

The Development of a State Measure of Mindfulness

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Declaration

**This work has not been submitted to any other institution,
or for any other publication.**

Abstract

Introduction

Mindfulness practice is becoming used increasingly as a treatment in clinical psychology. However there are problems with the research on mindfulness, and until recently there were no measures of mindfulness. The **Literature Review** analysed psychologists' conceptualisations of the construct of mindfulness, and compared these with Buddhist understandings. It reviewed recently developed methods of assessment of mindfulness, and concluded that there was need for a state measure of mindfulness, one that specifically included assessment of mindful concentration. The **Research Report** was concerned with the first stage in the development of a state measure of mindfulness, including mindful concentration. It was concluded that further development needed to be done, to establish adequate reliability and validity. A **Critical Appraisal** is submitted, exploring difficulties in the process of research and the limitations of the research study.

Acknowledgements

I would in particular like to thank my supervisor, Professor Gillian Hardy, whom I should have consulted more. I would like to express my thanks to the many people who participated in this research, in particular members of a local Buddhist Centre and of a local church. I would like to thank Erika Rosenberg, of the University of California, at Berkeley, for her provision of the Mindfulness Inventory.

Word Counts

Literature Review	6,539
Literature Review references	769
Literature Review Total	7,308
Research Study	11,081
Research Study References	458
Research Study Total	11,539
Critical Appraisal	2,410
Full Thesis (excluding Appendices)	21,257
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**The Conceptualisation and Assessment
of Mindfulness**

(Intended Journal: Clinical Psychology Review)

Abstract

Objectives

Mindfulness training has become a popular intervention in clinical psychology. The conceptualisation of mindfulness has been unclear and there have been few methods of assessing mindfulness. This paper reviews psychological understanding of mindfulness and compares it with Buddhist understanding of the concept. It considers recently developed measures of mindfulness.

Method

Research and review articles on mindfulness and mindfulness based treatments were identified. In particular the conceptualisation and measurement of mindfulness in relevant articles was investigated. Buddhist literature on mindfulness was investigated for its conceptualisations of mindfulness practice.

Results

The findings show that there are a variety of factors in the construct of mindfulness, and within mindfulness practice. The role of concentration in mindfulness practice has been acknowledged but not explored within clinical psychology, and there are Buddhist analyses of the beneficial effects of stable focussed concentration. There have been several measures of mindfulness recently developed, all but one being trait measures. Most are as yet unpublished.

Conclusions

Research using recently developed measures of mindfulness is required, to overcome past deficiencies in the research on mindfulness. The development of measures of state mindfulness, and of concentration within mindfulness practice, is particularly required.

Literature Search Method

Computerised literature searches were originally carried out on PSYCHLIT and MEDLINE using the key term 'mindfulness', on all years available. These were updated regularly, using PSYCHINFO, MEDLINE and then BIOSIS. On occasion references were received by email from an author in this area, or accessed by following up a citation in an article. Relevant Buddhist literature was either already known to the author, or searched through references in Buddhist books.

Introduction - Mindfulness Practice in Clinical Psychology

Mindfulness training has become an increasingly popular therapeutic intervention within clinical psychology, for the treatment of mental health problems and chronic pain, and there is an accelerating number of articles concerned with its clinical use. Mindfulness is usually taught in a therapeutic context using the 'mindfulness of breathing' meditation, in which one attempts to be continuously aware of the sensations of breathing, and also by employing other mindfulness exercises where attention is directed to general bodily sensations or to the continuous experience of thoughts and feelings. Baer, in a review of research on the clinical use of mindfulness training, summarised the dominant current psychological understanding of mindfulness thus: "...mindfulness is the nonjudgmental observation of the ongoing stream of internal and external stimuli as they arise" (Baer, 2003, p125).

Three different sets of authors, Kabat-Zinn (1982), Linehan (1993), and Teasdale and his colleagues (Segal, Williams & Teasdale, 2002) have been most influential in promoting mindfulness training in clinical practice. Each has developed a major therapeutic programme based around mindfulness training, also researching the efficacy of that treatment programme, to some extent. Kabat-Zinn developed the Stress Reduction and Relaxation Programme (SRRP) - later called Mindfulness-Based Stress Reduction (MBSR) - based upon intensive mindfulness meditation, which has been used in the treatment primarily of chronic pain and stress (Kabat-Zinn 1982, Kabat-Zinn, Lipworth & Burney, 1985; Kabat-Zinn, Lipworth, Burney & Sellers, 1987; Kabat-Zinn & Chapman-Waldrop, 1988; Kabat-Zinn, Massion, Kristeller, Peterson, Fletcher, Pbert, Lenderking & Santorelli, 1992).

