

**University of Southampton**  
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**The contribution of mindfulness to the  
understanding and management of  
distress in psychosis and the validation of  
The Mindfulness Questionnaire**

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Psychology**

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I the undersigned confirm that the work I have presented as my thesis is entirely my own work. Reference to, quotation from, and discussion of the work of any other person has been correctly acknowledged within the work in accordance with University guidelines for production of a thesis.

Signed.....

Date.....6/10/05.....

## Abstract

### *Literature Review*

Interest in the clinical use of mindfulness practice has increased rapidly in recent years. Research investigating the efficacy of mindfulness based interventions indicates that these approaches can be useful for a range of disorders (Baer, 2003; Grossman, Nieman, Schmidt and Walach, 2004). Little attention has been paid to how mindfulness could contribute to the understanding and management of distress associated with psychosis. The following review describes what is currently known about mindfulness interventions, considers mechanisms of change and suggests ways in which mindfulness could be applied to psychosis. Contraindications for meditation for individuals with psychosis are reviewed and directions for future research are suggested.

### *Empirical Paper*

The literature on mindfulness interventions has been limited by the lack of an available measure of mindfulness. Several measures of mindfulness have been developed but none which specifically measure mindful response to distressing experiences.

The present research examines the reliability and validity of the Mindfulness Questionnaire (MQ, Chadwick, 2002, unpublished), a 16 item measure of mindful response to auditory hallucinations, as well as hypotheses about the relationship between mindfulness, affect and distress associated with hearing voices, beliefs about and response to voices.

Fifty-nine participants with a diagnosis of schizophrenia who were currently experiencing auditory hallucinations participated. Results indicated that four items should be removed. The 12 item MQ showed good internal reliability with a Chronbach's alpha of .84. Predictions about the relationship between MQ, affect, distress associated with hearing voices, beliefs about and response to voices were confirmed.

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**Can mindfulness contribute to  
understanding and managing  
distress associated with psychosis?**

**Emily Thomas**

**Prepared for submission to Psychological  
Bulletin**

**(See appendix L for Instructions to Authors)**



# **Can mindfulness contribute to understanding and managing distress associated with psychosis?**

## **Abstract**

Interest in the clinical use of mindfulness practice has increased rapidly in recent years. Research investigating the efficacy of mindfulness based interventions indicates that these approaches can be useful for a range of disorders including chronic pain, stress, anxiety, depressive relapse and disordered eating (Baer, 2003; Grossman, Nieman, Schmidt and Walach, 2004). So far little attention has been paid to how mindfulness could contribute to the understanding and management of distress associated with psychosis. The following review describes what is currently known about mindfulness interventions, considers possible mechanisms of change and suggests ways in which mindfulness could be applied to psychosis. Contraindications for meditation for individuals with psychosis are reviewed and directions for future research are suggested.

## **Keywords**

Mindfulness, Psychosis

## Introduction

Interest in the clinical use of mindfulness practice has increased rapidly in recent years. Research investigating the efficacy of mindfulness based interventions indicates that these approaches can be useful for a range of disorders including chronic pain, stress, anxiety, depressive relapse and disordered eating (Baer, 2003; Grossman, Nieman, Schmidt and Walach, 2004). However the evidence base is still in its infancy and is limited by methodological weaknesses of the individual studies. Further research is also needed to establish whether mindfulness approaches are as effective as other well-established psychological treatments. One particular problem has been that until recently there has been no established measure of mindfulness. This has meant that efficacy studies to date have not been able to establish whether the health benefits observed are indeed related to increased mindfulness skills. Correspondingly, there has so far been little empirical investigation of the mechanisms of change involved in mindfulness interventions. Future research is needed to address these points and to develop specific models for understanding how mindfulness may facilitate change in particular disorders. Finally, although mindfulness interventions have been applied to several psychological disorders, little attention has been paid to whether mindfulness training could be beneficial for people experiencing distressing psychosis. A small body of literature suggesting that meditation practice has been associated with the development of psychotic symptoms may have deterred researchers and clinicians from using mindfulness with this population. The initial success of mindfulness interventions for other disorders suggests that a review of the

contraindications and possible benefits of mindfulness meditation for psychosis is warranted.

The following review will describe what is currently known about the clinical use of mindfulness practice and how this can be applied to the understanding and management of distress associated with psychosis. The review will begin by discussing definitions of mindfulness. The clinical applications of mindfulness will then be discussed, followed by consideration of the possible mechanisms through which mindfulness practice facilitates change. The literature indicating caution in the use of mindfulness with psychosis is critically reviewed and ways in which the approach may contribute to the understanding and management of distress associated with psychosis are suggested. Finally suggestions for future research are discussed.

### *What is mindfulness?*

Mindfulness meditation is central to the practice of Buddhism, which is concerned with the relief of suffering. Mindfulness involves particular qualities of attention and awareness that are developed through meditation. Meditation is defined as the intentional self-regulation of attention from moment to moment (Goleman & Schwartz, 1976). Kabat-Zinn (2003) offers a definition of mindfulness as

*“The awareness that emerges through paying attention on purpose, in the present moment, and non-judgementally to the unfolding of experience moment by moment” (Pg. 145)*

Bishop et al. (2004) suggest a two-component model of mindfulness, involving (i) the self-regulation of attention focusing on immediate experience, and (ii) the adoption of a particular orientation to experience, characterised by curiosity, openness and acceptance. These components will now be discussed in more detail.

During mindfulness meditation, attention is focused on a particular object or experience, commonly the sensation of the breath entering and leaving the body. This requires skills in sustained attention. When the individual notices their attention being pulled away from their breath by either an internal event such as a thought, feeling or sensation, or an external event, they are asked to observe and acknowledge the event and then to redirect their attention back to their breath. This requires skills in switching and flexibility of attention. Mindfulness does not involve thought suppression, rather the content of the thought is noted and then attention is redirected back to the original focus of attention. This is hypothesised to prevent elaborative, ruminative thought processes and maintain attention in the present moment.

Bishop et al. (2004) suggest that because attention has a limited capacity, abstaining from elaborative processing frees up attention to attend to present moment experiences and so facilitates perception of experiences which may not previously have been noticed. They hypothesise that this results in the development of a perspective unbiased by beliefs, assumptions and expectations. Meditative traditions refer to this perspective as 'beginners mind'.

The second component of this model of mindfulness is the adoption of a particular orientation to experience. This involves purposefully developing an attitude of unbiased curiosity about experiences;

*“... in mindfulness practice, the focus of a person’s attention is opened to admit whatever enters experience, while at the same time, a stance of kindly curiosity allows the person to investigate whatever appears without falling prey to automatic judgements or reactivity.”* (Segal, Williams, & Teasdale, 2002 pg. 207).

Segal et al. (2002) suggest that this increased awareness and understanding leads to the insight that thoughts and feelings are simply events in the mind rather than necessarily accurate reflections of self or reality. They make the distinction between meta-cognitive insight/awareness (a cognitive set in which thoughts and feelings are *experienced* as mental events, rather than as the self or reality) and meta-cognitive knowledge (when the individual holds the *knowledge* that thoughts are not necessarily true) (Teasdale, Moore, Hayhurst, Pope, Williams & Segal, 2002). Wells (2000) has discussed the role of metacognition in emotional disorder more broadly, his work has examined the role of meta-cognitive beliefs and meta-cognitive control strategies in the maintenance of anxiety disorders. Bishop et al. (2004) also suggest that mindfulness is a psychological process similar to a meta-cognitive skill, which can be developed with practice. They suggest mindfulness requires both monitoring of the stream of consciousness and control of cognitive processes



through the regulation of attention. The relationship between mindfulness and metacognition is discussed further below.

An attitude of acceptance of all experience is emphasised as crucial to the practice of mindfulness. Roemer and Orsillo (2002) define acceptance as being experientially open to the reality of the present moment and argue that adopting a stance of acceptance impacts upon the meaning attached to painful or unpleasant thoughts and therefore has implications for the way in which these are experienced.

Kabat-Zinn (1990) describes seven attitudinal factors that are consciously cultivated in mindfulness practice: non-judging, patience, a beginners mind, trust, non-striving, acceptance and letting go. These attitudes are intertwined and overlapping.

### Non-judging

The mind constantly responds to experience by judging and labelling. For the most part this is an automatic process of which we are barely aware. Cultivating mindfulness involves becoming aware of the constant stream of judging and assuming the stance of an impartial witness to our experience.

### Patience

Patience demonstrates the understanding that things must unfold in their own time. Impatience arises when we want things to be different from how they

are. Mindfulness involves allowing the moment to unfold, without trying to rush through to the next moment.

### Beginners mind

Beginners mind is the willingness to see everything as if for the first time. It means being free from expectations gained through past experiences and being open and receptive to things as they are.

### Trust

Practising mindfulness involves developing a basic trust in yourself and your feelings. It involves learning to listen to yourself.

### Non-striving

Mindfulness meditation is ultimately a form of 'non-doing'. This involves learning to step back and observe our habitual ways of responding to experience. Mindfulness has no goal other than to be yourself, in the moment and developing understanding. It means letting go of ideas about how things 'should' be.

### Acceptance

Acceptance means seeing things as they actually are. Denying or avoiding the way things are does not change them, it simply prevents us from seeing clearly. Mindfulness involves accepting each moment as it is.

## Letting Go

Attachment to wanting things to be a certain way causes us to hold on to certain experiences and to avoid others. Mindfulness involves noticing these attachments and consciously letting go, letting whatever experience we are having come and go.

Bishop et al. (2004) argue that some of the qualities of mindfulness suggested by Kabat-Zinn (1990) such as patience and trust and those suggested by Epstein (1995), Welwood (2000), Kornfield (2002) and Baer (2003) such as non-reactivity, wisdom and compassion are actually outcomes of being mindful. They caution that a definition that confounds operational features with potential benefits reduces the utility of the construct.

Dimidjian and Linehan, (2003) define the overarching features of mindfulness as (i) observing, noticing or bringing awareness, (ii) describing, labelling, noting and (iii) participating. They suggest these activities are done in the following ways (i) non-judgementally, with acceptance, allowing, (ii) in the present moment, with beginners mind and (iii) effectively.

In summary, of the features suggested by Kabat-Zinn (1990), there seems to be agreement that non-judgement, beginners mind, non-striving, acceptance and letting go are core features of mindfulness. It is clear that Kabat-Zinn adopts a Buddhist approach and language that is somewhat in contrast to the cognitive psychological approaches of the other authors discussed. Nevertheless, his 'attitudinal' factors are arguably consistent with the



definitions of mindfulness incorporating processes of attention, awareness and acceptance of experience described above.

Mindfulness meditation is based on the notion that suffering arises from wanting things to be different from how they are, this involves an attachment/clinging to pleasant experiences and an aversion/avoidance of unpleasant experiences. Attachment and aversion are suggested to lead to fear, dissatisfaction and suffering and also to lead us away from our present moment experience (Mann & Youd, 1998). Mindfulness is suggested to be a way of 'stepping back' from these patterns of clinging and avoidance, and thus relieving suffering.

In order to begin to gain an understanding of how mindfulness may contribute to the understanding and management of distress in psychosis, this section of the review has described current definitions of mindfulness. In conclusion, mindfulness meditation is a practice which has its roots in Eastern traditions. It involves focusing and maintaining attention on present moment experience, with an attitude of acceptance and curiosity towards all experiences. Mindfulness meditation is concerned with the relief of suffering, a concern shared with psychotherapeutic traditions. This had lead clinicians to consider the benefits of mindfulness meditation in clinical practice. In examining how mindfulness may contribute to the understanding of distress associated with psychosis, it will be important to consider how the notion of attachment and aversion leading to suffering can be applied to understanding the relationship

between an individual's response to symptoms and the distress they experience.

The following section describes how mindfulness practices have been applied in clinical settings and is followed by a review of the efficacy literature for mindfulness-based interventions.

### **Clinical applications of mindfulness**

Several intervention packages have been developed to teach mindfulness skills. In Mindfulness Based Stress Reduction (MBSR, Kabat-Zinn, 1982, 1990) and Mindfulness Based Cognitive Therapy (MBCT, Segal et al. 2002) the primary focus is teaching mindfulness skills. In other intervention packages such as Dialectical Behaviour Therapy (DBT, Linehan, 1993), Acceptance and Commitment Therapy (ACT, Hayes, Strosahl, & Wilson, 1999) and Relapse Prevention (RP, Marlatt & Gordon, 1985), mindfulness forms one component amongst a range of interventions. In a similar but distinct approach, Wells (1990) developed Attention Training, in which participants are taught to pay intensive and flexible attention to external auditory stimuli. This approach is based on the hypothesis that attention training increases flexible meta-cognitive control of attention and enables participants to disengage from problematic, ruminative thinking patterns that maintain emotional disorder (Wells, 1990, 2000).

This section will focus on the effects of MBSR and MBCT as these approaches primarily teach mindfulness skills. As it is not possible to

determine the specific impact of mindfulness training upon outcome in the interventions which teach mindfulness amongst other skills (DBT, ACT and RP) these approaches will not be reviewed. However, as a brief version of Acceptance and Commitment Therapy has been used to prevent rehospitalization of patients with psychosis (Bach & Hayes, 2002), this paper will be described given the aim of this review. The outcome literature for Attention Training (Wells, 1990) is not reviewed as this approach is distinct from mindfulness training.

There is a growing literature evaluating the effects of mindfulness training in clinical and non-clinical populations. Grossman, Nieman, Schmidt and Walach (2004) conducted a meta-analysis of interventions in which the primary emphasis was mindfulness training. In total 64 evaluations of mindfulness training were found, including both published and unpublished material. Preliminary evaluations revealed that only 18 of these studies met inclusion criteria based on adequate study design, methodological rigor, use of standardised and validated outcome measures and adequate data to calculate effect sizes. Of these, 10 were controlled and eight uncontrolled. Dependant variables were divided into those measuring physical and mental health. Only standardised and validated outcome measures were included in the analysis. Grossman et al. (2004) calculated a between group effect size for controlled studies and a within group effect size for non- controlled studies, for both mental and physical health outcome measures (see below).

Baer (2003) conducted a meta-analysis of studies of mindfulness training. A literature review found 21 studies in total, 19 of these evaluated MBSR or a variant of this and two evaluated MBCT. Studies which evaluated DBT, ACT or RP were not included because they did not measure the effect of mindfulness independently of other components of treatment. Nine of the studies used pre-post designs with no control group, nine used a between group design with either a waiting list or treatment as usual control. Dependant variables included self and clinician reported measures of pain, medical symptoms, anxiety, depression, eating behaviours and general psychological functioning. Baer (2003) calculated mean effect sizes for each study from the range of measures completed at the end of the intervention and at follow up.

A summary of the findings will follow, organised by population group. Seven of the studies reviewed by Grossman et al. (2004) are not described as they are unpublished. The mean effect sizes reported by Grossman et al. (2004) and Baer (2003) will then be discussed. Finally the limitations of the current literature on the efficacy of mindfulness interventions will be reviewed.

### *Chronic pain*

Five studies examined the effects of MBSR in clients with chronic pain (Kabat-Zinn, 1982; Kabat-Zinn, Lipworth, & Burney, 1985, part 1; Kabat-Zinn, Lipworth, & Burney, 1985, part 2; Kabat-Zinn, Lipworth, Burney, & Sellers, 1987; Randolph, Caldera, Tacone, & Greak, 1999) The sample sizes in these studies ranged from 30-142. The samples in the studies by Kabat-Zinn and

colleagues overlapped. These studies showed statistically significant improvements on ratings of pain, other medical symptoms and general psychological symptoms. The majority of these improvements were maintained at follow up periods ranging from 2-48 months. Although pain was reduced at the end of intervention, it returned to pre-intervention levels within six months of treatment. Lasting benefit may therefore be in terms of adaptive coping responses to pain rather than change in pain symptoms. The main weakness of these studies is that they were uncontrolled. A further criticism of Kabat-Zinn, Lipworth, and Burney (1985, part 1) was that full inferential statistics were not reported. A strength of the Kabat-Zinn, Lipworth, and Burney (1985, part 2) study was that it included a comparison to control for regression towards the mean. However this comparison was not matched for potential differences in medical, psychosocial and sociodemographic variables; the comparison group also differed on pre-treatment ratings of pain and emotional distress.

### *Axis I disorders*

Individuals with generalised anxiety disorder and panic reported a significant improvement in symptoms at the end of MBSR. Post-treatment scores showed a reduction to non-clinical symptom ranges. These improvements were maintained at three-month and three-year follow up (Kabat-Zinn et al., 1992, Miller, Fletcher, & Kabat-Zinn, 1995). The study had rigorous assessment procedures using well-validated measures. However the sample size was small, 18/24 patients were receiving concurrent pharmacological treatment, and there was no control group. Although gains were maintained at



three year follow up, half of the participants had received additional treatment for their anxiety disorder since completing MBSR.

Kristeller and Hallet (1999) studied a sample of 18 patients with binge eating disorder and report statistically significant improvements on a range of eating and mood measures. A strength of this study was the inclusion criteria; participants had to meet diagnostic criteria for binge eating disorder, not be currently participating in a weight loss programme or psychotherapy, not be taking weight loss medication and not have a co-morbid psychological disorder. Weaknesses were that there was no control group and assessors were not blind to the fact that participants had been in treatment.

Teasdale et al. (2000) evaluated the effects of MBCT in people who had recovered from an episode of major depressive disorder. They found that participants with three or more depressive episodes had half the rate of relapse following MBCT compared to treatment as usual. Relapse rates did not differ for patients with only one or two previous episodes. The study was a randomised, controlled trial, with a large sample. Assessment was blind and used well-validated measures. The multi component nature of the intervention makes it impossible to establish whether effects were due to the mindfulness component specifically. A weakness of the study was that treatment as usual was not a specific alternative psychological treatment; for different participants, this incorporated depression related visits to a general practitioner, psychiatric treatment, counselling, psychotherapy and other

mental health contacts. Such treatment as usual is, however, more consistent with routine clinical practice.

### *Other medical disorders*

Kaplan, Goldenberg and Galvin (1993) and Goldenberg et al. (1994) found that patients with fibromyalgia reported improvements on a range of measures following MBSR. The study by Kaplan et al. (1993) is limited by lack of a control group, failure to report descriptive and inferential statistics, and arbitrary determination of clinical response. Participants were deemed to have responded to treatment if they reported a 50% improvement in half of the measures used. The study used measures of illness symptoms and of coping and adaptation. Unfortunately they combined these when reporting clinical response, despite evidence that coping may improve independently of change in symptom severity. Half of the control group in the Goldenberg et al. (1994) study consisted of people who had declined MBSR. This is problematic as there may be distinct differences between this group and those who accepted intervention.

In a randomised controlled trial Kabat-Zinn et al. (1998) found that patients with psoriasis who practised mindfulness whilst receiving light therapy experienced more rapid improvement in skin condition compared to patients who received light therapy alone. The outcome measure was time taken for psoriasis to clear. It would have been useful to include some psychological measures in order to assess any possible mediating factors.

