A critical review of mindfulness-based psychological treatments for worry and rumination

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Abstract

Introduction

Over the last 20 years, mindfulness has become a core treatment for psychological distress both as component of third wave CBT treatments. Worry and rumination are transdiagnostic cognitive processes which are seen as a core maintaining features of anxiety disorders and depression. Mindfulness theory suggests that MBCT acts on depression by reducing ruminative thinking. This literature review examines whether there is any evidence from mediation or treatment studies supporting MBCT/MBSR’s effect on clinical levels of worry or rumination. It also examines whether mindfulness interventions are ever contraindicated for people with high levels of worry or rumination.

Materials and methods

We reviewed controlled trials and mediation studies published up until December 2013 on Pubmed, Psychoinfo, Cochrane Library and Medline databases. Studies were eligible for inclusion if they used primary or secondary measure of worry/rumination. We only included studies with clinical and non-clinical adult participants. We did not include any uncontrolled trials. Studies including participants with learning disability, psychotic disorders or Axis II disorders were excluded from the review.

Results

We reviewed 11 trials. The heterogeneous nature and mixed quality of the studies made generalisation difficult. Ten of the studies reported positive outcomes for rumination. Four of the studies reported positive effects for worry. Although, these results are suggestive of a positive effect, these were often of small effect size and were not compared to active controls.

Conclusion

Although all the interventions reviewed found positive effects, their heterogeneous nature made it difficult to recommend mindfulness-based interventions as a treatment for clinical worry/rumination due to inadequate evidence. It is recommended that further research examine the effect of mindfulness-based interventions on worry/rumination directly and not as a secondary treatment aim.

Introduction

Mindfulness

Mindfulness is a simple form of meditation that has been translated from Buddhist practice into Western medicine over the last 30 years. It asks people to pay attention, moment by moment, non-judgementally. 1,2

Although mindfulness has been incorporated into a number of broad third-wave CBT treatments (e.g. ACT, DBT, meta-cognitive therapy 3), two specific manualised mindfulness-based psychological interventions have been studied extensively: mindfulness-based stress reduction (MBSR) and mindfulness-based cognitive therapy (MBCT). MBSR is an 8 week group-based program focused on teaching mindfulness skills and bringing mindfulness into daily living especially in areas of physical or emotional distress. 4 MBCT combines the structure and skills of MBSR with cognitive behavioural techniques. 5 It is designed for the prevention of relapse in recurrent depression.

The focus of mindfulness is to teach the individual to become more aware of their thoughts and feelings and to relate to them as mental events rather than something that is true or not true. In this sense, it fosters a decentred relationship to thoughts and emotions. The development of MBCT was informed by studies which showed that depressive relapse was associated with negative automatic thinking such as rumination, catastrophising and self-criticism 6 and that being able to detach from this thinking was likely to be beneficial in reducing depression.

Systematic reviews of MBCT 6,7 have concluded that in patients with three or more previous depressive episodes, MBCT has significant therapeutic benefits. 8 For instance, a 40% relapse rate in the year following the intervention compared with 66% in the treatment-as-usual (TAU) condition. Kuyken et al. 9 showed that MBCT was as effective as maintenance antidepressant medication in preventing relapse in patients with three or more depressive episodes. 10,11

Geschwind et al. 12 found MBCT to be an effective intervention despite the number of previous episodes, indicating that it was residual symptomatology rather than number of episodes that was the key mediator. Those without symptomatology (“stable remitters”) showed no effect for MBCT, whereas MBCT had a positive effect for those with residual symptomatology. However, in contrast Bondolfi et al. 13 did not show MBCT to be superior to TAU for patients with recurrent depression.

Fjortoft et al. 6 in their systematic review of MBSR found evidence for improvements in mental health in clinical and non-clinical populations. 14,15,16

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In clinical populations with physical illnesses, medical treatment was improved by MBSR’s role in relieving psychological distress.\textsuperscript{17,18} In clinical populations with psychiatric disorders, MBSR had some effect in reducing symptoms of distress, anxiety and depression.\textsuperscript{16,19} However, this population has been more commonly treated with MBCT.

Notably, Hoge et al.\textsuperscript{20} have recently published the first full RCT examining the effects of MBSR with a GAD population. They found significant positive effects but assessed general measures of anxiety and stress and did not include any specific measures of worry/rumination.