Kabat-Zinn described the rationale for using mindfulness meditation for the treatment of chronic pain. He wrote: “traditional meditation texts are replete with recommendations for cultivating detachment to intense pain” and hypothesised that mindfulness meditation would bring about benefit through helping develop the ability to observe intense feeling in the body as ‘bare sensation’. He proposed that by maintaining a perspective, during periods of formal meditation, in which no mental event is accorded any content value, the strong “alarm reaction” typical of response to pain can lose its strength simply by being observed as separate. He argued that this attentional stance appears to produce “uncoupling” of the sensory component of the pain from the cognitive and affective dimensions. He also argued that the method of mindful observation cultivated in meditation can “carry over” into the tasks of everyday life (Kabat-Zinn, 1982).

The SRRP evolved into an eight week programme with a weekly group teaching session of two and a half hours (the first and last being three hours) and a seven to eight hour intensive session in the sixth week. Participants were expected to do daily homework of up to an hour’s duration. The commitment expected from the participants was high.

Three mindfulness practices were used in the SRRP: ‘sweeping’ - a gradual sweeping through the body from feet to head with one’s attention, focusing on proprioception, and with periodic suggestions of breath awareness and relaxation; mindfulness of breathing and other perceptions; hatha yoga postures, taught emphasising mindfulness.

Linehan has used mindfulness training as a core feature of her Dialectical Behaviour Therapy for borderline personality disorder (Linehan, 1993). Linehan considers the central problem in borderline personality disorder to be ‘dysregulation’, primarily

emotional, but also interpersonal, behavioural and cognitive (Linehan, 1993). DBT itself is the ‘application of a broad array of cognitive and behavior therapy strategies to the problems of BPD’ (Linehan 1993, p19) which involves the teaching of ‘emotion regulation, interpersonal effectiveness, distress tolerance, core mindfulness, and self-management skills’ (Linehan, 1993, p19). DBT is dialectical in that it explicitly employs working with opposite principles together in a dynamic balance. One of these pairs of opposite principles is ‘acceptance and change’. Linehan relates this to her experiences in studying meditation and Eastern spirituality, and states that the DBT tenets of observing, mindfulness, and avoidance of judgment are all derived from the study of Zen meditation (Linehan, 1993, pp20-21). Linehan states that mindfulness skills are the core skills to be learned in DBT, and underpin the learning of other skills. She relates mindfulness skills to overcoming ‘self-dysregulation’ and in particular to the undermining of secondary responses to primary emotions, through nonjudgmental observation and description of those primary emotions, which she also sees as an exposure technique allowing desensitisation (Linehan, 1993). In a variety of mindfulness exercises patients are instructed to ‘experience’ exactly what is happening in the moment, without either pushing it away or grabbing onto it. They are also instructed to ‘step back from’ and observe judgmental responses to their own behaviours. “The idea is to let thoughts, feelings, and sensations come and go, rise and fall away, without attempting to exert control” (Linehan, 1993, p354).

Teasdale and his colleagues have developed a “cost-efficient, group, skills-based programme”, Mindfulness Based Cognitive Therapy (MBCT), for the prevention of relapse in depression. (Teasdale, 1999a, p153). They follow Kabat-Zinn’s approach to teaching mindfulness, with an eight session training adapted from the SRRP. MBCT

employs the ‘mindfulness of breathing’ meditation as well as other mindfulness exercises. They teach MBCT to people who have recovered from an episode of depression, to enhance relapse-prevention through the development of ‘metacognitive insight’ or ‘metacognitive awareness’ which allows the experiential processing of thoughts and emotions, and inhibits the cycle of ‘depressive interlock’ that involves endless rumination about the content of thoughts and emotions. Metacognitive awareness is seen as a cognitive set in which negative thoughts and feelings are seen as passing mental events rather than aspects of self (Teasdale, Moore, Hayhurst, Pope, Williams & Segal, 2002).

Other forms of therapy have also been developed which are related to mindfulness training. There is Relapse Prevention (Marlatt & Gordon, 1985, Marlatt 1994) for use in drug dependency. Marlatt recognises addiction as an inability to accept the present moment, with a persistent search for the next “high”. Mindfulness is used as a technique to develop acceptance of the present moment and to cope with such urges (Marlatt, 1994). Acceptance and Commitment Therapy employs interventions closely akin to mindfulness, in particular encouragement to experience thoughts and feelings as they arise, without judging or evaluating them (Kohlenberg, Hayes & Tsai, 1993). There is also Hakomi, an experiential psychotherapy which explicitly employs mindfulness to help deal with strong emotion (Kurtz, 1990).

There have been various research studies of the effectiveness of mindfulness-based treatments. Kabat-Zinn et al. undertook a series of studies (Kabat-Zinn 1982, Kabat-Zinn *et al.* 1985, 1987, 1988, 1992) looking at the efficacy of SRRP. Linehan and colleagues (Linehan, Armstrong, Suarez, Allmon & Heard, 1991; Linehan, Heard &

Armstrong, 1993; Linehan, Tutek, Heard & Armstrong 1994) investigated the treatment effects of DBT. Methodological shortcomings in such studies mean that one cannot conclude that mindfulness was the operative factor in these treatments, though the results are suggestive of benefit from the mindfulness-based treatment programmes. Each treatment approach has many different factors which could be operative, and typically there were no measures of mindfulness. Bishop (2002), in a review and critical evaluation of Mindfulness Based Stress Reduction, concluded that there was relatively little research upon it, with published work full of methodological problems. He concluded that little was known about the effectiveness of MBSR, that the evidence showed it may have promise as a treatment approach, but that the evidence did not support a strong endorsement of it.