Specia, Carlson, Goodey and Angen (2000) carried out the only randomised controlled study of the impact of MBSR in a mixed sample of cancer patients. They found that MBSR reduced mood disturbance by 65 % and stress levels by 35 %. Improvements were maintained at six-month follow up (Carlson, Ursuliak, Goodey, Angen, & Specia, 2001). The authors also found that time spent practising mindfulness correlated with reductions in mood disturbance, which supports the suggestion that meditation specifically impacted upon mood. However social desirability effects cannot be ruled out.

### *Mixed clinical populations*

Kutz et al. (1985) evaluated the effects of MBSR in a group of people receiving long-term psychodynamic therapy for a range of psychiatric diagnoses. They reported significant improvements on a range of self and therapist reported symptoms. The study is weakened by a small sample size and lack of control group. This made it impossible to control for the effect of ongoing psychodynamic therapy.

Roth and Creasor (1997) and Reibel, Greeson, Brainard and Rosenzweig (2001) studied a mixed sample of medical patients and reported improvements in a range of psychological and medical symptoms. Neither study had a control group.

### *Non-clinical populations*

Studies of student samples reported significant effects of mindfulness on ratings of psychological symptoms, empathy and spiritual experiences (Astin,



1997; Shapiro, Schwartz, & Bonner, 1998). Both studies used randomised controlled designs. Shapiro et al. (1998) used matched randomisation to control for possible confounding variables. The study also replicated its findings by offering the control group MBSR after the treatment group. A limitation of the study was that the control group did not receive an alternative psychological intervention to control for non-specific therapeutic factors. Astin's (1997) study is limited by the sample size: only 12 participants completed MBSR.

A community sample with reported stress completed MBSR and showed significant improvements on a range of medical and psychological symptoms (Williams, Kolar, Reger, & Pearson, 2001). The study did include a waiting list control group and participants were randomly assigned to groups.

Massion, Teas, Herbert, Wertheimer and Kabat-Zinn (1995) found that women who meditated regularly following completion of MBSR had significantly higher levels of melatonin (a variable related to immune function) than women who had never meditated.

### *Effect Sizes*

Grossman, Nieman, Schmidt and Walach (2004) report an effect size of  $d = 0.54$  (95% CI 0.39-0.68,  $p = .000$ ) for mental health measures in the 10 controlled studies. Five of these studies included physical health measures, with an effect size of  $d = 0.53$  (95%-CI, 0.23-0.81,  $p = .000$ ). These effect sizes

are considered to be in the medium range (Cohen, 1977). The data sets for both mental and physical measures passed the test for homogeneity.

Effect sizes for both mental and physical health measures were calculated for 18 uncontrolled studies (Grossman et al. 2004). A medium effect size of  $d = 0.50$  (95%-CI, 0.43-0.56,  $p = .000$ ) was reported for mental health measures. However this data set did not pass the test for homogeneity and so should be interpreted with caution. Only nine of the 18 studies reported physical health variables; the mean physical health effect size for these was  $d = 0.42$  (95%-CI, 0.34-0.50,  $p = .000$ ). This data passed the test for homogeneity.

Baer (2003) calculated an overall mean effect size for 15 of the studies included in her analysis (means for studies with overlapping samples were averaged and included as one study). The overall mean effect size post intervention was  $d = 0.59$  (95%-CI, 0.15-1.65,  $p = .000$ ) when weighted by sample size. Several of the studies reported effect sizes in the large range (Kabat-Zinn et al. 1992; Kristeller & Hallet, 1999; Massion et al. 1995; Astin 1997).

Fewer studies reported follow up data but Baer (2003) calculated a follow up mean effect size for those that did:  $d = 0.59$  (95%-CI, 0.08-1.35,  $p = .000$ ), a medium effect size (Cohen, 1977). Grossman et al. (2004) only analysed measures collected immediately post-intervention as many studies either did not include follow-up evaluation or the time span of follow up was too varied to allow meaningful comparison.

Taken together, these figures suggest that mindfulness interventions produce effect sizes in the medium range. The effect sizes are similar for both uncontrolled and controlled studies and are slightly larger for mental health measures rather than physical health.

Baer (2003) emphasises that some of the effect sizes may have been underestimated because certain authors did not report values, which were required for the calculation of effect size, and so conservative estimations were used.

#### *Limitations of the current literature*

There are several factors that make it difficult to draw clear conclusions about the efficacy of mindfulness interventions from the current literature. The first is that none of these approaches teach mindfulness in isolation from other cognitive and behavioural skills. Secondly the interventions teach several meditation practices to facilitate mindful awareness and it is possible that some of these exercises are more helpful than others (Mason & Hargreaves, 2001). Thirdly there are significant methodological weaknesses in the existing studies of mindfulness interventions as described above. Finally, with the exception of a study by Brown and Ryan (2003), the studies to date have not measured mindfulness as an outcome variable. The recent development of several measures of mindfulness will hopefully mean that future studies will investigate changes in mindfulness following interventions. These weaknesses will now be discussed in more detail.

The majority of studies reviewed here evaluated the effects of MBSR or interventions adapted from this programme. Although the main focus of MBSR is mindfulness training, benefits may be gained from attending a group treatment, for example the experience of universality from meeting other people with similar difficulties. However, Grossman et al. (2004) suggest that the similarity of effect sizes across studies and particularly across the controlled studies included in their meta-analysis supports some specificity of mindfulness interventions. Studies with active controls to account for general and non-specific effects of interventions had a mean effect size of  $d = 0.49$ , which although slightly smaller is not significantly different from the effect size of  $d = 0.58$ , for studies with waiting list controls. Similarly Baer (2003) found that studies using waiting list controls yielded slightly larger effect sizes than those using treatment as usual. These results should be interpreted cautiously as the effect sizes were calculated by averaging various measures and the sample sizes are small. Baer (2003) notes that these methodological issues may mean that differences between mindfulness and comparison groups are not significant.

The majority of mindfulness interventions reported here teach several meditation practices such as seated meditation, body scan meditation and mindful yoga. None of the studies to date have evaluated whether there are differences in outcome depending on which method is used. A qualitative evaluation of participants' accounts of MBSR indicated that one participant gained quite different experiences depending upon which form of meditation she used (Mason & Hargreaves, 2001). Obviously the report of one participant

does not indicate that there is a general difference, but perhaps future investigation is warranted.

Nine of the studies reviewed by Baer (2003) and eight of those reviewed by Grossman et al. (2004) had no control group and so were unable to control for the effects of passage of time, general and non-specific effects of interventions, demand characteristics, placebo effects or comparison to other treatments. Five of the controlled studies reviewed by Baer (2003) and four of those reviewed by Grossman et al. (2004) included waiting list controls. In four of the studies reviewed by Baer (2003) that compared mindfulness interventions to treatment as usual, the other treatment was medically based and so not directly comparable to psychological intervention.

Six of the studies included in the Baer (2003) meta-analysis had sample sizes below the recommended size needed to gain a reliable medium-large effect size (Cohen, 1977).

The clinical significance of findings was difficult to assess because of differences in the ways that scores were reported. Clinical significance was reported for a few cases in the Baer (2003) review, where well known measures were used. These calculations suggested clinically significant change following intervention but should be considered tentatively because of small sample sizes and uncontrolled designs. Baer (2003) suggests that future research should directly assess clinical change following intervention either by reassessing participants to determine whether they still meet the



diagnostic criteria for which they were referred to the intervention or by assessing the extent to which they fall within normal limits on well established clinical measures.

Baer (2003) and Grossman et al. (2004) report that the studies reviewed in their analyses do not describe the procedures used to train therapists or to evaluate their delivery of mindfulness treatment. In order to ensure integrity of treatment it would be helpful if future research described these. Segal, Teasdale, Williams and Gemar (2002) have since developed an MBCT adherence scale for this purpose. Grossman et al. (2004) also criticise the current literature for failing to give sufficient information about participant drop-out rates and other concurrent interventions that participants may have been receiving.

A final and major methodological weakness in the existing literature is that with the exception of a study by Brown and Ryan (2003, described below), none of the studies reviewed here measure mindfulness as a variable. This is a problem as it may be that the benefits gained from the interventions were not brought about by an increase in mindfulness. Perhaps another process was responsible for change in symptom measures such as relaxation, social support, increased self-efficacy or normalisation of difficulties. In order to demonstrate that it is specifically mindfulness training that is beneficial we must establish that positive change observed following mindfulness training is correlated with an increase in mindfulness.

### *Current measures of mindfulness*

In order to establish that mindfulness training is associated with an increase in mindfulness skills, a reliable and valid measure of mindfulness is needed. There exist three published measures of mindfulness to date. Buchheld and Walach (2002) and Buchheld, Grossman and Walach (2001) discuss the development of the Freiburg Mindfulness Questionnaire (FMI) a measure of trait mindfulness. The measure was found to be reliable and valid and to detect changes over the course of an intensive meditation retreat. Its use is limited to those with some meditation training.

Brown and Ryan (2003) developed the Mindful Attention Awareness Scale (MAAS) measuring how present and aware people are in the current moment. The scale was found to be both reliable and valid. It discriminated between meditators and non-meditators and detected changes in mindfulness across time. Its use is limited to measuring trait mindfulness.

Brown and Ryan (2003) used the Mindful Attention Awareness Scale as an outcome measure in an evaluation of an MBSR intervention for 41 participants who had early stage breast or prostate cancer. The evaluation showed that higher levels of mindfulness were related to lower levels of mood disturbance and stress both before and after the intervention. Increases in mindfulness across the intervention predicted decreases in mood disturbance and stress, indicating that increases in mindfulness skills were responsible for concomitant reductions in negative affect.

Baer, Smith and Allen (2004) have developed the Kentucky Inventory of Mindfulness Skills (KIMS). The scale is suggested to measure trait mindfulness and has four subscales, observe, describe, act with awareness and accept without judgement. The measure had good internal consistency and test-retest reliability. The Act with Awareness subscale was strongly related to MAAS scores, the Describe and Accept without Judgement subscales correlated with the MAAS moderately, Observe was unrelated.

Two other measures of mindfulness have been developed, the Cognitive Affective Mindfulness Scale (CAMS) by Feldman, Hayes, Kumar and Greeson (2003) and the Toronto Mindfulness Scale (TMS) by Bishop et al. (2004). The psychometric properties of these scales are still being investigated and are yet to be published. The TMS is intended to measure state mindfulness and has been designed for administration immediately after meditation practice. This limits its use as a baseline measure prior to a mindfulness intervention.

A limitation of these measures is that they have not been validated for use with clinical populations. The existing measures focus on mindfulness in everyday life or immediately after meditation practice as opposed to how mindfully an individual can respond to distressing cognitions.

Although the Baer (2003) and Grossman et al. (2004) reviews suggest that mindfulness interventions may be beneficial for a range of disorders, it is clear that more rigorous, randomised, controlled trials of mindfulness interventions are needed before the efficacy of these approaches can be considered



proven. These trials need larger samples of participants with specific disorders in order to examine which populations are likely to benefit. The studies need to include a measure of mindfulness in order to determine whether this is indeed the active ingredient for the changes observed. If mindfulness training is to continue to be offered in the NHS, in which we are increasingly required to work to evidence based practice, it will also be important to demonstrate that the interventions are at least as efficacious as other validated treatments.

Despite the methodological weaknesses in this literature and the need for more rigorous research, the fact that mindfulness training has been successful in reducing distress across a number of disorders suggests that a review of the mechanisms involved, and the implications for interventions aimed at psychosis is warranted. The following section describes current theories of how mindfulness training may effect change, and consideration of how these hypothesised mechanisms may reduce distress associated with psychosis.

### **How does mindfulness effect change? Possible mechanisms**

In addition to researching the efficacy of mindfulness interventions, it is essential that we develop an understanding of the mechanisms through which mindfulness facilitates change, both in non-clinical populations and with reference to current models of specific psychopathologies. Teasdale et al. (2003) argue that this is necessary to (i) gain an understanding of when and how it is helpful, (ii) consider the impact of instructors' particular orientation or understanding of emotional disorder, (iii) delineate the impact of the way in

which the skills are taught, (iv) understand the benefits of mindfulness independent of the traditional Buddhist understanding of what causes suffering, (v) identify the key components of mindfulness relevant for particular disorders and (vi) gain an understanding of the processes that may be affected across diagnostic criteria.

### *Changes to information processing and cognition*

A possible mechanism through which mindfulness exerts change is by influencing information processing. The way in which we process information has been shown to be a maintenance factor in depression, anxiety disorders and relapse to substance use (Roemer & Orsillo, 2002; Teasdale et al., 2000; Breslin, Zack & McMair, 2002). The role of information processing as a maintenance factor will now be discussed with reference to relapse to depression, substance use and generalised anxiety disorder (GAD) in order to illustrate how mindfulness may relieve distress associated with these disorders.

The Interacting Cognitive Subsystems framework (ICS; Barnard & Teasdale, 1991; Teasdale, 1993; Teasdale, Segal, & Williams, 1995) is an information processing account of vulnerability to, maintenance of and relapse in depression. ICS suggests that depressive states are maintained by the production of 'depressogenic schematic models'. When an individual who has recovered from a depressive episode experiences mild negative affect, a schematic model is triggered which contains global negative beliefs about the self, world and future. These schematic models output specific negative

meanings which contribute to the production of further schematic models and maintain the depressive state through a 'depressive interlock'. For example, when an individual who has recovered from depression experiences mild negative affect, such as the disappointment felt when a friend calls to cancel an arranged meeting, a schematic model is triggered which contains the beliefs 'I'm worthless' and 'other people can see I'm worthless'. These are accepted as accurate reflections of reality and trigger depressed mood. Feedback from the way in which depressed mood is experienced in the body (lack of energy, disturbed appetite and sleep) and the negative automatic thoughts that these beliefs trigger ('my friend cancelled because they don't really like me', 'I'm boring and uninteresting and so may as well stay in by myself') maintain the schematic model. The person is then likely to behave and process information in a way that is consistent with their schematic model of being worthless, thus triggering further negative automatic thoughts about the self, world and others and maintaining the depressive interlock.

Teasdale et al. (1995) suggest three strategies that may prevent establishment of depressive interlock. The first is to redeploy the cognitive processing resources necessary to maintain the interlock. The second involves synthesis of alternative schematic models relating to depressing topics but not in themselves depressogenic. The third is to facilitate production from depression related models of outputs that do not feedback to regenerate depressogenic models.

Mindfulness meditation may be an effective way of altering the information processing that triggers relapse and maintains depressive interlock. Increased skills in switching attention and inhibiting ruminative, elaborative thinking may redeploy the cognitive resources necessary to establish and maintain depressive interlock. Observing depressogenic thoughts and feelings without reacting to them may facilitate the production of alternative schematic models. Thirdly, increased awareness and understanding of thoughts and feelings may facilitate a 'decentred perspective' or metacognitive insight/awareness, where thoughts and feelings are experienced as mental events rather than necessarily accurate reflections of self or reality (Teasdale et al. 2002). For example mindfulness meditation may enable the person to observe 'I am having a thought that I am worthless' rather than necessarily accepting the thought 'I am worthless' as accurate. They suggest that this decentring is likely to change the negative automatic thoughts produced by depressogenic schematic models and may forestall the production of further depressogenic schematic models, thus preventing interlock and facilitating alternatives to the familiar cognitive or behavioural patterns that maintain depression.

Similarly, Breslin, Zack and McMain (2002) suggest that repeated substance abuse is associated with the development of a substance abuse memory network characterised by automatic allocation of attention to substance related cues. Relapse to substance abuse is often preceded by negative affect (Breslin, Sobell, Sobell, & Agrawal, 2000). Repeated pairings of substance use and negative affect leads to a conditioned response set in which substance use is triggered when negative affect is experienced.



Mindfulness practice may allow individuals to become aware of over-learned patterns of thoughts and emotions that potentially lead to relapse, and to consciously redirect attention to a different stimulus. Repeated experiences of observing rather than reacting to urges may begin to weaken the learned associations in the substance abuse memory network. It may also increase feelings of self-efficacy and self-control, important protective factors against relapse (Marlatt and Gordon, 1985).

By definition, individuals with GAD seem to process information in a way that is incongruent with what is actually happening to them in the present moment, frequently experiencing persistent anxiety in the absence of a current threat. This may be because individuals with GAD are vulnerable to learning associations between threatening stimuli and other stimuli present at the time of the threat (Thayer, Friedman, Borkovec, Johnsen, & Molina, 2000). The association may be between the negative stimuli and thoughts about the stimuli, so that in future simply thinking about the stimuli can trigger habitual, automatic modes of information processing which distress the individual and maintain their anxious state (Roemer & Orsillo, 2002). Mindfulness may be a way of making salient the incongruence between the individual's internal state and the external environment, helping the individual to appraise external threat more accurately, thereby breaking the cycle of habitual, automatic worrying.

## *Exposure*

Worry is identified as a central feature of GAD, the focus of worry frequently being possible future events (DSM-IV, APA, 1994). In the short term worry appears to reduce anxiety and so is self-reinforcing. In the longer term, worry seems to maintain GAD by functioning as a form of experiential avoidance which prevents exposure to feared internal and external events, and thus prevents reduction of anxiety (Roemer & Orsillo, 2001; Borkovec, 1994). Mindfulness practice may be beneficial for individuals who experience GAD because it may provide exposure to intolerable feelings of uncertainty (Dugas, Gagnon, Ladouceur, & Freeston, 1998). This may then reduce the need to worry as a form of experiential avoidance, and thus breakdown the factors maintaining the disorder (Roemer & Orsillo, 2001).

Negative affect is the most common antecedent to relapse to substance use (Breslin et al. 2000). Individuals with substance use difficulties frequently report using substances to escape negative affect (Kushner, Sher, & Beitman, 1990). Mindfulness practice may desensitise individuals to adverse states that may otherwise trigger relapse, reducing the need for substances to avoid these states (Breslin, Zack & McMMain, 2002).

Linehan (1993) reports that people with borderline personality disorder are afraid of experiencing strong negative affect. Maladaptive behaviours such as substance use and self-harm can be viewed as attempts to avoid or escape intense affective states. Linehan (1993) suggests that mindfulness practice

can provide exposure to negative affect which will reduce fear of experiencing strong emotion and increase affect tolerance.

### *Increased flexibility in responding*

In a state of mindfulness, thoughts and feelings are observed as events in the mind, without over identifying with them and without responding to them in an automatic, habitual pattern of reactivity. Bishop et al. (2004) suggest that mindfulness practice can develop a 'space' between perception and response that allows people to respond reflectively as opposed to reflexively.

Increased awareness of factors that may trigger relapse may enable people to utilise coping skills which they may not have been able to if unaware of potential relapse until a later stage (Teasdale et al., 1995; Breslin, Zack & McMMain, 2002)

Suppression of urges can lead to a paradoxical increase in the expected benefits of consuming alcohol (Palfai, Monti, Colby, & Rohsenow, 1997), a factor predictive of relapse (Brown, 1985). The acceptance element of mindfulness practice encourages individuals to allow urges to come, to observe them and allow them to pass without responding. In this way individuals can learn that the urges cannot consume them, that they can be in control even though they are experiencing the urge to use substances. It is hoped that by accepting urges, individuals can become less fearful of their impact and that they will subside more quickly (Breslin, Zack & McMMain, 2002).

Kristeller and Hallet (1999) suggest that mindfulness training may lead to improved recognition of satiety cues in individuals who binge eat and enable them to observe urges without yielding to them.

