

# THE EFFECT SIZE OF MINDFULNESS-BASED COGNITIVE THERAPY AS AN INTERVENTION OPTION FOR DEPRESSION

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## Abstract

Depression as a form of mental health illness is well-known and widespread nowadays in this age and time. Many interventions, curative and preventive, have been created to fight this illness. This paper discussed the use of Jon Kabat-Zinn's mindfulness meditation and its philosophy when combined with a recognized therapy form, Cognitive Behavioral Therapy, to become Mindfulness-Based Cognitive Therapy (MBCT). Specifically, this paper discussed which aspect of depression that MBCT can specifically tackle when working with depressed individuals, which is their ruminative thinking style. The goal of this paper is to see the effect size of MBCT as an intervention to be used when working with depressed individuals. By looking at the effect size, it can also help to determine how effective this option might be as an intervention.

**Keywords:** depression, MBCT

Depression can be such a debilitating illness for a person going through it and the people close to the individual. Many interventions have been devised and done to help those battling with depression such that can be seen in the many forms of psychotropic medicines available nowadays to cure depression, curative therapies that are geared to work directly in reducing depressive symptoms, and even in the more recent use of non-conventional venues. Mindfulness meditation is seen as a newcomer in this realm of interventions for depression that might function as another option to reduce depression in certain individuals. Mindfulness meditation has been used by many mental health practitioners as part of stress management effort to reduce stress and improve the mental health and overall well-being of individuals, regardless whether those individuals are going through some kind of medical illness, pain, or simply trying to improve their life overall health and well-being (Taylor, 2006). While it is true that mindfulness meditation have been used mostly when dealing with illnesses related to physical health as shown in many health psychology textbooks (Brannon & Feist, 2004; Taylor, 2006), this current paper would like to apply the use of mindfulness meditation on a common mental health illness such as depression. The purpose of this paper is to discover and link perhaps a specific aspect of depressive symptoms that can be helped with using mindfulness meditation and its philosophy (Kabat-Zinn, 1990, 1994) and to specifically look at the effect size of mindfulness meditation from recent studies within the field by applying the Cohen's rule of effect size (Thalheimer & Cook, 2002).

Within an experimental design research, effect size provides us information regarding the experimental effect of a treatment (Thalheimer & Cook, 2002). To take this perspective and apply it into an intervention research, which is the type of research studying the effect of a specific intervention, measuring effect size is especially important and useful because it gives us the magnitude effect of

an intervention. Knowing the magnitude effect in return helps to understand the significance of a particular intervention as well as its feasibility and practicality. In other words, an intervention with a small effect size, for instance, might put us in a new perspective of whether to continue using the same intervention knowing that it has such a minimum statistical effect or find an alternate intervention. An intervention with a large effect size, on the other hand, will inform us of its high effectiveness level. In this paper, Cohen's  $d$  was used to look at the effect size because it is the most widely reported measurement of effect size within the field and it is possible to convert many other measurement of effect size into Cohen's  $d$  in order to make comparison easier.

### **Defining Depression**

The complete criteria and definition of major depressive episode can be gathered from the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Text Revision (DSM-IV-TR)* (American Psychiatric Association (APA), 2000). As mentioned in the *DSM-IV-TR*, one of the descriptive features associated with Major Depressive Episode is brooding or obsessive rumination. This paper is interested in the rumination aspect of depression because rumination is part of the cognitive processes in depressed individuals that has been thought of as having a major impact on the duration of depressive episodes (Nolen-Hoeksema, 1991).

Ruminative responses to depression are defined by Nolen-Hoeksema (1991) as "behaviors and thoughts that focus one's attention on one's depressive symptoms and on the implication of these symptoms" (p. 569). Nolen-Hoeksema further explained that over time these ruminative responses may become automatic negative thoughts. The difference between ruminative responses to depression and other ruminative tendencies in thinking that many regular and common people do is in the tendency for depressed individuals to focus on their negative emotional state during those rumination times. This, according to Nolen-Hoeksema, should be considered as the key characteristic in the ruminating responses to depression in depressed individuals. When ruminative responses have become automatic negative thoughts, it may then interfere with the individual's ability to think effectively and positively and, in the long run, his or her problem-solving. Nolen-Hoeksema (1991) further mentioned that depressed individuals who employ ruminative responses may end up prolonging the duration of their depressive episodes and thus, increasing the severity of their depression.