**Worry and Rumination**

Although worry and rumination are frequently discussed as a key processes in depression\textsuperscript{21,22} and anxiety disorders,\textsuperscript{23} there are multiple definitions across the research.\textsuperscript{24} Brosschot, Gerin & Thayer\textsuperscript{25} argue that rumination and worry are underpinned by the same cognitive process i.e. perseverative cognition and that this is a transdiagnostic factor which increases the level of distress in both anxiety and depression. The essential features of the varying definitions of worry and rumination are cognitive activities that are (i) repetitive, (ii) uncontrolled and (iii) negatively valenced.\textsuperscript{21} The difference between the two is primarily their focus: worry is future focused, whereas rumination is focused on the past.\textsuperscript{26}

Each aspect of worry/rumination (i.e. the repetition, the lack of control or the negative valence) is in itself distressing, leading the person to worry about the symptoms of worry/rumination as well as the content.

This process of worry about worry is self-perpetuating and accounts for the maintaining nature of the distress.\textsuperscript{27,28} People for whom worry or rumination are there primary clinical issue are commonly seen in clinical practice, presenting across a range of diagnostic categories.

**Mindfulness and worry/rumination**

Several key questions emerge from the current evidence-base on mindfulness and worry/rumination. There is strong evidence that MBSR and MBCT are effective in relieving distress and reducing the risk of depressive relapse among certain populations. Although, Teasdale et al.\textsuperscript{1} hypothesised that reductions in worry and rumination were likely modes of change in anxiety and depression, it is unclear what effect MBCT/MBSR have on clinical presentations of worry/rumination.

MBCT was considered unsuitable for acute depression because of the intensity of negative thinking.\textsuperscript{11} Since a core component of rumination is the length of time spent thinking, adding meditative time to each day has the potential to exacerbate rather than to relieve symptoms. It is important to ascertain if MBCT is contraindicated for particularly ruminative depressive presentations.

In this literature review, we looked to ascertain from trial data and mediation studies what is the current best understanding of:

- The effect of mindfulness interventions on worry/rumination
- Whether mindfulness interventions are contraindicated for people with high levels of worry/rumination

**Results**

**Treatment studies of Mindfulness interventions for worry/rumination**

We examined eleven trials which examined mindfulness based interventions and measured reductions in worry or rumination using self-report measures.

**Methodological quality of trials**

Generally the studies were of moderate quality. They were manualised. Several had control conditions though often not active controls. They used easily replicable measures. However, they had little follow-up or only a short follow-up. Generally intention-to-treat analysis was not used so attrition may be a significant factor not taken into account in the statistical analysis (Table 1).

**Materials and methods**

Very few mindfulness treatment studies have been explicitly designed to reduce worry/rumination, rather measures of worry/rumination have been secondary measures in depression or anxiety trials.\textsuperscript{26}

We reviewed controlled trials and mediation studies published up until December 2013 on Pubmed, Psychoinfo, Cochrane Library and Medline databases, using combinations of search terms: mindfulness, MBCT, MBSR, rumination, worry, PSWQ, meditation, anxiety, depression, RSS, Rumination on Sadness Scale, RRQ, Rumination Reflection Questionnaire, CERTS, Cambridge-Exeter Repetitive Thought Scale, RSQ Rumination Style Questionnaire.

Studies were eligible for inclusion if they used primary or secondary measure of worry/rumination e.g. Rumination Response Scale,\textsuperscript{29} Penn State Worry Questionnaire.\textsuperscript{30} We only included studies with clinical and non-clinical adult participants. We did not include any uncontrolled trials. Studies including participants with learning disability, psychotic disorders or Axis II disorders were excluded from the review.

**Critical review**

Heeren & Philippot\textsuperscript{31} published the only MBCT trial directly targeting rumination. It found a significant reduction from pre to post and between MBCT and the waiting list control.

All 10 of the studies which looked at rumination reported positive outcomes for the mindfulness intervention,\textsuperscript{32,33,34,35,36,37,38,39,40} superficial support for mindfulness interventions as a treatment for rumination.
All four of the studies which looked at worry reported positive effects for the mindfulness interventions,⁴,³⁶,³⁷,⁴⁰ again giving superficial support for mindfulness interventions as a treatment for worry.

However, while there is ostensible support for mindfulness interventions’ effects on worry/ rumination, there are a number of factors to take into account:

- Only one of the studies primarily targeted worry/rumination and any effects seen in other studies may well be the secondary outcome of changes in the primary outcome e.g. anxiety/depression.

- Few of the studies had active controls, meaning non-specific effects of groups or psychoeducation may have led to the effect.

- Other interventions have been found to have an impact on worry/ rumination e.g. cognitive behaviour therapy.²⁶ It is necessary to ascertain whether it is the mindfulness component or the cognitive therapy component of the intervention that may have led to the effect.