### *Relaxation*

Mindfulness is not intended to induce relaxation. When practising mindfulness individuals are encouraged to observe all internal experiences without trying to change them, including observation of tension and distress. However relaxation has been reported to be associated with mindfulness meditation in some cases (Alexander, Robinson, Orme-Johnson, & Schnieder, 1994; Delmonte, 1984). Mason and Hargreaves (2001) conducted a qualitative evaluation of participants' accounts of MBCT and relaxation emerged as a theme, with the majority of participants reporting that they found meditation calming or relaxing.

In summary, several authors have suggested theories of how mindfulness may facilitate change in specific psychological disorders. The mechanisms of change suggested include changes to information processing and cognition, exposure and increased flexibility in responding. Finally, although relaxation is not an aim of mindfulness, it has been found to induce relaxation in some cases. The mechanisms of change suggested so far have been based on specific understandings of relapse to depression and substance use, generalised anxiety disorder and eating disorders. What can these theories tell us about how mindfulness may be helpful in managing distress associated with psychosis?



The information processing theories of how mindfulness may reduce distress have in common a focus on breaking habitual cycles of responding that are hypothesised to maintain specific disorders or distress. Teasdale et al's. (2002) theory of meta-cognitive insight/awareness may be useful in understanding distress associated with symptoms of psychosis. For example, if the individual accepts malevolent voice content or paranoid thoughts to be accurate reflections of reality, they are likely to experience distress and to respond in particular ways that maintain distress. Alternatively, if the individual is able to develop meta-cognitive insight/awareness and can observe 'I am hearing a voice that is saying that I am worthless and having thoughts that other people want to hurt me', this is likely to affect the meaning of the experience, and emotional and behavioural consequences.

As described above avoidance is hypothesised to maintain distress in several disorders. The experience of letting internal experiences come to mind can provide exposure to feared thoughts, emotions and sensations. Mindfulness may provide exposure to voices and distressing thoughts and images which may reduce distress associated with these experiences.

The distress associated with symptoms of psychosis can also motivate individuals to develop other coping strategies aimed indirectly at avoiding/escaping the experience, such as withdrawal, self-harm and substance misuse. If individuals were able to observe thoughts, images and voices non-judgementally, this may reduce the need to respond in habitual ways maintaining distress in the long-term.

Finally, some individuals report that mindfulness can be relaxing. This may also benefit individuals experiencing psychosis, consistent with the broad stress-vulnerability model, in which psychological symptoms are triggered by stressful events.

The review will now move on to consider in more detail how mindfulness may be useful in reducing distress associated with symptoms of psychosis. Prior to this, contraindications for using mindfulness with this clinical group are discussed.

### **Meditation and psychosis: Contraindications**

Mindfulness meditation practice is being applied to a range of disorders but so far little attention has been paid to its use with people who experience psychosis. There was a similar delay in applying other psychological approaches such as cognitive therapy to psychosis (Chadwick, Birchwood, & Trower, 1996), probably in part because psychosis used to be considered discontinuous with normal experience and unamenable to psychological treatment (Johns & van Os, 2001). The evidence base for the efficacy of cognitive therapy for psychosis is considered promising (Jones, Cormac, Silveira da Mota Neto, Campbell, 2004), suggesting that hesitation in applying treatment approaches useful for other disorders is unwarranted. Another possible reason for the hesitation in using mindfulness based approaches for individuals with psychosis is a small body of literature that suggests meditation practices may either trigger relapse in individuals with a history of

psychosis or be implicated in the onset of a first episode of psychosis. The following is a review of this literature.

Chan-Ob and Boonyanaruthee (1999) report three case studies in Thailand, where individuals developed symptoms of psychosis during meditation practice. All three attended a seven-day intensive course at the same temple. The course encouraged participants to meditate for as long as possible, to sleep very little and to restrict food intake to one meal a day.

The first case was a 25-year-old student with a history of stress, depression and family problems who reported seeking an intensive meditation course to find relief from her distress. During the retreat the individual reported an increase in anxiety and found it very difficult to sleep. One week following the course she was admitted to hospital with hallucinations and persecutory delusions. Chan-ob and Boonyanaruthee (1999) report that mental examination revealed disorientation to time and place, labile affect, mild loosening of association, poor insight and impaired judgement. An organic cause of symptoms was investigated but none was found. The individual was given sedative and anti-psychotic medication. Symptoms of psychosis remitted after one week. The final diagnosis was brief psychotic disorder.

The second case was a 35-year-old man who reported seeking a meditation retreat to find relief from anxiety about financial problems. This person reported finding letting go of his anxiety very difficult and began to ruminate during meditation. He became unable to sleep and practised walking



meditation at night for 3 consecutive nights. After the third sleepless night he began to hallucinate and expressed delusions of grandeur. He reported beliefs that he was able to contact God and read minds. Other symptoms reported included behavioural and speech disturbance and lack of insight. Organic causes for his condition were investigated but not found. The patient was given anti-psychotic medication and psychotic symptoms remitted within one week. He was given a diagnosis of bipolar disorder type 1 (manic psychosis).

The third case was a 28-year-old woman with a history of schizophreniform disorder who had previously experienced a decline in mental health following meditation. On this occasion the individual sought a meditation retreat shortly after discontinuing anti-psychotic medication. Again, she sought meditation in the hope of finding relief from psychological distress. She was admitted to hospital with severe psychotic symptoms after practising meditation intensively for 10 days. She was given anti-psychotic medication and symptoms of psychosis subsided after 1 week.

Chan-Ob and Boonyanaruthee (1999) conclude that meditation was a minor precipitating factor for relapse in the third case. Withdrawal from medication is thought to have exacerbated previously controlled symptoms and caused sleep disturbance. These two factors are thought to have triggered relapse to psychosis. In the first two cases the authors do not report whether this was the first episode of psychosis. In these cases it is important to note that both individuals sought meditation because they were experiencing high levels of

stress and symptoms of anxiety and depression. It seems that these individuals sought meditation in the hope of getting rid of particular experiences, which mindfulness meditation does not aim to do.

It is also of note that all three cases attended retreat at the same temple. It is possible that there was something particular about the practice undertaken which may have contributed to the triggering of psychosis. The meditation practice they undertook was intensive and individuals were encouraged to sleep as little as possible. Experimental investigations of the effects of sleep deprivation result in experiences similar to psychotic symptoms (Oswald, 1974). Sleep deprivation also frequently precedes onset of psychotic symptoms (Wright, 1993; Wehr, 1991). Although it is possible that sleep deprivation is simply another symptom of psychosis, Kingdon & Turkington (1994) suggest that it may play a causative role. They suggest that the fact that many acute episodes of psychosis remit rapidly with adequate sleep supports this hypothesis. The combination of stress and sleep deprivation, combined with increased tension and rumination experienced by at least one of the three during meditation is likely to have contributed to onset of psychotic symptoms. It is not possible to conclude from these cases that meditation triggered psychosis.

The authors do not state explicitly whether the individuals were practising mindfulness meditation or concentration/transcendental meditation. They do report that the practice involved forgetting whatever came to mind and focusing full attention on body movement; this is not consistent with



mindfulness meditation where the individual is asked to observe all thoughts, feelings and sensations that enter awareness, and is more likely to be a form of concentration meditation.

Chan-Ob and Boonyanaruthee (1999) also report that in Thailand where meditation practice is extremely common amongst people of all ages, there have been no reported cases of people developing symptoms of psychosis during meditation, prior to the cases that they cite.

Walsh and Roche (1979) report having used meditation as a clinical intervention with over 1000 individuals and report three cases in America where individuals had developed symptoms of psychosis during meditation practice.

The first was a 25-year-old man who attended a one-week retreat. On the seventh day the man developed symptoms of psychosis and became extremely distressed and aggressive. The second case was a 23-year-old woman who attended a 2-week retreat where she meditated for 18 hours per day. She became paranoid and experienced an acute psychotic episode after 10 days of meditation. The authors report that the woman was remarkably insightful about her experiences and suggest that this was the result of her meditation training. The third case was a 23-year-old woman who developed symptoms of psychosis on the fourth day of an intensive meditation retreat.

All three cases had a history of psychosis. The first had recently discontinued anti-psychotic medication before attending the retreat. In the first two cases the individuals had been fasting and slept very little, usually 1-2 hours per night. All three recovered very quickly when meditation practice was discontinued and normal eating and sleeping patterns were resumed. The authors conclude that intensive meditation combined with fasting and altered sleep may be unhelpful for individuals with a history of psychosis but that a less intensive meditation practice and adequate food and sleep may have psychotherapeutic benefits for this population. The authors do not report what type of meditation the individuals engaged in, however they do note that healthy individuals may experience changes in perception of reality during meditation practice which may indicate that they were using transcendental or concentration meditation in which altered states of consciousness are common. Although the authors do not report whether or not the retreat was silent, it is likely, as the majority are. This is important as it may mean that delusional ideas develop unchecked.

Sethi and Bhargava (2003) report two cases of psychosis developed during meditation practice. The first case was a 20-year-old male who was admitted to hospital and diagnosed with schizophrenia. He had been experiencing paranoia, delusions of persecution and auditory hallucinations for one month. Clinical interview revealed that prior to the onset of the episode the man had practised intensive meditation for four days. The individual had no personal or family history of psychiatric illness. The second case was a 30-year-old man who was diagnosed with schizophrenia after developing religious delusions

during a meditation retreat. The man had experienced two previous episodes of psychosis, both after attending a retreat.

Sethi and Bhargava (2003) report that neither individual showed any signs of psychological illness immediately prior to the mediation practice. However it may be difficult to exclude the presence of a prodrome phase, which often has a spiritual tone and may draw people to meditation practice because of early changes. Again, the authors do not report whether the individuals practised mindfulness meditation. Like Chan-Ob and Boonyanaruthee (1999), these authors note that meditation practice is extremely common in India and when carried out under proper guidance and in moderation can enhance psychological well-being.

Naveen and Telles (2003) describe the results of a prospective one-year follow up study of 23 participants who had a diagnosis of chronic schizophrenia. Participants living in a half way home were asked to practise slow yoga breathing techniques (one hour per day, five days per week) and meditation (one hour per day, five days per week). Outcome measures included subjective reports from participants and unstructured observations from therapists. During the initial two months of practice participants reported that this increased awareness of thoughts and feelings but was distressing. After the first two months, therapists rated participants as having fewer episodes where they were agitated and disturbed.



Following the initial study, Naveen and Telles (2003) carried out a single blind, randomised control cross over trial where 28 participants with a diagnosis of schizophrenia were allocated to either a yoga or physical training condition. The authors do not describe what the physical intervention entailed. The physical training group reported greater reductions in symptoms and improved daily functioning in comparison to the yoga group. Participants did not report any adverse effects whilst practicing yoga. However, Naveen and Telles (2003) suggest that the emphasis on relaxation and awareness of internal sensations, which are an essential part of yoga, may not be useful for people with psychosis.

In contrast, Jordan (1989) reports that following a programme of yoga practice, participants with a diagnosis of psychosis showed increased sociability, decreased anxiety and reduced emotionality. However the yoga programme in this intervention did not include specific meditation exercises.

Kennedy (1976) reports that depersonalisation or derealisation syndrome can sometimes occur following meditation practice. Two cases are described where the individuals began to experience depersonalisation after practising meditation, in both cases depersonalisation later began to happen spontaneously and uncontrollably when they were not practising meditation. The individuals were distressed by their experiences. Organic causes were investigated but not found. Kennedy (1976) reports that the first person engaged in yoga practice and practices which increased awareness, the second person practiced arica meditations. In the same paper, Kennedy

(1976) reports that 22 out of a sample of 23 yoga and meditation students had experienced depersonalisation at some point during their practice but that these were considered normal and did not cause distress. The author concludes that depending on the individual's view, depersonalisation can be both valued and sought through meditation, or it can be feared. This would be consistent with the cognitive model (Beck, Rush, Shaw, & Emery, 1979), in which it is the meaning or interpretation of events that mediates distress.

As noted earlier, transcendental meditation is distinct from mindfulness meditation, which is the focus of this review. However in the interest of providing a complete review of any contraindications for using meditation with people with psychosis, the literature on psychiatric problems precipitated by transcendental meditation will be briefly described here.

Lazarus (1976) cautions that for certain individuals transcendental meditation is contraindicated. He cites the case of one woman who made a serious suicidal attempt after practising transcendental meditation for a weekend but does not report any other details about the case. Lazarus (1976) cites other authors who have suggested that this form of meditation may not be suitable for all individuals but again very little detail is given about the circumstances in which individuals have developed problems during meditation. He argues that transcendental meditation may be unhelpful for individuals who have 'hysterical tendencies', 'strong depressive reactions' and 'schizophrenic' individuals, but does not offer evidence to support these concerns.



French, Schmid and Ingalls (1975) report the case of a 39-year-old woman who developed 'psychosis-like' behaviour shortly after beginning training in transcendental meditation. They report that the woman began to experience sustained euphoria, thought disorder, loosened associations and vivid waking dreams, which prompted her to behave in ways that would be described clinically as symptoms of psychosis (the authors do not describe in detail what these behaviours were). The woman continued her daily practice of meditation and after five months became extremely depressed. French et al. (1975) suggest that the practice of transcendental meditation contributed directly to the development of the 'psychosis-like' state by allowing previously repressed memories to be remembered. They further suggest that although this can be therapeutic, meditation practice needs to be limited and managed by an experienced meditation teacher so as not to allow such a state to develop and that professional mental health support may be needed to enable the individual to process and integrate the recovered material. They also stress the importance of sleep, recommending sedative medication where necessary.

In conclusion, there are several reports in the literature of individuals who have developed symptoms of psychosis either during or after meditation practice. However, several factors limit the strength of the conclusion that meditation played a causal role in the development of symptoms. Firstly the cases differed in the degree to which they reported individuals' psychiatric history. In some cases individuals reported a history of psychosis and discontinuation of anti-psychotic medication prior to beginning meditation

practice (Chan-Ob & Boonyanaruthee, 1999; Sethi & Bhargava, 2003; Walsh & Roche, 1979). In other cases individuals had no history of psychosis (Chan-Ob & Boonyanaruthee, 1999; Sethi & Bhargava, 2003). Some authors failed to describe the individuals' psychiatric histories (French, Schmid & Ingalls, 1975; Lazarus, 1976; Kennedy, 1976). It is worthy of note that individuals in the prodrome phase of psychosis often report spiritual experiences, which could motivate someone to practise meditation. It may be difficult to detect the presence of a prodrome phase. Secondly in several of the cases individuals were encouraged to eat and sleep as little as possible during the meditation retreat. Sleep deprivation has been reported to contribute to the development of symptoms of psychosis. Thirdly, in two of the cases described by Chan-Ob and Boonyanaruthee (1999) it was noted that the individuals were motivated to practise meditation because of stress, anxiety and low mood, suggesting a deterioration in psychological well being prior to starting meditation practice. Fourthly, in the majority of the cases cited here, meditation practice was intensive, strict and silent. The silent nature of retreats means that delusional ideas can develop unchecked. Several authors argue that when practised in moderation, with sufficient sleep and food, meditation has beneficial therapeutic effects (Chan-Ob & Boonyanaruthee, 1999; Walsh & Roche, 1979; Sethi & Bhargava, 2003). These authors also report having observed many more cases where individuals have experienced no adverse effects from meditation. This is especially important considering that some of these reports are from Eastern countries where meditation practice is very common, suggesting that development of psychological problems following meditation practice is rare. Considering the large numbers of people who practice



meditation, it could be expected that a small percentage may experience a psychotic breakdown; prevalence rates for psychosis suggest that about 1 in 100 people experience psychosis (Royal College of Psychiatrists, 2004). It is noteworthy that none of the evaluations of the use of mindfulness in clinical practice evaluated by Baer (2003) reported adverse effects. The study by Naveen and Telles (2003) suggests that even though participants with psychosis found meditation distressing during the first two months of practice that they also reported gains after this time. Finally it is necessary to consider the type of meditation practice undertaken, as there may be crucial differences between mindfulness meditation and other forms such as transcendental meditation. None of the cases above report that participants practised mindfulness meditation specifically. Several specify that transcendental meditation was practised. The literature on the clinical benefits of meditation is based on studies of mindfulness meditation.

The small number of cases where meditation has been associated with relapse in individuals with a history of psychosis or implicated in the development of a first episode of psychosis is further limited by several factors which undermine a directly causal relationship. The literature suggesting that meditation is contraindicated for people with psychosis seems to be outweighed by the growing body of evidence that mindfulness meditation can reduce psychological distress and enhance well being (Baer, 2003). With this in mind, the following section will examine in more detail how mindfulness may be helpful in the management of distress associated with symptoms of psychosis.

## **How might mindfulness be helpful in managing distress associated with symptoms of psychosis?**

The majority of patients presenting in psychiatric services with auditory hallucinations report that the experience of hearing voices is considerably distressing (Chadwick, Lees & Birchwood, 2000). Bauer (1970) described how individuals who hear voices can “feel caught in their power”.

Research into cognitive models of psychosis has shown that beliefs about voices are an important mediator of cognitive and behavioural responses that maintain distress. Chadwick and Birchwood (1994, 1995) found that four types of belief were particularly important in determining response to voices: beliefs about identity, purpose (malevolence or benevolence), omnipotence and power. Chadwick et al. (2000) found that voices believed to be malevolent were cognitively and behaviourally resisted, voices believed to be benevolent were engaged with. Omnipotence, malevolence and resistance were also related to depressive symptomology. The experience of omnipotence was characterised by perception of the voices’ power, a lack of control over the voice and the belief that the voice is all knowing.

Mindfulness traditions would suggest that both engagement and resistance with voices are ‘unmindful’ responses as they involve judgement and either aversion/pushing away or attachment/clinging to the experience. In addition, mindfulness traditions posit that these responses inevitably lead to distress and that learning to observe voices or distressing thoughts non-judgementally and letting these experiences pass without aversion or clinging would reduce

distress. Further to reducing negative affect, mindfulness practice has been associated with increased positive affect and measures of well-being (Brown & Ryan, 2003).

Therapeutic change, whether through cognitive therapy or mindfulness meditation has been hypothesised to change the relationship to thoughts by facilitating a 'decentred' perspective where thoughts are experienced as mental events rather than necessarily accurate reflections of self or reality (Teasdale et al. 2002). Being able to experience a thought in such a way has an implicit effect upon the meaning of the thought, which is likely to reduce emotional impact. If the thought or voice is no longer thought necessarily to reflect reality, associated distress and the need to act upon that thought or voice is likely to be reduced.

Freeman, Garety and Kuipers (2001) report that individuals with persecutory delusions commonly use safety behaviours, typically avoidance, and that such behaviour maintains delusions by preventing disconfirmation of persecutory beliefs. Mindfulness meditation may reduce the likelihood of engaging in behaviour that maintains distress and key cognitions. The processes of monitoring and recording thoughts and behaviours in cognitive therapy enables individuals to become aware of cognitive and behavioural patterns that increase distress so that people can consciously change these patterns in order to reduce distress. Mindfulness meditation may be an alternative route to gaining this increased awareness and insight and a way of not responding in the usual and habitual ways that maintain distress.