Using the definition of ruminative tendency in thinking, Nolen-Hoeksema therefore argued that one way to intervene is to provide distracting responses to these ruminative responses. She defined distracting responses as "the purposeful turning of one's attention away from one's symptoms of depression and its possible causes and consequences to pleasant or neutral activities" (Nolen-Hoeksema, 1991, p. 570). Some examples of distractive activities would be spending time with friends or doing a hobby, such as gardening or cooking. The key point here is that if those people were able to distract their thinking from negative to neutral or more positive state, they would likely be able to have a less severe depressive episode and shorter in duration. However, one can make an argument here that rumination can still occur even during these activities that are meant to be distractive (i.e., when doing an individual activity such as in gardening). Therefore, distraction in itself is not enough. The question is to find a specific type of distractive activity that can continuously help to avert one's attention from those ruminating, negative thoughts.

One thing to always remember is that depression encompasses many symptoms and each symptom has many features (APA, 2000). Rumination is just one of the many features of the cognitive aspect of depression, and therefore, is only one of the many symptoms of depression. Depression also varies in its manifestation. Some individuals may manifest more cognitive symptoms whereas others may show more somatized symptoms. The duration of depressive episodes may also vary from one individual to another, as well as the length of time a person has had recurrences or relapses of depressive episode. When trying to help a depressed individual, a therapist may be dealing with a first occurrence of depression, whereas at other occasions the therapist may be dealing with someone who has been battling recurrent episodes over a period of many years. All of these factors, not to mention other possible factors that have not been mentioned in this paper so far, such as the personality, the background history, and the cultural background of the person being treated, can make a difference when trying to find a suitable treatment option.

Mindfulness meditation as a treatment for depression is the focus of this paper. The purpose of this paper is to assess the effectiveness of mindfulness meditation as an evidence-based-practice option of clinical treatment for depressed individuals. Because of the diversity within the depression group itself, as mentioned earlier, it is also the goal of this paper to see whether a recommendation can be made about the specificity of mindfulness meditation as a treatment for the sub-population of depressed individuals based on what is available from the literature. In other words, can mindfulness meditation be useful to all depressed individuals?

### **Defining Mindfulness Meditation**

One of the pioneers in using mindfulness meditation within medical and psychological practice is Jon Kabat-Zinn. Him and his colleagues developed the Mindfulness-Based Stress Reduction (MBSR) program (Kabat-Zinn, 1990, 1994) that has been widely used as part of a stress management program in many places. Kabat-Zinn has also done numerous amount of research in assessing the effectiveness of mindfulness meditation as a way to reduce stress. Meditation, according to Kabat-Zinn, is just one example of practicing mindfulness. He defines mindfulness as “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” (Kabat-Zinn, 1994, p. 4). Thus, mindfulness can be done daily and almost on every activity, such as during a walk, exercise, meal, or even while at work.

To be mindful during meditation encompasses more than just the ability to stay focus. It is also about becoming aware of body sensations, feelings, and thoughts (Kabat-Zinn, 1994). Trainees in the MBSR program are taught *not* to ignore sensations or feelings that cause annoyance to their body and mind or to empty their mind, but instead, to pay attention to each and every thought that occurs in their mind in a non-judgmental way. They are trained to be aware of their automatic thought patterns and take note of those messages. At the same time, trainees are also encouraged to exercise in having an acceptance and non-judgmental attitude when noticing body sensations, state of mind, and feelings. As Kabat-Zinn defines it, having a non-judgmental attitude is the key emphasis in mindfulness meditation. It is a way to train the mind to let go off the tendency to judge how we perform our daily duties and work. By increasing their awareness, it is hoped that they can be more aware of their present moment and surroundings and approach every situation more mindfully rather than reacting to a situation in an automatic fashion. The main goal, in conclusion, is to be able to observe non-judgmentally sensations,

feelings and thoughts, and eventually react less habitually (Kabat-Zinn, 1990, 1994).