- The heterogeneous nature of the samples, severity of presentations and formats makes generalisation difficult. Meta-analysis of the data would not be meaningful.

- With the exception of van Aalderen et al.⁶ and Batink et al.,¹⁷ there is virtually no replication of studies, meaning any outcomes should be interpreted with caution.

### Mediation studies

Although the trials found a relationship between mindfulness interventions and reduced worry/ rumination, mediation studies have shown that this relationship may be complex. On the one hand, Shahar et al.,⁴¹ Heeren & Philippot³¹ and van Aalderen et al.²⁶ found strong relationships between improvement following MBCT and reduced rumination. On the other hand, Batink et al.¹⁷ indicated that MBCT outcomes were mediated by changes in worry but not rumination. Geschwind et al.¹² and Batink et al.¹⁷ found that changes in positive and negative affect appeared to mediate the effect of worry on depressive symptoms, indicating that it may be changes in positive and negative affect rather than worry and rumination per se, which are the mediators of change. In the Batink et al.¹⁷ study, 61% of the effect of MBCT on depressive symptoms was mediated by positive affect.

### Methodological quality of mediation papers

Generally the quality of the mediation studies was good. However, several of the papers looked for direct relationships between worry/rumination and mindfulness interventions, perhaps missing indirect or mediated relationships. Few of the studies have offered replication of previous work which allows some comparison but makes conclusions difficult.

### Contraindications for mindfulness

None of the studies reported any side effects from MBSR/MBCT. However,
Fjorback et al. noted that "it is well known that participants can experience an increase in symptoms because of the awareness training (p.117)". Anecdotal evidence suggests that those who struggle the most initially are those with high levels of rumination as they shift to a situation with increased thinking time and little distraction. Crane and Williams found that those who dropped out of MBCT had higher levels of rumination. In general, the rate of drop-out across the studies was consistent with other psychological therapies. However, it would be important to ascertain what causes dropout and whether this is due to rumination-related distress.

Discussion
This critical review examined treatment and mediation studies to understand whether mindfulness interventions have an effect on worry/rumination and whether mindfulness interventions are ever contraindicated for people with high levels of worry/rumination.

The first thing to note is that there are only a small number of studies which have examined mindfulness and worry/rumination directly. Although it is a cornerstone of the theoretical understanding of mindfulness’ effect on depression, relatively little research has attempted to ascertain whether mindfulness interventions have an effect on worry/rumination.

The heterogeneous nature of the intervention studies makes generalisation difficult. Ten of the studies reported positive outcomes for mindful interventions on rumination. Four of the studies reported positive effects for mindful interventions on worry. Although, these results are suggestive of a positive effect, the variety of studies leaves any meta-analysis meaningless. Unfortunately, it is difficult to recommend mindfulness-based interventions as a treatment for clinical worry/rumination due to inadequate evidence. Trials that directly test the effect of MBCT on clinical levels of worry/rumination are sorely needed.

Mediation studies showed a relationship between MBCT and changes in worry/rumination. However, this relationship itself may be mediated by changes in affect. Meditation interventions as opposed to more traditional treatments may not have large effects on symptoms. Rather it is important to make a distinction between symptom severity and symptom distress, as has been done in the pain literature. This may be poorly captured by standard self-report measures. Evidence suggests that there is a complex interaction between affective and cognitive variables and that statistical models need take these into account.

Although commentators have mentioned increases in distress due to mindfulness, there is no data that suggests that it is harmful. However, as in all therapies there is an attrition rate and it should be ascertained as to whether individuals are dropping out of therapy due to increased distress. From the current evidence, it is impossible to say whether MBCT/MBSR can lead to an increase in distress or to an increase in rumination.

Limitations
Due to the heterogeneous nature of the studies, this paper could only operate as a literature review and not a meta-analysis. Rumination and worry have not generally been the primary concepts of interest for mindfulness research and therefore there may be studies which examined these which have not been published or were not picked up by the search terms used in this review. Non-controlled trials were not included in this review and this may have reduced the range of outcomes examined.

Conclusion
Although it is a cornerstone of the theoretical understanding of mindfulness’ effect on depression, relatively little research has examined mindfulness and worry/rumination directly. Although all the interventions reviewed found positive effects, the heterogeneous nature of the intervention studies made it difficult to recommend mindfulness-based interventions as a treatment for clinical worry/rumination due to inadequate evidence.

Mediation studies show a relationship between MBCT and changes in worry/rumination. Evidence suggests that there is a complex interaction between affective and cognitive variables and that mediation models need take these into account. Although commentators have mentioned increases in distress due to mindfulness, there is no data that suggests that MBCT/MBSR is harmful or contraindicated.

References
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