Further evidence to suggest that people with psychosis may employ coping strategies that maintain and increase symptoms and distress is provided by Shergill, Murray and McGuire (1998). These authors report that individuals with psychosis use deliberate ignoring and distraction as methods of suppressing symptoms. The literature on thought suppression indicates that this strategy has the paradoxical effect of increasing the frequency of thoughts (Wegner, Schneider, Carter & White, 1987; Purdon, 1999). Morrison, Haddock and Tarrier (1995) propose that suppression based strategies increase the frequency of intrusive thoughts, distress and auditory hallucinations in people with psychosis. Mindfulness meditation training encourages individuals to 'turn toward' distressing experiences, letting them come into full awareness without attempting to suppress or avoid them. In this way, mindfulness based interventions may be an alternative way of responding to these experiences that is likely to reduce symptoms and associated distress.

Mindfulness meditation has been used in clinical practice with voice hearers and has been associated with a reduction in distress. Chadwick, Newman Taylor and Abba (in press) evaluated the impact of a group mindfulness intervention on the experiences of 10 participants who had experienced subjectively distressing symptoms of psychosis for at least two years. Outcome measures included the Clinical Outcomes in Routine Evaluation (CORE, CORE system group, 1998), a standardised and validated measure of subjective well being, problems/symptoms, life functioning and risk, and the Mindfulness Questionnaire (Chadwick, 2002), a measure of the degree to

which people respond mindfully to distressing experience. Following the mindfulness group, individuals reported an improvement in general clinical functioning. In addition, improvements were correlated with an increase in the degree to which individuals responded mindfully to distressing experiences. Data from the Mindfulness Questionnaire indicated that individuals were less able to respond mindfully to voices than to distressing thoughts and images. An advantage of the study was the measurement of mindfulness as an outcome variable. Limitations of this study were the small sample size and lack of experimental control. However the results suggest preliminary support for the benefit of mindfulness approaches for individuals with psychosis. More rigorous research is warranted.

Bach and Hayes (2002) conducted a randomised controlled trial of a brief version of ACT for inpatients who experienced positive symptoms of psychosis. The acceptance based treatment encouraged participants to develop a mindful response towards distressing internal events. Participants were randomly assigned to either a treatment as usual (TAU) condition where they received a combination of medication, psycho-education and individual psychotherapy, or TAU and four sessions of adapted ACT. Outcome measures included the number of days to re-hospitalisation in comparison to a baseline of the amount of days between their last re-hospitalisation, subjective ratings of distress and strength of conviction in delusional beliefs and medication compliance. Participants who received the adapted ACT stayed out of hospital for an average of 22 days longer than those who received TAU only. The two groups did not differ on baseline measures of re-hospitalisation

rates or ongoing measures of medication compliance, suggesting that the decrease in hospitalisation rates was not due to differences in medication compliance. An interesting finding was that those who received ACT reported significantly more symptoms than those who received TAU, which is perhaps indicative of increased acceptance of symptoms. Participants who received ACT reported a greater reduction in delusional belief conviction than TAU, but the two groups did not differ in terms of distress. However, ratings of distress did reduce significantly for both groups pre to post intervention. These findings may suggest that acceptance based treatment facilitated a 'decentred' perspective which reduced delusional belief conviction. Further investigation is needed to confirm these findings and to investigate the mechanisms of change. It would have been interesting to investigate whether ACT had an impact upon measured mindfulness skills.

The theoretical rationale for the use of mindfulness as a way of managing distress associated with symptoms of psychosis is in keeping with current cognitive behavioural understandings of psychosis. Mindfulness may be a way of learning to observe voices or distressing thoughts non-judgementally and letting them pass without becoming caught in patterns of responding which increase distress, such as aversion or clinging. This may lead to the development of a decentred perspective or metacognitive insight/awareness where voice or thought content is not necessarily assumed to be true, thus reducing the need to respond as if it were. This may enable clients to reduce suppression, avoidance and safety behaviours maintaining distress. In



addition mindfulness may enable individuals to gain awareness and insight into the habitual patterns of responding which maintain their distress.

### **Future research: What more do we need to know about the use of mindfulness in clinical practice?**

The current status of mindfulness research has been reviewed. Initial empirical investigations have yielded promising results for a range of disorders such as anxiety, chronic pain, relapse to depression and substance use and eating disorders. Clinicians are currently working to apply mindfulness to other disorders including psychosis and initial investigations indicate that the approach has much to offer. However, the evidence for mindfulness-based approaches is still in its infancy and there are many questions yet to be answered.

Bishop et al. (2004) have described a two-component operational definition of mindfulness and testable hypotheses to investigate validity. Empirical investigation of these hypotheses is now needed. The first component of the model involves the self-regulation of attention. In order to keep attention focused on present moment experience and to redirect attention back to the focus of meditation when distracted, the authors suggest that skills in sustained and switching attention will be required. The development of mindfulness would therefore be expected to be associated with improvements in sustained attention and switching which could be objectively measured using standard vigilance tests and tasks that require the individual to shift mindset. This is consistent with Wells' (1990, 2000) work in anxiety disorders

in which he teaches attention training as a way of developing meta-cognitive skills. During mindfulness practice the individual observes all experiences as they arise but once observed returns attention back to the focus of meditation without engaging in elaborative processing of the stimuli. Increases in mindfulness should therefore be associated with improvements in cognitive inhibition. This can be objectively measured using tasks that require inhibition of semantic processing such as the stroop test. The development of beginners mind, where sensations are experienced as if for the first time, free from the bias of previous experience is assumed to develop through mindfulness practice. This could be measured with tasks that require detection of stimuli in unexpected places. An individual who has developed beginners mind should be more able to detect stimuli in unexpected places because they will not be restricted by expectations.

The second component of Bishop et al's. (2004) model states that mindfulness involves consciously cultivating a particular orientation to experience that is characterised by curiosity, openness and acceptance. The authors suggest that adopting a stance of curiosity and acceptance should be associated with reductions in the use of cognitive and behavioural avoidance strategies which could be measured with standardised measures of coping style. In addition, mindfulness practice should increase the trait of dispositional openness. Mindfulness practice has been suggested to increase affect tolerance by encouraging individuals to allow painful thoughts and feelings to come, and then to let them go (Linehan, 1993). Improved affect tolerance could be tested using measures of emotional sensitivity (Bishop et



al. 2004). Mindfulness practice also involves learning to observe internal experience; this is thought to lead to increased awareness of different internal experiences such as thoughts, emotions and bodily sensations and of the patterns between these experiences. Bishop et al (2004) suggest that increased mindfulness skills will be associated with increased emotional awareness and psychological mindedness and reductions in alexithymia.

The efficacy literature for the clinical use of mindfulness interventions reviewed above is limited by methodological weaknesses. Future research should include randomised controlled trials where mindfulness interventions are compared to established psychological treatments. Larger samples of individuals with specific disorders would enable researchers to establish which populations mindfulness training is most beneficial for. These randomised controlled trials would benefit from better descriptions of the individuals who either drop out of or refuse mindfulness interventions. This may help identify if these interventions are more acceptable or effective for people with particular characteristics.

It would be useful to investigate whether there are any differences between different types of meditation practice such as seated meditation, body scan or mindful yoga. When working with people with borderline personality disorder Linehan (1993) uses mindfulness practices in which the eyes are kept open and the object of focus is external to the individual as she suggests that maintaining an internal focus can be too difficult or distressing for these individuals. In contrast, MBSR (Kabat-Zinn, 1982, 1990) encourages

participants to focus on internal experiences. Dimidjian and Linehan (2003) suggest that future investigations should examine which disorders and levels of severity would direct therapists to use or avoid which types of mindfulness training. Future research may also examine which are the active ingredients of mindfulness training and whether mastery of certain components is more important than others (Dimidjian & Linehan, 2003). Alternatively, it may be that the different attitudinal factors involved in mindfulness are so interlinked that they develop conjointly. Also, the majority of mindfulness interventions are delivered in a group. Is this the best way or are individual mindfulness interventions as effective?

Dimidjian and Linehan (2003) raise questions about how clinicians should be trained to use mindfulness. In traditional mindfulness practices, individuals develop a close relationship with a mindfulness teacher and undertake extended practice. It is the teacher's responsibility to judge when they are ready to become teachers themselves. Segal et al. (2002) suggest that it is essential that clinicians practise themselves. This is untypical in cognitive behavioural interventions and may deter some clinicians. Further investigation is needed to establish the best way to train teachers and to identify practice requirements.

The outcome measures used in clinical trials of mindfulness interventions could be improved. Firstly there is a need to develop a measure of mindfulness that could be used to establish whether benefits gained from mindfulness interventions are associated with increases in mindfulness skills.

Several authors have now developed measures of mindfulness (Brown & Ryan, 2003; Buchheld, Grossman & Walach, 2001; Feldman, Hayes, Kumar & Greeson, 2003; Chadwick, 2002; Baer, Smith & Allen, 2004; Bishop et al. 2004). However with the exception of the Mindfulness Questionnaire by Chadwick, these scales have not been designed specifically to measure how mindfully an individual can respond to distressing cognitions. The other scales either measure mindfulness in everyday life or immediately after meditation practice. This limits their usefulness in clinical practice, where it is important to assess how an individual is able to respond to distressing experiences, and to do so at baseline as well as after practice. Several of these measures have not been published and their reliability and validity is yet to be established. Measures are needed which have been shown to be reliable and valid for use with clinical populations. Future trials could use reliable, valid, standardised measures of change, preferably ones with norms in order to assess the clinical significance of change. Baer (2003) suggests that future research may benefit from post assessment of diagnostic criteria, in order to assess the clinical significance of change.

Dimidjian and Linehan (2003) and Epstein (1999) suggest that clinicians' practice may benefit from mindfulness training even if they do not teach mindfulness skills to clients. They propose that future research could usefully examine what skills a mindful therapist may emit. Martin (1997) suggests that effective psychotherapy facilitates mindfulness in both client and clinician without the formal practice of mindfulness skills. This is consistent with Teasdale et al's (2002) argument that successful cognitive behavioural



therapy facilitates the same decentred perspective as mindfulness training.

Future research could examine these suggestions.

The benefits of mindfulness training have been suggested to occur through a variety of mechanisms. Research is needed which examines these mechanisms empirically. Models of how mindfulness works need to be developed based on current understandings of the development and maintenance of particular disorders. Teasdale et al. (2003) caution against using mindfulness as a generic technique without formulating how the approach addresses factors known to maintain particular disorders.

The application of mindfulness approaches to the understanding and treatment of distress associated with symptoms of psychosis is in the early stages. Although initial investigations look promising (Chadwick et al., in press), much more research is needed to establish whether this is a useful approach for this population. This body of research will benefit from investigation of all of the factors described above. In addition it will be useful to examine whether mindfulness approaches are more useful for distress associated with certain symptoms. The results from Chadwick et al. (in press) indicate that there may be some difference in how mindfully people are able to respond to different symptoms of psychosis. Although mindfulness approaches are not directed at reducing symptom frequency, future research could also investigate whether it has an impact upon dimensions of delusional and hallucinatory experience.

The body of literature linking meditation and development of symptoms of psychosis is small and there appear to be other factors that could account for the development of symptoms in the cases cited. However, further investigation of contraindications for meditation in this population would be beneficial. Indeed this point applies to all disorders; MBCT was found to be unhelpful for people with fewer than three depressive relapses (Teasdale et al., 2000).

Qualitative research methodologies could usefully explore participants' experiences of mindfulness meditation and their accounts and explanations of any changes experienced following intervention. This research could also explore any elements of mindfulness practice that participants find unhelpful.

Finally there is a growing interest in the role of metacognition and psychopathology. Current research in this area has links with the mindfulness literature but these links have not been clearly defined and explained. The use of different terminology makes it difficult to integrate these two areas of interest. For example Wells' (2000) discusses the role of meta-cognitive knowledge, experiences and strategies, whereas Teasdale and colleagues (1993, 1995, 2002) discuss meta-cognitive knowledge and insight/awareness. It seems that both accounts view metacognitive knowledge as beliefs about cognition and that Wells (2000) conceptualisation of metacognitive experience is similar to Teasdale et al's (1993, 1995, 2002) concept of metacognitive insight/awareness. What is not clear is where mindfulness fits into these theories. Is it a meta-cognitive control strategy, employed to develop meta-



cognitive insight/awareness? Or is it the outcome state in which meta-cognitive insight/awareness is experienced? Future research would benefit from collaboration between researchers to establish a consensus on how mindfulness and meta-cognitive theories are related. In line with the literature on prevention of relapse to depression, it would be useful to investigate whether successful cognitive therapy for voices is associated with increased meta-cognitive awareness. Also, it will be useful to look at what Morrison and Wells' (2000, 2003) work on metacognition and psychosis can add to the question of how mindfulness can contribute to the management of distress associated with psychosis. This work identifies that participants with psychosis use different thought control strategies and hold significantly higher levels of dysfunctional meta-cognitive beliefs to non-patients.

## **Summary and Conclusion**

The aim of this review was to consider how mindfulness can contribute to the understanding and management of distress associated with psychosis. The review described how mindfulness traditions are concerned with the relief of suffering, based on a particular understanding of how attachment/clinging to pleasant experiences and aversion/avoidance of unpleasant experiences lead to distress.

Chadwick et al's (1996) research investigating the relationship between beliefs about voices and cognitive and behavioural responses to voices indicates that individuals commonly respond in ways which could be framed as aversion or attachment, specifically resisting and engaging with voices.

Other research indicates that individuals with psychosis use coping strategies that may actually maintain or increase symptoms and distress (Freeman et al., 2001; Shergill et al., 1998; Morrison et al., 1995).

Mindfulness provides a framework to understand how these responses may maintain and increase distress. Based on this understanding, mindfulness interventions can be used to teach individuals an alternative way of responding to experiences that may reduce distress. The theories on how mindfulness effects change suggest that it may be a way of facilitating a decentred perspective where internal experiences are accepted as just that, as opposed to necessarily accurate reflections of self or reality (Teasdale et al., 2002). This perspective may enable voice hearers to step out of the power that the voice has over them. A decentred perspective may reduce the need to act upon the content of the voice or distressing thought/belief, this may in turn impact upon behaviour, allowing individuals to reduce avoidance and safety behaviours that contribute to the maintenance of distress and delusional beliefs. Mindfulness practice is suggested to increase ability to respond flexibly, as opposed to habitual responses. Responding mindfully to experiences, allowing them to come into awareness, without judgment or aversion, may provide exposure to feared experiences and re-evaluation of key cognitions, thus reducing distress and the need for avoidance. If through mindfulness practice the individual is able to reduce attempts to ignore and suppress symptoms, this may impact upon symptom frequency and severity.

An evaluation of the clinical use of mindfulness with voice hearers indicated that this intervention was associated with improvements in general clinical functioning (Chadwick et al., in press).

The literature reports a small number of cases where meditation has been associated with relapse in individuals with a history of psychosis or implicated in the development of a first episode of psychosis. Several factors undermine a directly causal relationship and a growing body of evidence indicates that mindfulness meditation can reduce psychological distress and enhance well-being (Baer, 2003). The literature does suggest that strict, silent meditation practice in combination with fasting and reduced sleep may be unhelpful for individuals with a history of psychosis. Non-mindfulness based meditation practices such as transcendental meditation may also be unhelpful.

In conclusion, the review indicates that there is a theoretical rationale for using mindfulness to understand and treat distress associated with psychosis, and that this rationale is consistent with current cognitive models of psychotic symptoms. Further research is needed as discussed.



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**Reliability and Validity of the Mindfulness  
Questionnaire for use with People with  
Psychosis**

**Emily Thomas**

**Prepared for submission to Behaviour  
Research and Therapy**

**(See appendix M for Instructions to Authors)**

# Reliability and Validity of the Mindfulness Questionnaire for use with People with Psychosis

## Abstract

The literature on mindfulness interventions has been limited by the lack of a measure of mindfulness. Several measures of mindfulness have been developed but none which specifically measure mindful response to distressing experiences.

This research examines the reliability and validity of the Mindfulness Questionnaire (MQ, Chadwick, 2002, unpublished), a measure of mindful response to auditory hallucinations, as well as hypotheses about the relationship between mindfulness, general affect, distress associated with hearing voices, beliefs about and response to voices.

Fifty-nine participants with a diagnosis of schizophrenia who were currently experiencing auditory hallucinations participated. Internal reliability analysis suggested that three of the original 16 items should be removed. One further item was removed in response to participant feedback. The 12 item MQ showed good internal reliability with a Chronbach's alpha of .84. The MQ correlated significantly with the Mindful Attention Awareness Scale, thus conferring moderate concurrent validity. MQ score was significantly negatively correlated with negative affect and distress associated with voices. The MQ was significantly negatively related to beliefs about malevolence and omnipotence of the voice and resistance to voice. These data suggest that the scale is internally reliable and valid within the limits of the present study.

**Keywords:** Mindfulness Measure, Psychosis, Reliability, Validity



# 1. Introduction

## 1.1. *Mindfulness in Clinical Practice*

Interest in the clinical benefits for physical and mental health of mindfulness practice has increased rapidly in recent years. Mindfulness is drawn from meditative traditions, and may be defined as 'paying attention in a particular way: on purpose, in the present moment and non-judgementally' (Kabat-Zinn, 1994, p4).

Bishop et al. (2004) suggest that mindfulness has two defining features. The first involves the self-regulation of attention, specifically maintaining attention on immediate experience. The second feature is the adoption of a particular orientation towards one's experience of the present moment, characterised by curiosity, openness and acceptance.

Mindfulness meditation aims to alleviate distress, a goal which it shares with cognitive behavioural therapy. Specifically, mindfulness meditation is thought to change the way we relate to our thoughts, feelings and bodily sensations. Teasdale, Segal and Williams (1995) observed that successful cognitive therapy was associated with a change in the way people related to internal experience. These authors hypothesized that 'decentring' from thoughts, feelings and sensations reduced distress by allowing individuals to view internal experience as objects of awareness as opposed to necessarily accurate reflections of self or reality.

Research investigating the efficacy of mindfulness based intervention packages indicates that they can be useful for a range of disorders such as chronic pain, stress, anxiety, depressive relapse and disordered eating (Baer, 2003; Grossman, Nieman, Schmidt and Walach 2004).

### *1. 2. Assessment of Mindfulness*

The studies examining the efficacy of mindfulness based interventions have measured a range of outcome variables including both psychological and physical symptoms. However the majority have not attempted to measure mindfulness as a variable as until recently there has not been an established method for measuring this construct. This has meant it has not been possible to ascertain whether the meditation practices taught have lead to an increase in mindfulness skills, and whether an increase in mindfulness skills is related to the observed health benefits of such interventions. The lack of an established measure of mindfulness has also limited investigation of mindfulness; the literature suggests that mindfulness is a multi-faceted construct but is in the early stages of defining what these facets are, and how they are related to other psychological constructs. In order for research to proceed in this area, a reliable and valid measure of mindfulness is needed.

Several self-report measures of mindfulness have now been developed. Brown and Ryan (2003) developed the Mindful Attention Awareness Scale (MAAS) measuring how present and aware people are in everyday life. The scale was found to be both reliable and valid. It discriminated between meditators and non-meditators and detected changes in mindfulness across

time. A clinical intervention demonstrated that an increase in mindfulness as measured by the MAAS was associated with a decrease in mood disturbance and distress in patients with cancer.