Kabat-Zinn's MBSR course has been employed by other researchers into the making of a clinical approach called the mindfulness-based cognitive therapy or also more commonly known as MBCT (Mindfully-Based Cognitive Therapy, n.d.; Teasdale, Segal, Williams, Ridgeway, Soulsby, & Lau, 2000). The difference between MBSR and MBCT is in the addition of some aspects of cognitive-behavioral therapy (CBT) within the structure of MBCT. In other words, MBCT is a combination of CBT and MBSR. Besides the obvious use of mindfulness exercises (meditation, yoga, body scan, reflection of those exercises) in MBCT, another important distinction between CBT and MBCT is in the focus of therapeutic work on the process of thinking. Whereas the emphasis of CBT is to identify the content of thoughts (i.e., negative thought pattern), the emphasis of MBCT is for clients to become more aware of their thought processes and how they can relate to those thoughts in a more non-judgmental way (Teasdale, Segal, Williams, Ridgeway, Soulsby, & Lau, 2000). MBCT is also done in a group setting with nine to twelve members and runs for eight weeks. The discussion of MBCT is germane here because studies that are reviewed in this paper have focused on MBCT, instead of on mindfulness alone, as an intervention to manage depression.

### **Review of Recent Studies**

A study was done by Broderick (2005) that looked at the style of ruminative response (Nolen-Hoeksema, 1991) and compared it with mindfulness meditation. Broderick particularly wanted to see whether mindfulness meditation would be a more effective modality to use than distractive activities. She had a total number of 177 undergraduate students participated in her study. A mood assessment for each group was done three times: at baseline or before the mood induction, immediately following the mood induction, and immediately following the experimental task. All three groups also did a thought listing exercise at the beginning. The purpose of mood induction was to increase dysphoric mood. After the mood induction phase, participants were then randomly assigned to either the rumination group ( $n = 55$ ), distraction ( $n = 61$ ), or mindfulness meditation ( $n = 61$ ). Participants in the 'rumination condition' received 45 phrases of sentences that asked them to contemplate on self-focused statements silently, followed by an 8-minute of quiet reflection. Participants in the 'distraction condition' also received a similar treatment, except that they would focus on statements that were not related to their self. Participants in the 'mindfulness meditation' followed a short guided mindfulness meditation that was adapted from Jon Kabat-Zinn's work, but Broderick did not specify which script. It seems that the length of this condition was only eight minutes.

Broderick (2005) discovered that patients in the ruminative condition showed the highest negative mood scores following the experimental task compared to the other two groups. The lowest negative mood scores following the experimental task came from the mindfulness meditation group, and the distraction group's mood scores were somewhere in between the other two groups. Based on the calculation of Cohen's  $d$  to see the effect sizes of these groups, there was a large effect size of 0.93 regarding the usefulness of mindfulness meditation when compared to the rumination group, but a small effect size of 0.29 when compared to the distraction group. This study concluded that distraction and mindfulness meditation can be useful to reduce negative affect, but that mindfulness meditation would be a better choice than distraction. The results also provided support to other studies that have linked rumination and negative affect in a positive linear relationship.

Teasdale, Segal, Williams, Ridgeway, Soulsby and Lau (2000) conducted a research evaluating the usefulness of MBCT in preventing a relapse of major depressive episodes among depressed individuals in remission. This research used a random assignment to either the MBCT group ( $n = 76$ ) or the Treatment As Usual (TAU) group ( $n = 69$ ). TAU participants were also instructed to continue seeking help from their family doctor or other sources as they normally would should they become symptomatic again during the course of the study. Teasdale et al. (2000) specified the variables of treatment that TAU patients received and used percentages to state the amount of people received other treatments. These additional treatments were called covariates, so as not to confuse them with the treatment condition of MBCT. The assessment of their TAU treatments was monitored bimonthly. MBCT participants also went through the same variables as TAU and were monitored bimonthly. Teasdale et al. (2000) discovered no significant differences between TAU and MBCT groups as related to these covariates of treatment.

