre uitgesloten werden van deelname. Dit proefschrift toont aan dat het indicatiegebied van MBCT uitgebreid zou moeten worden naar patiënten met terugkerende depressies die op dit moment depressief zijn. Op die manier kan MBCT in de toekomst mogelijk al eerder ingezet worden en zo bijdragen aan betere behandeling van mensen met terugkerende depressies.

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Curriculum Vitae

Joël van Aalderen was born on May 26th 1982 in Assen, The Netherlands. The first years of his life were in Kampen. From the age of seven, he lived in Veenendaal where he finished his secondary education at the Ichthus College in 2001. In the same year he started to study psychology at Utrecht University. During his study, he followed a trajectory called 'clinical neuropsychology', combining neuropsychological and clinical psychology courses. From 2003-2005, he actively participated in the 'management team' of his study psychology. After finishing his study in 2006, he started to work as a psychologist at the department of psychiatry of the Radboud University Nijmegen Medical Centre. At this department, he started in 2007 with his PhD study 'MBCT for recurrent depression' and also with the post-master study at SPON Nijmegen, to become GZ-psycholoog (Health Care psychologist) at the end of 2009. In 2011 he started with his 'post-GZ-psycholoog specialization' to become a Clinical Psychologist/ Psychotherapist at RINO Utrecht, working at Altrecht, a mental health care institution, Utrecht area. He completed this study in the beginning of 2015. Since March 2015, Joël has been working as Clinical Psychologist for Psy-Q Utrecht, with focus on personality disorder, depression and psychotrauma. Since 2014, he is one of the editors of the Dutch scientific journal *Psyche & Geloof* (Psyche & Faith). Joël lives in Utrecht and is married with Hanneke. They are the parents of three lovely daughters: Sifra, Nynke and Anne-Floor.