Buchheld and Walach (2002) and Buchheld, Grossman and Walach (2001) discuss the development of the Freiburg Mindfulness Inventory (FMI), a measure of trait mindfulness. The measure was found to be reliable and valid and to detect changes over the course of an intensive meditation retreat. Its use is limited to those with some meditation training.

Baer, Smith and Allen (2004) have developed the Kentucky Inventory of Mindfulness Skills (KIMS). The scale is suggested to measure trait mindfulness and has four subscales: Observe, Describe, Act with Awareness and Accept without Judgement. The measure had good internal consistency and test-retest reliability. The Act with Awareness subscale was strongly related to MAAS scores, the Describe and Accept without Judgement subscales correlated with the MAAS moderately, Observe was unrelated.

Two other measures of mindfulness have been developed: the Cognitive Affective Mindfulness Scale (CAMS) by Feldman, Hayes, Kumar and Greeson (2003) and the Toronto Mindfulness Scale (TMS) by Bishop et al. (2004). The psychometric properties of these scales are still being investigated and they have yet to be published. The TMS is intended to measure state mindfulness and has been designed for administration immediately after meditation



practice. This limits its use as a baseline measure prior to a mindfulness intervention.

The concept of mindfulness is complex, the literature suggests that is multifaceted, but different authors emphasise varying aspects of mindfulness. The existing measures of mindfulness focus on various aspects of mindfulness in everyday life, such as attention to noises, sensations, behaviour, non-judgement of emotion, forgetting people's names, observation of thoughts, ability to accept self (Baer et al. 2004, Brown, & Ryan, 2003; Buchheld, & Walach, 2002; Buchheld, Grossman, & Walach, 2001). Mindfulness meditation is used in clinical practice to teach participants to respond mindfully to internal experiences such as thoughts, feelings and sensations. In order to evaluate how effective mindfulness interventions are at changing the way individuals relate to distressing experiences, a measure is needed which specifically assesses how mindfully someone is able to respond to distressing internal experiences.

The Mindfulness Questionnaire has been developed by Chadwick (MQ, unpublished) for this purpose. The questionnaire has two forms: one measuring responses to distressing thoughts and images, the other measures response to the experience of hearing voices. The former measure is applicable to both clinical and non-clinical groups, the latter is a specialist measure for use with people who experience auditory hallucinations. Both forms of the MQ measure four aspects of mindfulness: Mindful Observation (clear awareness, 'beginners mind'), Absence of Aversion (welcoming all



experience, turning towards the difficult), Non-Judgement (judging neither sensations nor the self) and Letting Go (letting sensations pass without reacting).

Hember (2003) examined the reliability and validity of the thoughts and images version of the MQ in a community sample of meditators (n=83) and non-meditators (n=51). The questionnaire demonstrated good internal reliability (Cronbach's alpha = .90). Hember (2003) reported a significant correlation between the MQ and MAAS ( $r = .57, p = .000$ ) suggesting moderate concurrent validity. Criterion validity was established with a significant difference between the meditating and the non-meditating subgroups ( $t = 3.40, df = 132, p = .000$ ).

Mindfulness is suggested to be associated with a variety of well-being outcomes (Kabat-Zinn, 1990). Brown and Ryan (2003) demonstrated an association between the MAAS and PANAS (Watson, Clark & Tellegen, 1988). The PANAS comprises two scales measuring positive and negative affect. Mindfulness was positively associated with positive affect ( $r = .30-.39, p = .000$ ) and negatively associated with negative affect ( $r = -.39$  to  $-.43, p = .000$ ). They report similar correlations with a range of other measures of psychological well-being. Similarly, Hember (2003) found a significant correlation between total MQ scores and visual analogue scale ratings of mood ( $r = .48, p = .000$ ) with higher mindfulness scores associated with increased pleasantness of mood. Mead (2004) found the MQ thoughts and images version to be sensitive to change in mindfulness following MBSR.

### *1.3. Mindfulness and Psychosis*

Chadwick, Birchwood and Trower's (1996) cognitive model of voices proposes that it is the individual's beliefs about a voice and not only a voice itself that determines emotional and behavioural consequences. Chadwick and Birchwood (1994, 1995, 1996) found that four types of belief were particularly important in determining response to voices: beliefs about identity, purpose (malevolence or benevolence), omnipotence and power. To further investigate the relationships between these beliefs they developed first the Beliefs about Voices Questionnaire (BAVQ) and later the BAVQ-R which both measure beliefs about auditory hallucinations, and emotional and behavioural reactions to them. They found that voices believed to be malevolent were cognitively and behaviourally resisted and associated with negative emotions such as fear, anxiety, anger and low mood; voices believed to be benevolent were engaged with and associated with the emotions of happiness, calm and confidence. There was a strong positive relationship between beliefs about omnipotence and malevolence and resistance. Omnipotence was negatively related to engagement with voices.

By definition mindfulness involves non-judgement (Kabat-Zinn, 1990). Mindfulness is also characterised by openness to experience and acceptance and an absence of aversion (Kabat-Zinn, 1990). It would be therefore be expected that beliefs about malevolence, benevolence and onnipotence would be associated with less mindful responses, as they constitute judgements about the voice. Engagement and resistance would also be expected to be negatively related to mindfulness, as mindfulness involves

observing experiences without reacting to them. The relationship between beliefs about purpose and responses to voices (established by Chadwick and Birchwood's earlier studies) suggests that beliefs about the voice being malevolent would be positively associated with aversion and beliefs about the voice being benevolent would be negatively associated with aversion.

#### *1.4. Aims of the Present Research*

The present research aims to investigate the reliability and validity of the voices version of the MQ (Chadwick, unpublished) in a sample of people who meet diagnostic criteria for schizophrenia and who are currently experiencing auditory hallucinations. In addition to investigating the internal reliability and concurrent validity of the measure, the study aims to explore the relationship between mindfulness and beliefs about voices, given that such beliefs have been shown to aid understanding of distress associated with hearing voices (Chadwick and Birchwood, 1994, 1995, 1996).

The principle aims of this study are to assess the internal reliability and concurrent validity of the MQ in a sample with psychosis and current auditory hallucinations and to examine the conceptual links between mindfulness as measured by the MQ and other variables.

#### *1.5 Hypotheses*

The primary hypotheses are (1) the MQ will have adequate internal reliability and (2) the MQ will correlate significantly with the MAAS, thus conferring concurrent validity.



There are two secondary hypotheses. First, hypothesis (3) investigates the relationship between MQ and distress, specifically predicting that Total MQ score will be negatively correlated both with the Negative Affect scale of the PANAS (a general measure of positive and negative affect), and distress associated with hearing voices as measured by a Likert scale. Hypothesis (4) explores predictions about the relationship between MQ scores, beliefs about and response to voices as measured by the BAVQ-R, specifically (a) Malevolence and Omnipotence sub-scale scores on the BAVQ-R will be negatively correlated with Total MQ scores; and (b) Resistance subscale scores will be negatively correlated with Total MQ score.

## **2. Method**

### *2.1. Participants*

Fifty-nine people who met DSM IV diagnostic criteria for a diagnosis of schizophrenia and currently experienced auditory hallucinations participated (35, or 59% were male, 24, or 41% were female). Participant's age ranged from 19-61 years, with a mean age of 38.94 years (s.d.=11.89). The amount of time since participants began experiencing symptoms of psychosis ranged from six months to 49 years, with a mean time of 14.54 years (s.d.=11.71). Nine, or 15.3% of the sample were inpatients at the time of participation, 50, or 84.7% were outpatients. 53, or 88.1% of the sample were currently taking anti-psychotic medication.

To more fully describe the nature of the voice hearing experience two aspects of voices were assessed using a five point Likert scale, frequency of hearing



voices and loudness of voices. The five points of the frequency scale with numbers who endorsed each are as follows: once this week (5), several times this week but not every day (13), once a day (1), several times a day but not every hour (22) and every hour (17). The five points of the loudness scale with numbers who endorsed each are as follows: quiet whisper (5), quieter than own voice (19), about as loud as own voice (21), louder than own voice (6) and extremely loud (7). One person did not complete either the frequency or the loudness scale. The mode rating of frequency was 'several times a day but not every hour'. The mode rating of loudness was 'about as loud as own voice'.

Nine, or 15.3% of the participants reported practicing meditation, of these, five practiced mindfulness meditation. The amount of time since the participants began meditation practice ranged from two-three months to more than 10 years. Six of the participants had meditated in the last seven days, one within the last month, one within the last six months and one had not meditated for more than a year. The average number of days per week these nine participants practiced meditation ranged from zero-seven, with a mean of 2.88 (s.d.=2.31). Number of minutes participants practiced meditation for ranged from five to 35, with a mean of 13.11, (s.d.=9.66).

## *2.2. Measures*

Mindfulness Questionnaire (MQ), Chadwick (2002, unpublished)

This is a 16 item self report instrument measuring the degree to which people respond mindfully to auditory hallucinations and unwanted thoughts or

images. The items assess Mindful Observation, Absence of Aversion, Non-Judgement and Letting Go. These sub-scales are not independent constructs. Items are scored on a seven-point Likert scale, worded 'strongly disagree' to 'strongly agree', yielding a total score range of zero to 96. To guard against the tendency to agree with any statement, eight items are framed positively, eight negatively. The reliability and validity of the thoughts/images form of the MQ has been examined with a community sample of people who practised mindfulness meditation ( $n=83$ ) and those who did not ( $n=51$ ; Hember, 2003). The questionnaire had good internal reliability; Cronbach's  $\alpha = .90$ . It discriminated between the meditating and non-meditating subgroups, showing good criterion validity ( $t=3.40$ ,  $df=132$ ,  $p= .000$ ). The questionnaire also correlated significantly ( $r=.57$ ,  $p= .000$ ) with the Mindful Attention Awareness Scale (MAAS) by Brown and Ryan (2003), suggesting concurrent validity.

#### The Mindful Attention Awareness Scale (MAAS), Brown and Ryan (2003)

The MAAS is a 15 item self report instrument that asks individuals to rate how frequently they have certain experiences on a six-point scale. The items describe experiences that indirectly assess how present and aware someone is in the current moment. The scale has good test-retest reliability ( $r = .81$ ,  $p = .000$ ) and internal consistency (Cronbach's  $\alpha = .82$ ). Convergent and divergent validity assessments show that the scale measures a quality of consciousness that is related to a variety of measures of well-being, discriminates between meditators and non-meditators, and detects changes in mindfulness over time.

Positive and Negative Affect Scales (PANAS), Watson, Clark & Tellegen (1988)

The PANAS comprises two 10 item mood scales, measuring positive (PA) and negative (NA) affect. Factor analysis indicates that positive and negative affect are relatively independent constructs. The items are scored on a five-point scale ranging from 'not at all' to 'extremely'. The PANAS can be used to ask participants to report on several time frames ranging from 'this moment' to 'this year'. The internal consistency for the PA and NA scales for each of these time frames is high (Cronbach's alpha ranging from .86 to .90 for PA, .84 to .87 for NA).

Beliefs About Voices Questionnaire Revised (BAVQ-R), Chadwick, Lees & Birchwood (2000)

The BAVQ-R is a 35-item measure of people's beliefs about auditory hallucinations, and their emotional and behavioural reactions to them. There are three subscales relating to beliefs: malevolence, benevolence and omnipotence. Two subscales each measure a combination of emotional and behavioural responses to auditory hallucinations: resistance and engagement. All items are measured on a four-point scale ranging from 'disagree' to 'agree strongly'. The mean internal reliability for the five subscales is high, Cronbach's alpha=.86. Examination of construct validity found a strong relationship between malevolence and resistance ( $r=.0.76$ ,  $p = .000$ ,  $N = 60$ ) and benevolence and engagement ( $r=.82$ ,  $p = .000$ ,  $N = 60$ ).



## Further Information Questionnaire

A questionnaire (see appendix E) was used to gather information about:

- length of time experiencing auditory hallucinations
- frequency and loudness of auditory hallucinations (for details of Likert scale see participants section above)
- distress associated with auditory hallucinations was measured using five point Likert scales, one measuring distress when heard voice, one measuring distress moments after hearing the voice. The five points of the scales were: not at all distressed, slightly distressed, moderately distressed, very distressed but could be worse and extremely distressed
- practice of mindfulness meditation.

### *2.3. Procedure*

Ethical approval was obtained from the Southwest NHS Multi Research Ethics Committee and the University Ethics Committee (see appendix J and K).

Participants were recruited through community mental health teams, in-patient wards and hearing voices groups in Southampton, Winchester, Bristol, Cheltenham and Gloucester.

Mental health team members were asked to identify potential participants on their caseloads who had a diagnosis of a schizophrenia according to DSM IV. Permission to be contacted by the researcher was then gained by a member of staff who routinely had contact with the client.



All participants were fully informed about the purpose of the study (see appendix G for participant information sheet) and asked to sign a consent form (see appendix H) prior to completing the measures. Participants were offered the choice of completing the measures independently, with their key-worker or with the researcher. The order of the scales was constant as the sampling method precluded counterbalancing because the response rate of participants who chose to complete the measures independently could not be ascertained. All participants were debriefed, thanked and offered a summary of the results of the research once the study was complete (see appendix I for debrief sheet).

### **3. Results**

#### *3.1 Missing Data*

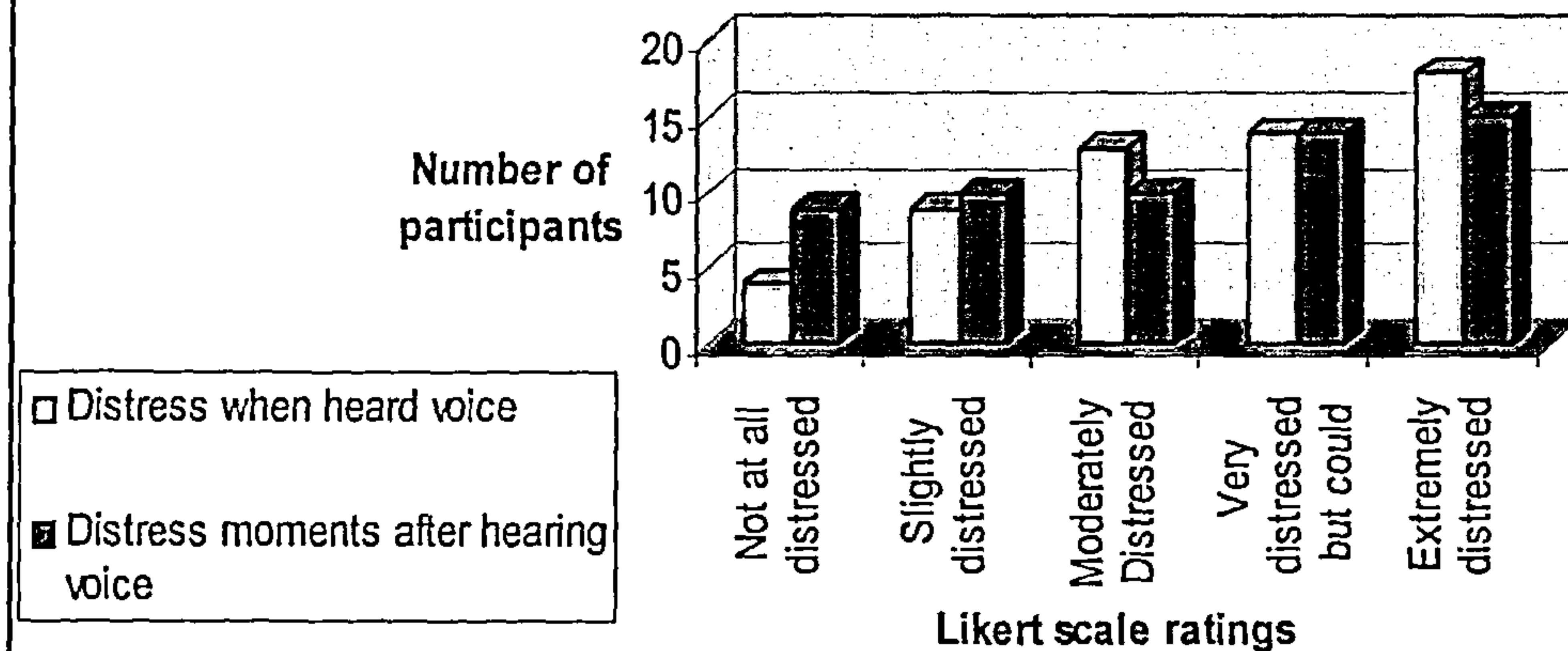
There was a low incidence of missing data. Two responses were missing from the MQ data. Eight responses were missing from the MAAS data, six of these were responses to item 12, which asks participants how often they drive places on automatic pilot, these participants did not respond to this item as they did not drive. Three people missed one item from the BAVQ-R. Missing items on the MQ and MAAS were replaced with the participant's mean response for the total scale. Missing data on the BAVQ-R were replaced with the participant's mean for that sub-scale. One participant's data for the Malevolence, Benevolence and Omnipotence subscales of the BAVQ-R was excluded from the analysis as they had not responded to one page of the questionnaire.

### *3.2. Descriptive Statistics*

The data for the MQ, BAVQ-R Malevolence, Resistance, Omnipotence, PANAS and MAAS were normally distributed: 1 sample Kolmogorov-Smirnov tests were non-significant (see appendix F, Table 1 for results). These data were therefore analysed using parametric tests. The one sample Kolmogorov-Smirnov test was significant for the Benevolence and Engagement subscale of the BAVQ-R, indicating that these scales were not normally distributed. Visual examination of these data showed them to be skewed towards very low scores. Over 77.6% of the participants scored five or less on the Benevolence subscale, 23 people scored zero (range 0-18). On the Engagement subscale, 69.5% scored five or less, 16 participants scored zero (range 0-21). The participants in this study represent a sample of malevolent voice hearers who resist their voices.

Participants were asked to rate how distressed they felt when they heard the voice, and a few moments after hearing the voice. The five points of the scales with numbers who endorsed each are shown in Figure 1. The mode rating for distress when heard voice was 'extremely distressed'. The mode rating for distress moments after hearing the voice was 'extremely distressed'. One participant did not complete the distress ratings.

Figure 1. Likert scale ratings of distress when heard voice and moments after hearing voice



In order to examine the individual differences between distress at the time of hearing the voice and distress moments after hearing the voice, a change score was calculated. Four participants rated an increase in distress from when they heard the voice to moments after, 37 participants rated no change in distress, 17 participants rated a decrease in distress moments after hearing the voice compared to distress when they heard the voice. Spearman's rho correlation coefficients were calculated to examine whether the difference between the participants rating of distress when they heard the voice and distress moments after was significantly related to other variables. This analysis indicated that the difference in distress at the these two time points was not significantly related to MQ score, BAVQ-R scores, PANAS scores or whether or not the participant practiced meditation. The results of this analysis can be seen in Appendix N. Appendix O is a scatter plot of the difference between distress when heard the voice and moments after for each participant.



Mean MQ, MAAS, PANAS, distress ratings, Malevolence, Omnipotence and Resistance for the total sample, male participants, female participants, inpatients, outpatients, meditators and non-meditators are reported in Table 2.