In Teasdale et al.'s study (2000), all of participants have had at least two episodes of major depression in their past. The results were analyzed separately based on two samples, intent-to-treat sample ( $n = 145$ ) comprising of all patients that were randomly assigned to either MBCT or TAU, and per-protocol sample ( $n = 132$ ) comprising of all TAU participants ( $n = 69$ ) and those patients who have been previously assigned to MBCT but received only four out of eight weeks of MBCT sessions ( $n = 63$ ). What they found is that number of previous episodes has significant effect on the condition, thus requiring them to do separate analyses based on those who have had only two previous episodes and those who have had more than two episodes for each group.

For those with a history of three or more episodes of depression in the intent-to-treat sample, 40% of MBCT participants experienced relapse compared to 66% of TAU participants who experienced relapse. The difference between the two yields an  $h$  value of .53, which indicates a medium effect size under Cohen's rule (Thalheimer & Cook, 2002). For those under the same amount of previous episodes (three or more) in the per-protocol sample, 37% participants experienced relapse in the MBCT condition and 66% participants experienced relapse in the TAU group, which yields to a difference in  $h$  value of .59 and is considered of having a medium effect size under Cohen's rule.

In contrast to the three or more previous episodes, the group of patients with only two episodes of depression showed no significant benefits from the treatment condition. Teasdale et al. (2000) found that, within this parameter of two episodes, the MBCT group experienced a 54% of relapse compared to a 31% relapse with the TAU group. What they also found upon further exploratory analyses of the demographics of the two-episode participants is that they have much older age when experiencing their first episode of depression. Teasdale et al. therefore noticed and suggested that perhaps participants from the two-episode group came from a different population than those from the three-or-more-episode group. Therefore, in the future, the number of previous episodes and its impact on MBCT should be further analyzed separately.

A replication of Teasdale et al. (2000)'s study above was conducted following its completion and published four years later by Ma & Teasdale (2004). This study also used a randomized assignment to either MBCT group ( $n = 37$ ), TAU group ( $n = 38$ ) or, this time they added, non-depressed group of people as the control group. The control group ( $n = 50$ ) consisted of those who scored less than 11 on the Beck Depression Inventory (BDI) and did not endorse two items on the screening questions

for DSM-IV major depression in regards to feeling depressed and anhedonia. For data analyses, the samples have been divided into two samples, intent-to-treat and per-protocol. The concept behind the division was similar to the previous study done by Teasdale et al. (2000). Because this study was also interested to see whether there is a distinction between two previous episodes and three-or-more previous episodes, Ma and Teasdale also analyzed the two groups separately. For the three or more episodes, there was only one participant difference between per-protocol sample and intent-to-treat sample. Therefore, they decided it was unnecessary to conduct two separate analyses. For the two-episode group, however, separate analyses were conducted for per-protocol sample and intent-to-treat sample.

What Ma and Teasdale (2004) found within the three-or-more group was a much larger effect size than the medium effect size found by Teasdale et al. (2000). There was a 36% relapse only in MBCT group compared to a 78% relapse in TAU group, which led to an  $h$  value of .88 using Cohen's rule or a very large effect size (Thalheimer & Cook, 2002). For participants who experienced only two episodes of depression previously and fell under the intent-to-treat sample, 50% of MBCT participants experienced relapse, whereas only 20% of TAU participants did so. Under the per-protocol sample, 25% of MBCT participants experienced relapse and 20% in TAU group relapsed. In comparison to Teasdale et al. (2000)'s rates, the two-episode within intent-to-treat sample rates from the two studies are comparable, but not with the per-protocol results from both studies. Teasdale et al.'s rates were higher.