**Table 2. Descriptive statistics for each of the variables for total sample, male participants, female participants, inpatient, outpatient, meditators and non-meditators**

Sample	Total MQ			Total MAAS			PANAS Positive Affect			PANAS Negative Affect		
	Mean	Std. Dev.	Range	Mean	Std. Dev.	Range	Mean	Std. Dev.	Range	Mean	Std. Dev.	Range
Total sample (N = 59)	36.86	16.54	0-96	47.05	14.04	15-90	23.53	9.34	10-50	31.89	10.74	10-50
Male Participants (N= 35)	30.60	14.40	0-96	46.23	13.30	15-90	24.46	9.94	10-50	31.17	11.65	10-50
Female Participants (N= 24)	24.12	14.22	0-96	48.25	15.26	15-90	22.17	8.41	10-50	32.92	9.40	10-50
Inpatients (N= 9)	33.56	8.86	0-96	48.55	13.39	15-90	24.44	6.71	10-50	30.1	10.39	10-50
Outpatients (N = 50)	37.46	17.57	0-96	46.78	14.27	15-90	23.36	9.78	10-50	32.20	10.87	10-50
Meditators (N=9)	41.89	23.86	0-96	56.67	14.30	15-90	26.00	10.33	10-50	26.67	10.14	10-50
Non-Meditators (N= 50)	35.96	15.02	0-96	45.32	13.41	15-90	23.08	9.19	10-50	32.82	10.67	10-50

**Table 2. Continued**

Sample	Malevolence			Omnipotence			Resistance		
	Mean	Std. Dev.	Range	Mean	Std. Dev.	Range	Mean	Std. Dev.	Range
Total Sample (Resistance N= 59, other N = 58)	10.64	6.89	0-18	11.27	4.68	0-18	19.58	5.96	0-27
Male Participants (N = 35)	9.34	5.64	0-18	10.29	4.43	0-18	19.23	6.80	0-27
Female Participants (Resistance N = 23, other N = 24)	12.61	8.18	0-18	12.78	4.75	0-18	20.08	4.56	0-27
Inpatients (N= 9)	8.78	4.24	0-18	11.67	3.84	0-18	18.22	8.29	0-27
Outpatients (Resistance N=50, other N = 49)	10.98	7.25	0-18	11.20	4.85	0-18	19.82	5.52	0-27
Meditators (N = 9)	8.89	6.17	0-18	10.78	5.89	0-18	19.22	5.30	0-27
Non-meditators (N = (Resistance N=50, other N = 49)	10.96	7.02	0-18	11.37	4.49	0-18	19.64	6.12	0-27



### 3.3. Primary Hypotheses

#### Hypothesis 1: Internal Reliability

Chronbach's alpha for the Total MQ is .82, indicating that the measure has good internal reliability (Howitt, & Cramer, 2003). Item-total correlations ranged from .02 to .66, with a mean item-total correlation of .42. Items with an item-total correlation of .30 and above are considered satisfactory (Landon, 2005) suggesting that items 6 ( $r = .12$ ), 12 ( $r = .02$ ), and 15 ( $r = .17$ ) should be removed or revised. The mean item scores and item-total correlations are reported in Table 3. Internal structure remains stable when individual items are deleted. The overall alpha remains at least .80 whichever of the 16 items is deleted, including those with the lowest item-total correlation, items 6, 12 and 15.

**Table 3. Mean, standard deviation, range and item-total correlations for MQ**

MQ Item	Mean	Std. Dev.	Range	Item-total correlation-r	Chronbach's alpha if item deleted
1- I am able just to notice it without reacting	3.12	2.14	0-6	.49	.80
2- It takes over my mind for quite a while afterwards	1.59	1.59	0-6	.66	.80
3- I judge the voice as good or bad	1.00	1.52	0-6	.38	.81
4- I feel calm soon after it has stopped	2.64	2.00	0-6	.50	.80
5- I am able to accept the experience	3.66	2.14	0-6	.47	.80
6- I get angry that this happens to me	1.66	1.93	0-6	.12	.83
7- I notice how brief each comment really is	2.76	2.13	0-6	.41	.81
8- I judge myself as good or bad depending on what the voice says	1.90	2.24	0-6	.56	.80
9- I 'step back' and am aware of the voice without getting taken over by it	2.86	2.15	0-6	.48	.80
10- I just listen and let it	2.80	2.20	0-6	.46	.81

pass					
11- I accept myself the same whatever the voice says	2.58	2.27	0-6	.58	.80
12- In my mind I try and push the voice away	1.53	1.74	0-6	.02	.83
13- I keep thinking about what it said after it's stopped	1.54	1.80	0-6	.47	.81
14- I find it so unpleasant I have to distract myself and not notice them	2.32	1.91	0-6	.48	.80
15- I try just to listen without judging what the voice says	2.95	2.16	0-6	.17	.82
16- I lose myself in the voice	1.95	1.85	0-6	.53	.80

Item-Item correlations for the items with low item-total correlations are low, the mean correlations are extremely low. Item 6 item-item correlations range from  $r = -.01$  to  $.38$  with a mean of  $r = .07$ , item 12 ranges from  $r = .02$  to  $.31$  with a mean of  $r = .02$ , item 15 ranges from  $r = .02$  to  $.32$  with a mean of  $r = .08$ .

Approximately 80% or 24 of the 30 participants interviewed by the researcher reported that item 7 was confusing and asked the researcher for clarification of meaning. Visual examination of the spread of scores indicates that 29 of the total sample answered either 'totally disagree' or 'unsure'. In response to this feedback it was decided to remove this item from the scale.

Therefore three items were removed from the scale due to low item-total and item-item correlations (6,12 and 15), one item was removed in response to participant feedback. The remaining items form a 12 item scale with a possible range of scores 0-72.

When items 6, 7, 12 and 15 are removed, Chronbach's alpha for the Total MQ is .84. Item-total correlations range from  $r = .41$  to  $.69$ , with a mean of  $r = .52$ . From this point, Total MQ statistics have been calculated without items 6, 7, 12 and 15.

### Hypothesis 2: Concurrent Validity

Total score on the revised 12 item MQ was significantly positively correlated with Total MAAS score ( $r = .51$ ,  $p = .000$ ,  $N = 59$ ), indicating moderate concurrent validity.

### 3.4. Secondary Hypotheses

Pearson's correlation coefficients were calculated to examine the relationship between mindfulness as measured by the 12 item MQ and affect as measured by the PANAS, distress associated with hearing voices as measured by a Likert scale and beliefs about Malevolence, Omnipotence and Resistance as measured by the BAVQ-R. Due to the number of correlations that were calculated, a Bonferroni correction was considered but was not implemented due to the significance level of the results.

### Hypothesis 3: Mindfulness, Affect and Distress Associated with Hearing Voices

There was no significant relationship between Positive Affect and Total MQ score ( $r = .19$ ,  $p = .079$ ,  $N = 59$ ). Positive Affect was significantly positively correlated with Total MAAS score ( $r = .33$ ,  $p = .006$ ,  $N = 59$ ). Negative Affect was significantly negatively correlated with Total MQ score ( $r = -.69$ ,  $p = .000$ ,



N = 59). Negative Affect was significantly negatively correlated with Total MAAS score ( $r = -.67$ ,  $p = .000$ ,  $N = 59$ ). Items 4 and 14 of the MQ include descriptions of negative affect, in order to control for any possible confound between these items and affect as measured by the PANAS, the data was also analysed excluding these items. The relationship between Negative Affect and Total MQ score remained significant ( $r = -.68$ ,  $p = .000$ ,  $N = 59$ ). There remained no significant relationship between Positive Affect and Total MQ score ( $r = .19$ ,  $p = .071$ ,  $N = 59$ ).

Positive and Negative Affect were significantly negatively correlated at the 0.05 significance level ( $r = -.30$ ,  $p = .011$ ,  $N = 59$ ).

Participants were asked to rate the distress they felt both when they heard the voice and a few moments after hearing the voice. Total (12 item) MQ score was significantly negatively related to distress when the participant heard the voice ( $r = -.63$ ,  $p = .000$ ,  $N = 58$ ) and a few moments after hearing the voice ( $r = -.59$ ,  $p = .000$ ,  $N = 58$ ). These relationships remained significant when items 4 and 14 were removed from the analysis (distress when heard voice,  $r = -.65$ ,  $p = .000$ ,  $N = 58$ ; moments after hearing the voice,  $r = -.61$ ,  $p = .000$ ,  $N = 58$ )

#### Hypothesis 4: Mindfulness and Beliefs about and Response to Voices

Malevolence was significantly negatively correlated with Total MQ score ( $r = -.50$ ,  $p = .000$ ,  $N = 58$ ). Omnipotence was significantly negatively correlated with Total MQ score ( $r = -.65$ ,  $p = .000$ ,  $N = 58$ ). Total MQ score was significantly negatively correlated with Resistance ( $r = -.45$ ,  $p = .000$ ,  $N = 59$ )



### *3.5 Differences between meditators and non-meditators*

It was not an aim of this study to specifically recruit individuals who practiced meditation however as there were nine participants who reported practicing meditation a Mann Whitney U analysis was performed to examine whether there were significant differences in the scores reported by meditators (n=9) and non-meditators (n= 50). Visual examination of the mean scores shown in Table 2 indicate that there were differences in the mean ratings of MQ, MAAS and PANAS and that these differences were in the direction that would be predicted. Meditators reported higher MQ and MAAS scores, lower Negative Affect and higher Positive Affect. Visual examination of ratings of distress when the individual heard the voice and moments after hearing the voice indicates that meditators reported being less distressed both when they heard the voice and moments after. However the results of the Mann Whitney U analysis indicate that with the exception of the difference in MAAS scores, these differences were not significant. Meditators reported higher (more mindful) MAAS scores than non-meditators, this effect was significant at the  $p < 0.05$  ( $p = .041$ ). Meditators did not differ significantly from non meditators on the MQ ( $p = .541$ ), Negative Affect ( $p = .134$ ), Positive Affect ( $p = .342$ ), distress when heard voice ( $p = .143$ ) and distress moments after hearing the voice ( $p = .519$ ).

## **4. Discussion**

### *4.1. Reliability*

Within the limits of the present study, the MQ is both a reliable and valid measure of the degree to which people respond mindfully to voices. The

Chronbach's alpha score of .82 indicates a high level of internal reliability. However, items six, 12 and 15 had item-total correlations of considerably less than  $r = .3$ , suggesting that these items should be removed or revised. These items were removed from the scale. Item seven was also removed in response to feedback from participants that this item was confusing and made little sense as voices often talked continuously. This item was included in the scale as a parallel to item seven in the thoughts and images version of the MQ (where the item works well: Hember, 2003) but this item makes less sense when applied to the experience of hearing voices. With these items (6, 7, 12 and 15) removed, the 12 item scale has a Chronbach's alpha of .84, indicating good internal reliability. The 12 item scale has a mean item-total of  $r = .52$ , indicating that the remaining items are reliably measuring the same construct.

Due to the small sample size it was not possible to conduct factor analysis, (a minimum of 150 participants are required for factor analysis, Tabachnick & Fidell, 1996). This is something that future research may address.

#### *4.2. Concurrent Validity*

This study used the MAAS to examine the concurrent validity of the MQ. There was a modest yet significant relationship between the measures suggesting that the MQ does indeed assess mindfulness. This level of correlation has 'real world' significance, bearing in mind the important differences between the two scales. The MQ assesses how mindfully someone is able to respond to auditory hallucinations or voices, the MAAS

assesses how present and aware people are in everyday life (e.g. when snacking or driving).

#### *4.3. Mindfulness, Affect and Distress Associated with Hearing Voices*

The aim of mindfulness meditation is to alleviate distress. Brown and Ryan (2003) found that mindfulness as measured by the MAAS was positively associated with Positive Affect ( $r = .30-.39$ ,  $p = .000$ ) and negatively associated with Negative Affect ( $r = -.39$  to  $-.43$ ,  $p = .000$ ). Total MQ was therefore predicted to be negatively related to Negative Affect as measured by the PANAS. The results of this study support this hypothesis. This study did not find a significant relationship between Total MQ score and Positive Affect. This is unsurprising given that the MQ measures mindfulness only in relation to distressing voices – mindful responding to unpleasant voices is likely to reduce distress, but is unlikely to yield positive affect. There was a significant relationship between Total MAAS and Positive Affect score ( $r = .33$ ,  $p = .006$ ,  $N = 59$ ), and Total MAAS and Negative Affect score ( $r = .67$ ,  $p = .000$ ,  $N = 59$ ), supporting Brown and Ryan's (2003) findings.

There was a significant negative relationship between Positive and Negative Affect. Watson et al. (1988) found that the PANAS Positive and Negative Affect Subscales were largely unrelated, with correlations ranging between  $r = -.12$  to  $-.23$ , depending on the time instructions used. This study aimed to examine how mindfulness related to distress specifically associated with hearing voices as well as general measures of affect. Total MQ scores were found to be significantly negatively related to distress both at the time of



hearing the voice and a few moments after. The significance of the relationships between Total MQ, affect and distress associated with hearing voices was unchanged when items 4 and 14 were removed from the analysis in order to control for any possible confound between these items and distress.

#### *4.4. Mindfulness and Beliefs about and Responses to Voices*

The BAVQ-R was used in this study to test predictions about the relationship between mindfulness and response to voices. The sample in this study was a typical clinical sample, the majority experienced voices which were believed to be malevolent, very powerful and which they resisted. Scores on the Benevolence and Engagement subscales were low. Specifically it was predicted that mindfulness would be negatively related to beliefs about malevolence and omnipotence as these constitute judgements about the voice and mindfulness is characterised by non-judgement. The results show a significant negative relationship between Malevolence, Omnipotence and Total MQ score.

Chadwick and Birchwood (1994, 1995, 1996) found positive correlations between voices believed to be malevolent and resistance, and voices believed to be benevolent and engagement. An aspect of mindfulness measured by the MQ is mindful observation, simply observing experience without reacting, particularly with an absence of aversion and judgement. It would therefore be expected that Total MQ score would be negatively related to Resistance.



There was a significant negative relationship between Total MQ and Resistance.

Romme and Escher (1993) found that not all people who experience voices are distressed by them, many cope well. Out of a sample of 173 voice hearers, 58 or 34% reported that they coped well with the experience. Romme and Escher (1993) report that 30% of the group who coped well, experienced benevolent voices, compared to only 10% of the group who did not cope well. Future research could examine mindfulness in a sample of individuals who experienced benevolent voices, and in individuals who are not distressed by the experience. It would be interesting to examine whether mindfully responding to voices is a distinguishing feature of coping well with the experience.

#### *4.5. Limitations*

The present research has several limitations which must be taken into account when considering the results. Firstly, although the sample here was an adequate size, further studies are needed to replicate these findings before the reliability and validity of the voices version of the MQ could be considered established.

Secondly, it is important to note several characteristics of this study which limit the generalisability of the results. The sample here consisted of individuals with a diagnosis of schizophrenia (though formal diagnostic assessment was not undertaken). Although there is no reason to suggest that the scale would

be unreliable with other populations who hear voices, it cannot be assumed that it is reliable. The majority of the present sample (88.1%) were currently taking anti-psychotic medication, again, although there is no reason to suggest that the scale would not be reliable for use with individuals who were not taking medication, it should be taken into account that medication may have impacted upon response to voices. People were not excluded if they were known to have co-morbid disorders or drug/alcohol problems. Also, many patients were not put forward for participation. It is worthy of note that of all the people who gave permission to be contacted by the researcher about the study, only one declined participation. This sample primarily consisted of individuals who heard malevolent voices, which were believed to be very powerful and which they resisted, the majority also found the experience very distressing. A further limitation of this study is that it did not assess test-retest reliability. Future research could usefully examine this.

This study is insufficient to assess construct validity, although the relationships between mindfulness, affect, beliefs about and response to voices go some way to suggest that the MQ may be a valid measure of mindfulness as predicted relationships with related but distinct constructs were significant, with the exception of MQ and positive affect. However as discussed above, the distinct focus of the MQ on the experience of hearing voices as opposed to mindfulness of everyday activities suggests that the MQ would not be related to positive affect in the same way that mindfulness in everyday life may be.

A further limitation is that the order of the scales was constant. The sampling method precluded counterbalancing because the response rate of participants who chose to complete the measures independently could not be ascertained. The order in which the measures were completed could have affected responses to the measure e.g. participants may have spent more time considering their response to the earlier measures but have become tired by the last measure and so responded to items with less consideration.

Finally the differences between meditators and non-meditators should be interpreted with caution. The study did not aim to recruit meditators specifically and because of the small numbers of meditators that the analysis was based on it is not possible to draw conclusions from these results. In addition the study did not assess meditation practice in detail. Participants were asked if they practiced mindfulness meditation, five of the sample of nine meditators reported that they did. However the researcher did not investigate whether these participants understanding and practice of mindfulness was in keeping with the definition of mindfulness upon which this study is based. Future research could recruit a larger sample of meditators and assess more specifically the type of meditation which they practice in order to assess mindfulness meditation does indeed impact upon the variables measured in this study.

A final limitation is that there was also insufficient numbers of inpatients to assess whether differences were significant or not. There were no significant gender differences between scores.



#### *4.6. MQ and Other Measures of Mindfulness*

Baer (presentation at Bangor mindfulness conference 2004) investigated the convergent validity of the available measures of mindfulness (MAAS, FMI, CAMS, TMS and MQ) by investigating their relationship to a range of psychological variables. The relationship between mindfulness and psychological symptoms was explored using the Brief Symptom Inventory (BSI, Derogatis, 1992). All of the scales except the TMS were significantly negatively correlated with BSI scores.

Thought suppression and experiential avoidance have been implicated as maintenance factors in a range of emotional disorders such as Post Traumatic Stress Disorder (Ehlers & Steil, 1995), generalised anxiety disorder (Borkovec, 1994; Roemer & Orsillo, 2002) and Obsessive Compulsive Disorder (Salkovskis and Campbell, 1994). By definition mindfulness should be negatively correlated with both thought suppression and experiential avoidance as key qualities of mindfulness are letting experiences come with acceptance and non-aversion. Baer (2004) found that all of the scales except the TMS, were significantly negatively correlated to the White Bear Suppression Inventory (Wegner & Zanakos, 1994). The MQ was significantly correlated at the  $p < 0.01$  level. All of the scales except the TMS were also negatively correlated with a measure of experiential avoidance, the Acceptance and Action Questionnaire (Hayes et al. in press). Of all the measures the MQ showed the most significant correlation ( $r = -.60, p < 0.01$ ).



Baer conducted an exploratory factor analysis of all of the available mindfulness scales in order to identify and clarify the multiple facets of mindfulness that the scales were measuring. Factor analysis of the MQ identified two factors, non reactivity to distressing inner experience and non-judging or accepting of distressing inner experience. Hember (2003) also completed factor analysis of the MQ and found that the measure did not break down into separate subscales. However the sample size in Hember's study was below that recommended by Tabachnick and Fidell (1996).

Baer also conducted a stepwise regression analysis in order to examine which of the factors identified in the factor analysis predicted other psychological variables. Non-judging of inner experience was found to be the best predictor of psychological symptoms and thought suppression. Non-reactivity to inner experience was found to be the best predictor of experiential avoidance and self-compassion. These findings support the use of the MQ as a clinical tool which can be used to measure aspects of response to distressing experiences which have been implicated in maintenance theories of psychological disorders such as Post Traumatic Stress Disorder (Ehlers & Steil, 1995), Generalised Anxiety Disorder (Borkovec, 1994; Roemer & Orsillo, 2002) and Obsessive Compulsive Disorder (Salkovskis and Campbell, 1994).

## **5. Conclusion**

The MQ is a reliable and valid measure of mindfulness within the limits of this study. Future research could usefully conduct a factor analysis of the MQ with this population to examine the structure of the scale. Future research is

needed to examine whether or not mindfulness practice does increase mindful response to voices and whether this is associated with reduced distress. It would also be interesting to explore the relationships between mindfulness, beliefs about voices and affect in a non-clinical sample of voice hearers who are not distressed by the experience of hearing voices. The MQ might prove a useful clinical tool for assessment and evaluation of outcome in psychological therapy for people distressed by the experience of hearing voices.

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## Appendices

Appendix A	The Mindfulness Questionnaire (MQ) by Chadwick (2002, unpublished)
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## Appendix A

The Mindfulness Questionnaire (MQ) by Chadwick (2002,  
unpublished)

# Mindfulness Questionnaire

Usually when I hear my voice(s)

Participant Number

	Agree Totally	Agree Strongly	Agree Slightly	Unsure	Disagree Slightly	Disagree Strongly	Disagree Totally
1. I am able just to notice it without reacting							
2. It takes over my mind for quite a while afterwards							
3. I judge the voice as good or bad							
4. I feel calm soon after it has stopped							
5. I am able to accept the experience							
6. I get angry that this happens to me							
7. I notice how brief each comment really is							
8. I judge myself as good or bad, depending what the voice says							
9. I 'step back' & am aware of the voice without getting taken over by it							
10. I just listen and let it pass							
11. I accept myself the same whatever the voice says							
12. In my mind I try and push the voice away							
13. I keep thinking about what it said after it's stopped							
14. I find it so unpleasant I have to distract myself & not notice them							
15. I try just to listen without judging what it says							
16. I lose myself in the voice							

# Mindfulness Questionnaire

Usually, when I have distressing thoughts or images

	Agree Totally	Agree Strongly	Agree Slightly	Unsure	Disagree Slightly	Disagree Strongly	Disagree Totally
1. I am able just to notice them without reacting							
2. They take over my mind for quite a while afterwards							
3. I judge the thought/image as good or bad							
4. I feel calm soon after							
5. I am able to accept the experience							
6. I get angry that this happens to me							
7. I notice how brief thoughts and images really are							
8. I judge myself as good or bad, depending what the thought/image is about							
9. I 'step back' & am aware of the thought or image without getting taken over by it							
10. I just notice them and let them go							
11. I accept myself the same whatever the thought/image is about							
12. In my mind I try and push them away							
13. I keep thinking about the thought or image after it's gone							
14. I find it so unpleasant I have to distract myself & not notice them							
15. I try just to experience the thoughts or images without judging them							
16. I lose myself in the thought/images							

## Appendix B

The Mindful Attention Awareness Scale (MAAS),  
Brown and Ryan (2003)



Participant Number

**The Mindful Attention Awareness Scale (MAAS), Brown and Ryan (2003)**

**Day-to-Day Experiences**

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

1	2	3	4	5	6
Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never

1. I could be experiencing some emotion and not be conscious of it until some time later.	1	2	3	4	5	6
2. I break or spill things because of carelessness, not paying attention, or thinking of something else.	1	2	3	4	5	6
3. I find it difficult to stay focused on what's happening in the present.	1	2	3	4	5	6
4. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	1	2	3	4	5	6
5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	1	2	3	4	5	6
6. I forget a person's name almost as soon as I've been told it for the first time.	1	2	3	4	5	6
7. It seems I am "running on automatic," without much awareness of what I'm doing.	1	2	3	4	5	6
8. I rush through activities without being really attentive to them.	1	2	3	4	5	6
9. I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.	1	2	3	4	5	6
10. I do jobs or tasks automatically, without being aware of what I'm doing.	1	2	3	4	5	6
11. I find myself listening to someone with one ear, doing something else at the same time.	1	2	3	4	5	6
12. I drive places on 'automatic pilot' and then wonder why I went there.	1	2	3	4	5	6

13. I find myself preoccupied with the future or the past	1	2	3	4	5	6
14. I find myself doing things without paying attention	1	2	3	4	5	6
15. I snack without being aware that I'm eating.	1	2	3	4	5	6

## Appendix C

Positive and Negative Affect Scales (PANAS),  
Watson, Clark & Tellegen (1988)

Participant Number

**Positive and Negative Affect Scales (PANAS), Watson, Clark & Tellegen  
(1988)**

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you generally feel that way Use the following scale to record your answer.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

\_\_\_\_\_ interested  
\_\_\_\_\_ distressed  
\_\_\_\_\_ excited  
\_\_\_\_\_ upset  
\_\_\_\_\_ strong  
\_\_\_\_\_ guilty  
\_\_\_\_\_ scared  
\_\_\_\_\_ hostile  
\_\_\_\_\_ enthusiastic  
\_\_\_\_\_ proud

\_\_\_\_\_ irritable  
\_\_\_\_\_ alert  
\_\_\_\_\_ ashamed  
\_\_\_\_\_ inspired  
\_\_\_\_\_ nervous  
\_\_\_\_\_ determined  
\_\_\_\_\_ attentive  
\_\_\_\_\_ jittery  
\_\_\_\_\_ active  
\_\_\_\_\_ afraid



## Appendix D

Beliefs About Voices Questionnaire Revised (BAVQ-R),  
Chadwick, Lees & Birchwood (2000)

Participant Number

BAVO - R

There are many people who hear voices. It would help us to find out how you are feeling about your voices by completing this questionnaire. Please read each statement and tick the box which best describes the way you have been feeling in the *past week*.

If you hear more than one voice, please complete the form for the voice which is dominant.

Thank you for your help.

		Disagree	Unsure	Slightly Agree	Strongly Agree
1	My voice is punishing me for something I have done				
2	My voice wants to help me				
3	My voice is very powerful				
4	My voice is persecuting me for no good reason				
5	My voice wants to protect me				
6	My voice seems to know everything about me				
7	My voice is evil				
8	My voice is helping to keep me sane				
9	My voice makes me do things I really don't want to do				
10	My voice wants to harm me				
11	My voice is helping me to develop my special powers or abilities				
12	I cannot control my voices				
13	My voice wants me to do bad things				
14	My voice is helping me to achieve my goal in life				
15	My voice will harm or kill me if I disobey or resist it				



		Disagree	Unsure	Slightly Agree	Strongly Agree
16	My voice is trying to corrupt or destroy me				
17	I am grateful for my voice				
18	My voice rules my life				
19	My voice reassures me				
20	My voice frightens me				
21	My voice makes me happy				
22	My voice makes me feel down				
23	My voice makes me feel angry				
24	My voice makes me feel calm				
25	My voice makes me feel anxious				
26	My voice makes me feel confident				

When I hear my voice, usually ...

		Disagree	Unsure	Slightly Agree	Strongly Agree
27	I tell it to leave me alone				
28	I try and take my mind off it				
29	I try and stop it				
30	I do things to prevent it talking				
31	I am reluctant to obey it				
32	I listen to it because I want to				
33	I willingly follow what my voice tells me to do				
34	I have done things to start to get in contact with my voice				
35	I seek the advice of my voice				

## Appendix E

### Further Information Questionnaire



# Background Information Questionnaire

Please complete the following information

- 1. Age.....
- 2. Female/Male .....
- 3. Main occupation.....
- 4. Do you practice meditation? .....

If no, please go to question 11, if yes please answer the following:

- 5. Does mindfulness form part of your meditation practice?  
.....
- 6. How long is it since you began meditation practice?.....
- 7. When did you last meditate?.....
- 8. Over the last month please circle the average number of days per week that you have practiced sitting meditation

0	1	2	3	4	5	6	7
---	---	---	---	---	---	---	---

- 9. How many times per day do you practice sitting meditation?.....
- 10. How many minutes do you sit each time?.....
- 11. Have you received any form of psychological therapy for your symptoms of psychosis?.....

12. If so, what type of therapy?

Cognitive Therapy or Cognitive Behavioural Therapy

Psychoanalytic Psychotherapy

Other, please state .....

13. Approximately how many sessions of therapy did you receive?.....

14. Do you take any medication for your symptoms of psychosis? If so please specify.....

15. How long have you been experiencing symptoms of psychosis?.....

16. In the last week :

How frequently have you heard your voices?

Every Hour	Several times A day but not every hour	Once a day	Several times this week but not every day	Once this week

How loud have the voices been?

Quiet whisper	Quieter than own voice	About as loud as own voice	louder than own voice	Extremely loud

17. How distressed do you feel *when you hear* your voice?

Not at all distressed	Slightly distressed	Moderately distressed	Very distressed but could be worse	Extremely distressed

18. How distressed do you feel *a few moments after you heard* the voice?

Not at all distressed	Slightly distressed	Moderately distressed	Very distressed but could be worse	Extremely distressed

19. In the last week :

How frequently have you experienced distressing thoughts and images?

Every Hour	Several times A day but not every hour	Once a day	Several times this week but not every day	Once this week

20. How distressed do you feel *when* you experience the thought or image?

Not at all distressed	Slightly distressed	Moderately distressed	Very distressed but could be worse	Extremely distressed

21. How distressed do you feel *a few moments after* experiencing the thought or image?

Not at all distressed	Slightly distressed	Moderately distressed	Very distressed but could be worse	Extremely distressed

Appendix F. Table 1. Results of 1 sample-Kolmogorov Smirnov test.

Measure	N	Kolmogorov-Smirnov Z	Sig. (2-tailed) p
MQ	59	0.67	.763
BAVQ-R Malevolence	58	0.95	.322
BAVQ-R Benevolence	58	1.63	.010
BAVQ-R Omnipotence	58	0.78	.581
BAVQ-R Engagement	58	1.80	.003
BAVQ-R Resistance	58	1.22	.103
PANAS Positive Affect	59	0.73	.662
PANAS Negative Affect	59	0.81	.524
Total MAAS	59	0.67	.890



## Appendix G

### Participant Information Sheet

## Participant Information Sheet

### **Reliability and Validity of the Mindfulness Questionnaire for Use with People who experience voices, paranoia and other distressing beliefs**

*You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask Emily Thomas, Trainee Clinical Psychologist if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.*

#### **What is the purpose of the study?**

Mindfulness may be defined as 'paying attention in a particular way: on purpose, in the present moment and non-judgementally' (Kabat-Zinn, 1994)

The aim of the study is to investigate the reliability and validity of a questionnaire that looks at how people respond when they experience voices paranoia and other distressing beliefs. The questionnaire will be used in therapeutic practice and future research projects.

#### **Why have I been chosen?**

You have been chosen because you have been experiencing voices, paranoia or other distressing beliefs. We hope to recruit approximately sixty people to participate in the study.

#### **Do I have to take part?**

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet and be asked to sign a consent form. You will be given a copy of this information sheet and the signed consent form to keep. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect the standard of care you receive.

## **What will happen to me if I take part?**

If you agree to take part you will be asked to sign a consent form and to give permission for the researcher to have access to your medical records. You will then be given five questionnaires to complete. The questions will ask you about various aspects of the symptoms you have experienced. The questionnaires will take between 30-60 minutes to complete.

You will be offered the choice to either meet with the researcher to complete the questionnaires or to be sent them by post. If you choose to meet with the researcher any travel expenses you incur will be reimbursed.

Some of the people who take part will be asked to complete one of the questionnaires for a second time one week later.

You will be able to ask the researcher any questions you may have. All of the information you give will be kept confidential. It will be analysed along with data collected from other participants and written up into a research report. Your name or any other identifiable information will not appear in the report. A summary of the research findings will be available from the researcher at the end of the study, approximately July 2005.

At the end of the study you will be offered the chance to join a mindfulness group that we hope may help people find a way of managing their distress. You do not have to take part in the group, it is entirely up to you whether or not you would like to attend.

## **What do I have to do?**

You will need to complete the questionnaires, either with the researcher or return them in a stamped addressed envelope which will be provided.

## **What are the possible disadvantages and risks of taking part?**

You may find thinking about your symptoms distressing or uncomfortable. If you do become distressed, you can take a break from completing the questionnaires or withdraw altogether from the study.

## **What are the possible benefits of taking part?**

The information we gain from the study will allow us to develop and improve the mindfulness questionnaire. This will then be used in clinical practice with people who experience voices, paranoia or other distressing beliefs and in future research projects.

You will be offered the chance to join a mindfulness group that may help you to manage your distress. If you do not wish to take part in this research but would still like to join the mindfulness group, please tell Emily Thomas, Trainee Clinical Psychologist

### **Will my taking part in this study be kept confidential?**

All information which is collected about you during the course of the research will be kept strictly confidential. Any information about you which leaves the hospital will have your name and address removed so that you cannot be recognised from it.

As a Trainee Clinical Psychologist, my research is supervised by my co-researchers who are; NHS Clinical Psychologist, Dr Katherine Newman-Taylor and NHS Clinical Psychologist and University of Southampton Tutor, Professor Paul Chadwick. Both of these supervisors will keep any information I need to discuss with them entirely confidential.

### **What will happen to the results of the research study?**

A report of the study will be written and submitted as part of my doctorate. A summary of the results will be sent to you on request.

### **Who is organising and funding the research?**

I am a third year clinical trainee at the University of Southampton, Doctoral Programme in Clinical Psychology. This research is being conducted as part of my training and apart from a small university grant there is not separate funding for it.

### **Who has reviewed the study?**

The School of Psychology Research Ethics Committee, University of Southampton and South West Multicentre Research Ethics Committee have reviewed and approved the study.

If you have any questions about your rights as a participant in this research or you feel that you have been placed at risk, you may contact the Chair of the Ethics Committee, School of Psychology, University of Southampton, Southampton, SO17 1BJ. Tel: 023 8059 3995

### **Contact for further information**

If you have any questions please contact:

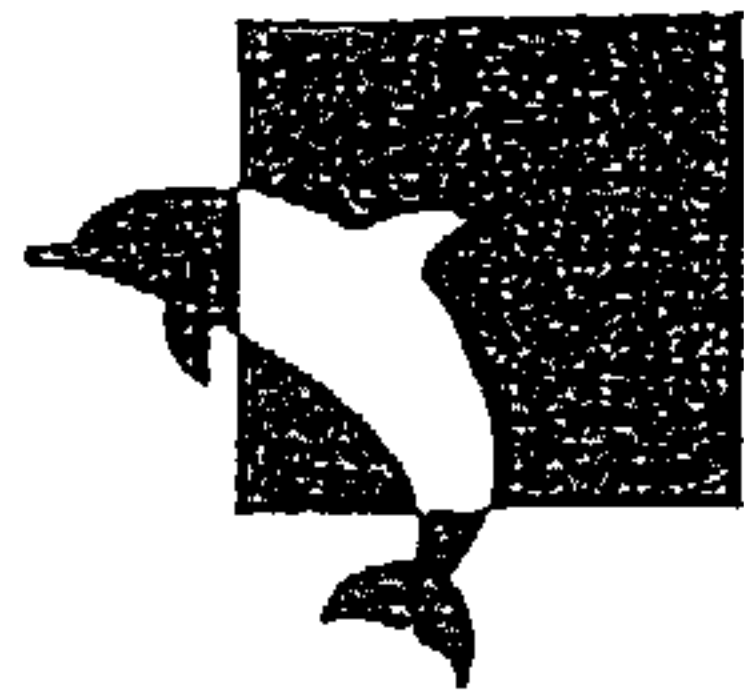
Emily Thomas, Trainee Clinical Psychologist, School of Psychology, University of Southampton, Southampton, S017 1BJ.  
Tel: 023 8059 5321, Email: [ert202@soton.ac.uk](mailto:ert202@soton.ac.uk)

*Thank-you for reading this and considering taking part*



## Appendix H

### Participant Consent Form



**Participant Consent Form**

**Reliability and Validity of the Mindfulness  
Questionnaire for Use with People who experience  
voices, paranoia and other distressing beliefs**

Emily Thomas  
Department of Clinical Psychology  
University of Southampton  
Southampton  
SO17 1 BJ  
023 8059 5321

Participant No

Please initial box

1. I confirm that I have read and understand the information sheet dated 20/11/04 (version 2) for the above study
2. I understand that my participation is voluntary and that I am free to withdraw at any time without my medical care or legal rights being affected
3. I am willing to allow access to my medical records by those involved in and for the purposes of this research study but understand that strict confidentiality will be maintained. The purpose of this is to check that the study is being carried out correctly.
4. I agree to take part in the above study

\_\_\_\_\_  
Name of Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name of person taking consent  
(If different from researcher)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

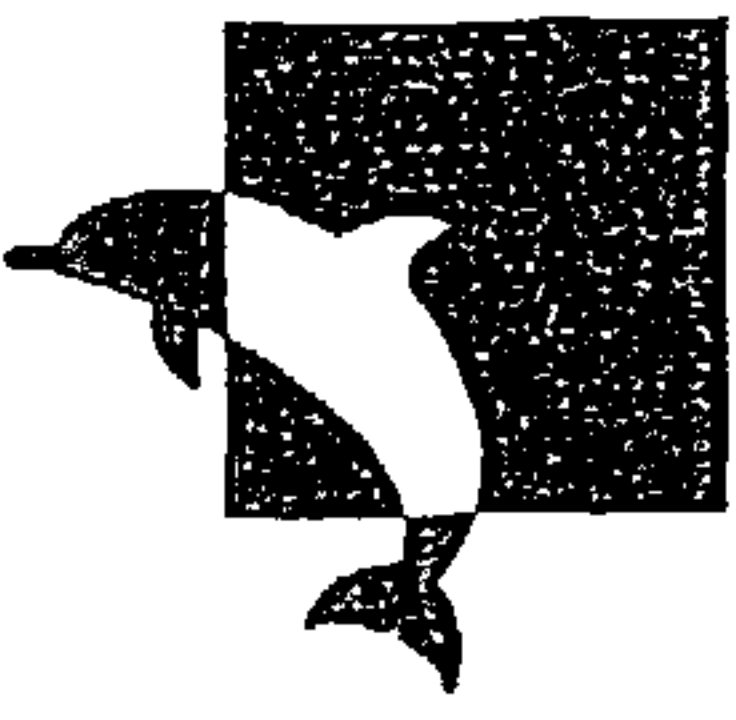
\_\_\_\_\_  
Researcher

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

## Appendix I

### Participant Debrief Sheet



## Participant Debriefing Statement

### Reliability and Validity of the Mindfulness Questionnaire for Use with People who experience voices, paranoia and other distressing beliefs

The aim of this study was to investigate the reliability and validity of a questionnaire that looks at how people respond when they experience voices, paranoia or other distressing beliefs. It is expected that the questionnaire will be used in therapeutic practice and future research projects. Your data will help us understand how useful the questionnaire is and how people respond to the experience of voices, paranoia or other distressing beliefs. Once again the results of the study will not include your name or any other identifying characteristics. The research did not deceive you in any way. You may have a copy of this debriefing statement if you wish. You may also request a summary of the findings of the research once they have been analysed. These will be available from July 2005 and can be requested by leaving a message for Emily Thomas on 02380 595321, or by emailing [ert202@soton.ac.uk](mailto:ert202@soton.ac.uk).