The conclusion that can be gathered from Ma and Teasdale's study is that they have replicated a study that was done previously (Teasdale et al., 2000) and gained results that support the previous study when it comes to the effectiveness of MBCT to prevent relapse in depressed individuals with three or more previous depressive episodes. Ma and Teasdale also found out that their research supported the hypothesis that patients with two previous episodes have a later age of onset of first episode. Ma and Teasdale further discovered and concluded that when the issue of internal versus external source of relapse is taken into consideration, MBCT is more effective in reducing relapse possibly caused by internal, habitual, and negative automatic thoughts (i.e., rumination) than relapse that is associated with factors externally (i.e., a death of a loved one).

Another study that was conducted by Kuyken et al. (2008) compared MBCT to the use of antidepressant medication (ADM) to prevent relapse in recurrent depressed participants. The study was conducted in primary care settings in England. All participants have had three or more previous episodes of depression. They were randomly assigned to the MBCT intervention group ( $n = 52$ ) or the ADM group ( $n = 52$ ). Some of the participants in the MBCT group also received medication treatment during the time of their MBCT group, but the ADM participants only received medications. Similar to the previous two studies that have been reviewed (Ma & Teasdale, 2004; Teasdale et al., 2000), Kuyken et al. divided their samples into the intent-to-treat and per-protocol for each intervention group. They found during the follow-up period that within the intent-to-treat sample, 47% of the MBCT participants experienced a relapse compared to 60% of the ADM group, and within the per-protocol sample, 46% of the MBCT participants had a relapse compared to 60% in the per-protocol sample.

In order to further see the impact of MBCT on the tapering or discontinuation of ADM of its participants that received dual treatment options, Kuyken et al. (2008) analyzed the mean number of

days on the ADM treatment for both the ADM group and the MBCT group during the 6-month period of follow-up. They found a significant difference between the two groups with MBCT members having a lower number of days on medication. This yields to Cohen's  $d$  of 1.07, which means it has a large effect size. When another data collection on medication-tapering (discontinuation) was done after the 6-month period, the medication usage between the two groups continued to be highly significantly different (Cohen's  $d$  of 0.93), which also indicates a large effect size.

In terms of the specificity of inclusion criteria, all of the studies reviewed so far have employed a stricter rule of choosing only participants who have been previously diagnosed with major depressive disorder. Their exclusion criteria would be other comorbid psychiatric disorders, such as bipolar, active drug dependence or abuse, organic mental disorders, schizophrenia, schizoaffective disorder, eating disorders, and obsessive-compulsive disorder. There are other recent studies done that evaluated the use of mindfulness meditation in treating depression, but these studies had a more broad inclusion criterion in terms of allowing the presence of other comorbid disorders such as anxiety and bipolar. The study done by Ramel, Goldin, Carmona and McQuaid (2004) was one of these studies that evaluated the use of Kabat-Zinn's MBSR with depressed individuals who also had other comorbid disorders (i.e., panic disorder, social phobia, OCD, PTSD, GAD, and other specific phobias). This study was a mix of within-subject ( $n = 23$ ) and between-subject ( $n = 11$ ) designs and using a waitlist group as a control group. Ramel et al. incorporated both war veterans and non-veterans as part of their participants.

Within the within-subject design, the results showed a significant decrease in the measurement of affective symptoms following MBSR course with Cohen's  $d$  score of 0.52, which yields a medium effect size. In addition to the measurement of affective symptoms, there was also the measurement of cognitive functioning. There was also a significant decrease from intake to follow-up assessment with Cohen's  $d$  of 0.80 showing a large effect size in rumination and a  $d$  score of 0.45 indicating a medium effect size in dysfunctional need for approval from others. Within the between-subject design, Ramel et al. discovered that upon completion of MBSR course, participants experienced a significant decrease in rumination (intake mean 56.82 to follow-up mean of 46), with the Cohen's  $d$  shows a score of 1.52 indicating a very large effect size. The waitlist participants, on the other hand, showed a rumination level that increased slightly from the intake mean of 48.18 to follow-up mean of 49.36, but the increase shows a  $d$  score of 0.12, which is a negligible effect size to notice. In terms of the measurement of affective symptoms and dysfunctional attitudes, Ramel et al. found no significant interaction effects between participants who completed the MBSR course and those in the waiting list group.

## **Conclusion**

Based on the review of the studies so far, it is clear that even the population of depressed individuals has sub-populations when relevant factors in depression, such as the number of previous episodes, are taken into consideration when conducting research. Number of previous depressive episodes is pertinent because when controlled carefully, the number of previous episodes yielded different results on the effectiveness of mindfulness meditation (Ma & Teasdale, 2004; Teasdale et al., 2000). These two studies (Ma & Teasdale, 2004; Teasdale et al., 2000) were done separately using two independent research settings, a random assignment, and a control group. Both studies also provided significant and at least a medium effect size of mindfulness meditation, combined with cognitive therapy, for the population of depressed individuals with three or more previous depressive episodes.

Based on the points above, this current paper sees that there is a potential for MBCT to be an evidence-based practice to treat depression based on the effect size of MBCT. However, more studies would be needed to replicate the results from various studies mentioned in this paper before a stronger conclusion can be made. Replications of these studies that can be done by separate groups of researchers may provide a more accurate and safe conclusion for the efficacy use of MBCT on depressed individuals. Conclusions can also be drawn regarding the specificity of number of previous depressive episodes and the use of mindfulness meditation practice, such as whether there is a difference between the effectiveness of mindfulness meditation or MBCT with those who have had two or less episodes and those with three or more previous episodes.

Another obvious question here is that the criterion of three or more episodes is still very broad, and therefore, a question can be asked whether MBCT will make another significant difference at some point when the amount of previous episodes is just too large. Is there be a limit to the effectiveness of MBCT when connected to the number of repeated depressive episodes? To say that MBCT would be efficacious for all depressed individuals with three or more episodes is to include almost all of the depressed individuals considering the fact that the proportion of depressed individuals with two previous episodes was only about 23% in both studies. Therefore, more research should also be done on this particular issue as well.

Another consideration about the two studies by Ma & Teasdale, 2004 and Teasdale et al., 2000 was presented by Williams, Russell, and Russell (2008). The question, according to Williams et al. (2008), lies in the use of appropriate control group in those two studies in order to better control the impact of MBCT. Williams et al. suggested that future studies should consider the use of either no-treatment control group or other treatment condition that are compatible to MBCT, rather than using antidepressant medications or vague additional treatments as covariates, to compare with MBCT. In Williams et al.'s opinion, antidepressant does not fall onto a psychology-based treatment unlike MBCT that employs some CBT techniques. One possible compatible treatment to MBCT would be the traditional talk therapy, such as the client-centered therapy or CBT alone.

One topic that all of these studies kept touched upon is on the feature of rumination as the key factor to focus on when using either MBSR or MBCT. This makes sense because, as Nolen-Hoeksema (1991) pointed out, ruminative style works at the cognitive level, and mindfulness meditation also works on the same cognitive level. The whole idea of letting go and using non-judgmental attitude seem to work appropriately with ruminative style of coping. The concept of non-judgmental attitude may be theoretically helpful for depressed individuals to slowly let go off the habitual and constant judging in their thinking patterns.

The other two studies that also looked at how mindfulness meditation might help the cognitive processes in depressed individuals (Broderick, 2005; Ramel et al., 2004) provided supportive conclusion on the incorporation of mindfulness meditation to treat depression. They both provided a good enough effect size and significance in their statistical analysis, but Broderick's study lacked a clear control group and Ramel et al.'s study was only a wait-list controlled study with its own limitations.

As seen from the conclusion above, many questions still remain to be explored and more replications are still needed. However, one cannot deny what the literature has shown regarding the use of mindfulness as a treatment option for depression. Therefore, based on the studies reviewed so far,



this paper finally concludes that there is a pretty strong support for the level of efficacy of mindfulness philosophy in the form of MBCT as an option to treat depression. Although mindfulness in the form of MBCT may not work for all individuals, the fact that it is a strong option to treat depression is a good news for the field of mental health.

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