If you have any further questions please contact me as detailed above.

Thank you for your participation in this research.

Signature

Date

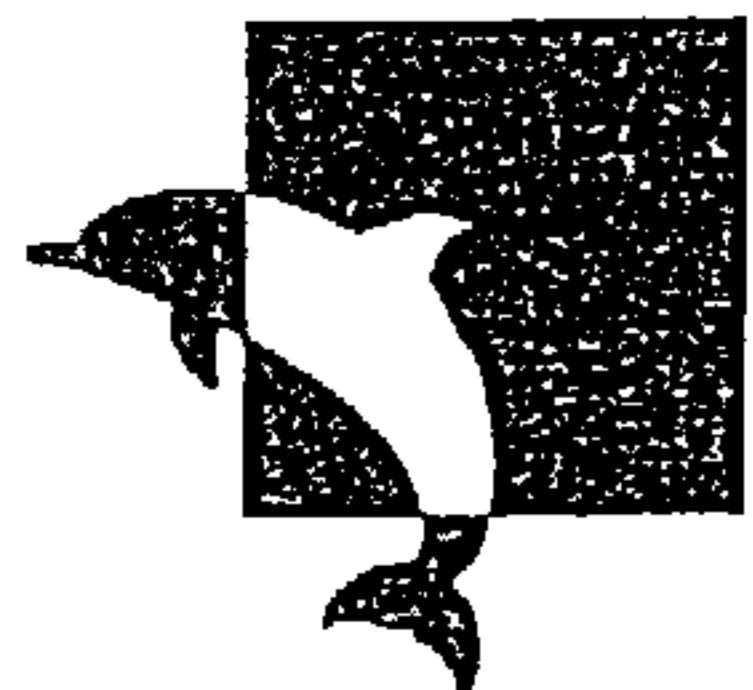
Name

If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you may contact the Chair of the Ethics Committee, Department of Psychology, University of Southampton, Southampton, SO17 1BJ.



## Appendix J

### University Ethics Approval



16 June 2005

Emily Thomas  
Department of Clinical Psychology  
University of Southampton  
Southampton  
SO17 1BJ

Dear Emily,

**Re: Reliability and Validity of the Mindfulness Questionnaire for  
Use with People who Hear Voices**

I am writing to confirm that the above titled ethics application was approved by the School of Psychology Ethics Committee on 9 September 2004.

Should you require any further information, please do not hesitate in contacting me on 023 8059 3995.

Please quote approval reference number CLIN/03/52.

Yours sincerely,

Kathryn Smith  
Secretary to the Ethics Committee

## Appendix K

### MREC Ethics Approval



# South West Multi-centre Research Ethics Committee

The Lescaze Offices  
Shinner's Bridge  
Dartington  
Devon  
TQ9 6JE

04 January 2005

Tel: 01803 861947  
Fax: 01803 861914

Email: [swmrec@sw-devon-ha.swest.nhs.uk](mailto:swmrec@sw-devon-ha.swest.nhs.uk)

Miss Emily Thomas  
Trainee Clinical Psychologist  
Southampton University  
Flat 7, The Mont, 34 St Andrews Road  
Montpelier  
Bristol BS6 5ED

Dear Miss Thomas

**Re: 04/MRE06/55 - Reliability and Validity of the Mindfulness Questionnaire for Use with People with psychosis**

The REC gave a favourable ethical opinion to this study on 8 December 2004.

Further notification(s) have been received from local site assessor(s), following site-specific assessment. On behalf of the Committee, I am pleased to confirm the extension of the favourable opinion to the new site(s). I attach an updated version of the site approval form, listing all sites with a favourable ethical opinion to conduct the research.

## Management approval

The Chief Investigator or sponsor should inform the local Principal Investigator at each site of the favourable opinion by sending a copy of this letter and the attached form. The research should not commence at any NHS site until management approval from the relevant NHS care organisation has been confirmed.

## Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

**REC reference number: 04/MRE06/55**

**Please quote this number on all correspondence**

Yours sincerely

Barbara Inger  
Committee Administrator

**Enclosure: Site approval form (SF1)**



South West MREC

**LIST OF SITES WITH A FAVOURABLE ETHICAL OPINION**

*For all studies requiring site-specific assessment, this form is issued by the main REC to the Chief Investigator and sponsor with the favourable opinion letter and following subsequent notifications from site assessors. For issue 2 onwards, all sites with a favourable opinion are listed, adding the new sites approved.*

<b>REC reference number:</b>	04/MRE06/55	<b>Issue number:</b>	4	<b>Date of issue:</b>	04 January 2005
------------------------------	-------------	----------------------	---	-----------------------	-----------------

<b>Chief Investigator:</b>	Miss Emily Thomas
----------------------------	-------------------

<b>Full title of study:</b>	Reliability and Validity of the Mindfulness Questionnaire for Use with People with psychosis
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*This study was given a favourable ethical opinion by South West MREC on 08 December 2004. The favourable opinion is extended to each of the sites listed below. The research may commence at each NHS site when management approval from the relevant NHS care organisation has been confirmed.*

Principal Investigator	Post	Research site	Site assessor	Date of favourable opinion for this site	Notes <sup>(1)</sup>
Mr M Hember	Acting Sector Manager	Avon and Wiltshire mental health partnership NHS trust Gloucester House, Southmead Hospital, Bristol, BS10 5NB	Southmead Research Ethics Committee	23/12/2004	
Mrs Janette Symes	Mental Health Trainer	Ms Carrie Marrow Gloucestershire Partnership NHS Trust Delancey Assessment & Rehabilitation Hospital Charlton Lane Cheltenham GL53 9QQ	Gloucestershire Research Ethics Committee	23/12/2004	
Mr M Hember	Acting Sector Manager	Avon and Wiltshire Mental Health Partnership NHS Trust. Cabot community Mental Health Services, 12 Grove Road, Bristol BS6 6UJ. Petherton Resource Centre, Hengrove, Bristol	Central & South Bristol Research Ethics Committee	15/12/2004	

Miss E Thomas	Trainee Clinical Psychologist	Department of Psychiatry Southampton University Hospitals NHS Trust Department of Psychiatry Royal South Hants Brintons Terrace Southampton	Southampton & South West Hampshire LREC (B)	15/12/2004	
Miss Emily R Thomas	Trainee Clinical Psychologist	Royal Hampshire County Hospital Romsey Road Winchester Hants SO22 2DG England	North & Mid Hampshire Local Research Ethics Committee	15/12/2004	
Miss E Thomas	Trainee Clinical Psychologist	East Southampton Mental Health Team Hawthorn Lodge Moorgreen Hospital Botley Road West End SO30 3JB	Southampton & South West Hampshire LREC (B)	04/01/2005	
Miss E Thomas	Trainee Clinical Psychologist	West Southampton Mental Health Team Canon House 6 Canon Street Shirley Southampton SO14 0YG	Southampton & South West Hampshire LREC (B)	04/01/2005	

Approved by the Chair on behalf of the REC:

..... (Signature of Administrator)


...Barbara Inger..... (Name)

*(1) The notes column may be used by the main REC to record the early closure or withdrawal of a site (where notified by the Chief Investigator or sponsor), the suspension of termination of the favourable opinion for an individual site, or any other relevant development. The date should be recorded.*




## Appendix L

**Instructions to authors: Psychological Bulletin**



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Gallo, L. C., & Matthews, K. A. (2003). Understanding the association between socioeconomic status and physical health: Do negative emotions play a role? *Psychological Bulletin*, 129, 10-51.

Hobfoll, S. E. (1998). *Stress, culture, and community: The psychology and philosophy of stress*. New York: Plenum Press.

Zuckerman, M., DePaulo, B. M., & Rosenthal, R. (1986).

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Humans as deceivers and lie detectors. In P.D. Blanck, R. Buck, & R. Rosenthal (Eds.), *Nonverbal communication in the clinical context* (pp. 13–35). University Park: Pennsylvania State University Press.

**Figures.** Graphics files are welcome if supplied as Tiff, EPS, or PowerPoint. High-quality printouts or glossies are needed for all figures. The minimum line weight for line art is 0.5 point for optimal printing. When possible, please place symbol legends below the figure image instead of to the side. Original color figures can be printed in color at the editor's and publisher's discretion and provided the author agrees to pay half of the associated production costs; an estimate of these costs is available from the APA production office on request. Supplemental materials. APA can now place supplementary materials online, which will be available via the journal's Web page as noted above. To submit such materials, please see [Supplementing Your Article With Online Material](#) for details.

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## Appendix M

Instructions to authors: Behaviour Research and Therapy

## Guide for Authors

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Provide the following data on the title page (in the order given).

**Title.** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.

**Author names and affiliations.** Where the family name may be ambiguous (e.g., a double name), please indicate this clearly. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name, and, if available, the e-mail address of each author.

**Corresponding author.** Clearly indicate who is willing to handle correspondence at all stages of refereeing and publication, also post-publication. **Ensure that telephone and fax numbers (with country and area code) are provided in addition to the e-mail address and the complete postal address.**

**Present/permanent address.** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

**Abstract.** A concise and factual abstract is required (maximum length 200 words). The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separate from the article, so it must be able to stand alone. References should therefore be avoided, but if essential, they must be cited in full, without reference to the reference list.

**Keywords.** Immediately after the abstract, provide a maximum of 6 keywords, to be chosen from the APA list of index descriptors. These keywords will be used for indexing purposes.

**Abbreviations.** Define abbreviations that are not standard in this field at their first occurrence in the article: in the abstract but also in the main text after it. Ensure consistency of abbreviations throughout the article.

**N.B. Acknowledgements.** Collate acknowledgements in a separate section at the end of the article and do **not**,

therefore, include them on the title page, as a footnote to the title or otherwise.

**Shorter Communications** This option is designed to allow publication of research reports that are not suitable for publication as regular articles. Shorter Communications are appropriate for articles with a specialized focus or of particular didactic value. Manuscripts should be between 3000 - 5000 words, and must not exceed the upper word limit. This limit includes the abstract, text, and references, but not the title pages, tables and figures.

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**Acknowledgements.** Place acknowledgements, including information on grants received, before the references, in a separate section, and not as a footnote on the title page.

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**References** Responsibility for the accuracy of bibliographic citations lies entirely with the authors

**Citations in the text:** Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications should not be in the reference list, but may be mentioned in the text. Citation of a reference as 'in press' implies that the item has been accepted for publication.

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Reference to a chapter in an edited book: Mettam, G. R., & Adams, L. B. (1994). How to prepare an electronic version of your article. In B. S. Jones, & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281-304). New York: E-Publishing Inc.

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## Appendix N

Table 4. Results of Spearman's rho correlations for change score between distress at time of hearing voice and distress moments after and MQ, MAAS, PANAS, BAVQ-R and meditation practice.

Correlations

			change score between distress when heard voice to distress moments after	MQ voices total 12 item
Spearman's rho	change score between distress when heard voice to distress moments after	Correlation Coefficient	1.000	.019
		Sig. (2-tailed)	.	.890
		N	58	58
	MQ voices total 12 item	Correlation Coefficient	.019	1.000
		Sig. (2-tailed)	.890	.
		N	58	59
	TOTALMAAS	Correlation Coefficient	-.050	.445**
		Sig. (2-tailed)	.708	.000
		N	58	59
	POSITIVE AFFECT SCALE	Correlation Coefficient	.079	.250
		Sig. (2-tailed)	.555	.056
		N	58	59
	NEGAQTIVE AFFECT SCALE	Correlation Coefficient	.066	-.677**
		Sig. (2-tailed)	.623	.000
		N	58	59
	MALEVOLENCE	Correlation Coefficient	-.033	-.542**
		Sig. (2-tailed)	.809	.000
		N	57	58
	BENEVOLENCE	Correlation Coefficient	-.072	.049
		Sig. (2-tailed)	.592	.715
		N	57	58
	OMNIPOTENCE	Correlation Coefficient	.036	-.637**
		Sig. (2-tailed)	.788	.000
		N	57	58
	ENGAGEMENT	Correlation Coefficient	-.033	-.033
		Sig. (2-tailed)	.807	.806
		N	58	59
	RESISTANCE	Correlation Coefficient	.083	-.494**
		Sig. (2-tailed)	.538	.000
		N	58	59
	meditation practice	Correlation Coefficient	-.081	.080
		Sig. (2-tailed)	.548	.545
		N	58	59

Correlations

			TOTALMAAS	POSITIVE AFFECT SCALE
Spearman's rho	change score between distress when heard voice to distress moments after	Correlation Coefficient	-.050	.079
		Sig. (2-tailed)	.708	.555
		N	58	58
MQ voices total 12 item		Correlation Coefficient	.445**	.250
		Sig. (2-tailed)	.000	.056
		N	59	59
TOTALMAAS		Correlation Coefficient	1.000	.367**
		Sig. (2-tailed)	.	.004
		N	59	59
POSITIVE AFFECT SCALE		Correlation Coefficient	.367**	1.000
		Sig. (2-tailed)	.004	.
		N	59	59
NEGAQTIVE AFFECT SCALE		Correlation Coefficient	-.684**	-.368**
		Sig. (2-tailed)	.000	.004
		N	59	59
MALEVOLENCE		Correlation Coefficient	-.322*	-.080
		Sig. (2-tailed)	.014	.551
		N	58	58
BENEVOLENCE		Correlation Coefficient	-.088	.088
		Sig. (2-tailed)	.513	.513
		N	58	58
OMNIPOTENCE		Correlation Coefficient	-.419**	-.351**
		Sig. (2-tailed)	.001	.007
		N	58	58
ENGAGEMENT		Correlation Coefficient	-.156	.155
		Sig. (2-tailed)	.237	.242
		N	59	59
RESISTANCE		Correlation Coefficient	-.346**	-.149
		Sig. (2-tailed)	.007	.260
		N	59	59
meditation practice		Correlation Coefficient	.269*	.125
		Sig. (2-tailed)	.040	.347
		N	59	59

Correlations

			NEGAQTIVE AFFECT SCALE	MALEVOL ENCE	BENEVOL ENCE
Spearman's rho	change score between distress when heard voice to distress moments after	Correlation Coefficient	.066	-.033	-.072
		Sig. (2-tailed)	.623	.809	.592
		N	58	57	57
MQ voices total 12 item		Correlation Coefficient	-.677**	-.542**	.049
		Sig. (2-tailed)	.000	.000	.715
		N	59	58	58
TOTALMAAS		Correlation Coefficient	-.684**	-.322*	-.088
		Sig. (2-tailed)	.000	.014	.513
		N	59	58	58
POSITIVE AFFECT SCALE		Correlation Coefficient	-.368**	-.080	.088
		Sig. (2-tailed)	.004	.551	.513
		N	59	58	58
NEGAQTIVE AFFECT SCALE		Correlation Coefficient	1.000	.468**	.017
		Sig. (2-tailed)	.	.000	.897
		N	59	58	58
MALEVOLENCE		Correlation Coefficient	.468**	1.000	-.248
		Sig. (2-tailed)	.000	.	.061
		N	58	58	58
BENEVOLENCE		Correlation Coefficient	.017	-.248	1.000
		Sig. (2-tailed)	.897	.061	.
		N	58	58	58
OMNIPOTENCE		Correlation Coefficient	.624**	.605**	-.060
		Sig. (2-tailed)	.000	.000	.654
		N	58	58	58
ENGAGEMENT		Correlation Coefficient	.055	-.160	.815**
		Sig. (2-tailed)	.681	.231	.000
		N	59	58	58
RESISTANCE		Correlation Coefficient	.516**	.565**	-.212
		Sig. (2-tailed)	.000	.000	.110
		N	59	58	58
meditation practice		Correlation Coefficient	-.197	-.068	.096
		Sig. (2-tailed)	.135	.610	.475
		N	59	58	58



**Correlations**

			OMNIPOT ENCE	ENGAGE MENT
Spearman's rho	change score between distress when heard voice to distress moments after	Correlation Coefficient	.036	-.033
		Sig. (2-tailed)	.788	.807
		N	57	58
MQ voices total 12 item		Correlation Coefficient	-.637**	-.033
		Sig. (2-tailed)	.000	.806
		N	58	59
TOTALMAAS		Correlation Coefficient	-.419**	-.156
		Sig. (2-tailed)	.001	.237
		N	58	59
POSITIVE AFFECT SCALE		Correlation Coefficient	-.351**	.155
		Sig. (2-tailed)	.007	.242
		N	58	59
NEGAQTIVE AFFECT SCALE		Correlation Coefficient	.624**	.055
		Sig. (2-tailed)	.000	.681
		N	58	59
MALEVOLENCE		Correlation Coefficient	.605**	-.160
		Sig. (2-tailed)	.000	.231
		N	58	58
BENEVOLENCE		Correlation Coefficient	-.060	.815**
		Sig. (2-tailed)	.654	.000
		N	58	58
OMNIPOTENCE		Correlation Coefficient	1.000	.024
		Sig. (2-tailed)	.	.856
		N	58	58
ENGAGEMENT		Correlation Coefficient	.024	1.000
		Sig. (2-tailed)	.856	.
		N	58	59
RESISTANCE		Correlation Coefficient	.588**	-.064
		Sig. (2-tailed)	.000	.630
		N	58	59
meditation practice		Correlation Coefficient	-.021	.094
		Sig. (2-tailed)	.873	.479
		N	58	59

**Correlations**

			RESISTANCE	meditation practice
Spearman's rho	change score between distress when heard voice to distress moments after	Correlation Coefficient	.083	-.081
		Sig. (2-tailed)	.538	.548
		N	58	58
MQ voices total 12 item		Correlation Coefficient	-.494**	.080
		Sig. (2-tailed)	.000	.545
		N	59	59
TOTALMAAS		Correlation Coefficient	-.346**	.269*
		Sig. (2-tailed)	.007	.040
		N	59	59
POSITIVE AFFECT SCALE		Correlation Coefficient	-.149	.125
		Sig. (2-tailed)	.260	.347
		N	59	59
NEGAQTIVE AFFECT SCALE		Correlation Coefficient	.516**	-.197
		Sig. (2-tailed)	.000	.135
		N	59	59
MALEVOLENCE		Correlation Coefficient	.565**	-.068
		Sig. (2-tailed)	.000	.610
		N	58	58
BENEVOLENCE		Correlation Coefficient	-.212	.096
		Sig. (2-tailed)	.110	.475
		N	58	58
OMNIPOTENCE		Correlation Coefficient	.588**	-.021
		Sig. (2-tailed)	.000	.873
		N	58	58
ENGAGEMENT		Correlation Coefficient	-.064	.094
		Sig. (2-tailed)	.630	.479
		N	59	59
RESISTANCE		Correlation Coefficient	1.000	-.029
		Sig. (2-tailed)	.	.827
		N	59	59
meditation practice		Correlation Coefficient	-.029	1.000
		Sig. (2-tailed)	.827	.
		N	59	59

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

## Appendix O

Figure 2. Scatter plot of distress at time of hearing voice and distress moments after for each participant

# Graph