One major problem with research on mindfulness based treatments has been the lack of a means of assessing mindfulness. A partial exception to this is some work by Teasdale et al., who have explored the effectiveness of MBCT (Teasdale *et al.*, 2002) at inhibiting depressive relapse, and whether any such effectiveness is related to increased 'metacognitive awareness'. They used a measure, the Measure of Awareness and Coping in Autobiographical Memory (MACAM), derived from interviewer ratings, concerned with the ability to discriminate thoughts and feelings from self. This measure may be viewed as an indirect means of assessing mindfulness, if the latter is conceived as the ability to discriminate self from thoughts and feelings. People treated with MBCT had significantly fewer relapses. MACAM scores for those treated with MBCT were also higher, indicating a 'medium effect size' (0.60) of treatment. Analysis of covariance, with age as a covariate, also revealed a significant treatment effect on MACAM scores.

However MACAM does not explore nonjudgmental attitude and general awareness of current experience, and therefore is not a measure of the core features of mindfulness identified by Baer. One other study, on the use of mindfulness in binge eating disorder, had a measure of mindfulness, a simple self-rating of 'sense of mindfulness during eating' (Kristeller & Hallett 1999). Decrease in number of binges and increase in sense of eating control were significantly correlated with increase in sense of mindfulness ($r=0.76$, $p<.001$ and $r=0.58$, $p<0.025$ respectively). Amount of eating meditation practice also correlated very significantly with improvement in binge eating ($r=0.66$, $p<0.01$); however there was no correlation between amount of meditation practised and improvement in sense of mindfulness.

Research on mindfulness was reviewed by Baer (Baer, 2003). Baer's meta-analysis of research on mindfulness-based treatments reported a mean post-treatment effect size, for 15 independent studies, of 0.74, (SD = 0.39), with a range of .08 to 1.65. When the effect sizes were weighted by sample size the effect size was 0.59. The mean of follow-up effect sizes was also 0.59 (SD=0.41). She concluded: "...on the average, the literature reviewed here suggests that mindfulness-based interventions have yielded at least medium sized effects, with some effect sizes falling within the large range" (Baer, 2003, p135)

Brown and Ryan (2003) developed the Mindful Attention Awareness Scale (MAAS) and then used it to assess change in a group of cancer patients participating in an MBSR course. They studied a group of patients with cancer participating in an MBSR course, using the MAAS, and investigating the relationship between MAAS scores over time

and measures of depression, anxiety and stress. There was no overall change in MAAS scores, between pre-treatment and post-treatment, in the sample as a whole. However, when they performed a multiple regression analysis, controlling for pain and fatigue scores, they discovered statistically significant correlations between increases in MAAS scores and decreases in scores on the Profile of Mood States questionnaire (one used in psycho-oncology and health research). Thus increased mindfulness was associated with a decline in 'tension/anxiety' ($p < .05$), 'depression' ($p < .01$), 'fatigue' ($p < .05$) and 'confusion' ($p < .01$), once one controlled for pain and fatigue scores. This provides some evidence of mindfulness (as measured by their questionnaire) being a factor in therapeutic change, although not compelling evidence.

The MAAS is a trait measure, not concerned with nonjudgmental acceptance of current experience, but rather with the undistracted awareness of what one is currently doing. This, combined with Teasdale's conceptualisation of mindfulness as metacognitive insight, raises the issue of what precisely mindfulness is, and what different aspects or factors it may have. Other measures have also now been developed, though unpublished, with different interpretations of mindfulness to that in the MAAS. These will be discussed later.

The Conceptualisation of Mindfulness

Baer writes that mindfulness: 'has been described as "bringing one's complete attention to the present experience on a moment-to-moment basis"... and as "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally"... All suggest that mindfulness should be practised with an attitude of nonjudgmental acceptance. That

is, phenomena that enter the individual's awareness during mindfulness practice, such as perceptions, cognitions, emotions, or sensations, are observed carefully, but not evaluated as good or bad, true or false, healthy or sick, or important or trivial...' (Baer 2003, p125). Contained in this summation are references to two factors: (i) deliberately paying full attention to present experience, and (ii) adopting a nonjudgmental attitude to that experience.

Kabat-Zinn views mindfulness as 'detached observation'. He considers that meditation "can be defined as the intentional self-regulation of attention from moment to moment" (Kabat-Zinn 1982, p34). He argues that there are two main types of meditation practice, concentration meditation and mindfulness meditation. He considers that concentration meditation involves the "restriction of attention to a single point or object", whereas mindfulness meditation, whilst it "presupposes concentration to maintain steady attention..." nevertheless "emphasises the detached observation, from one moment to the next, of a constantly changing field of objects". He states that this "flexibility is achieved by concentrating on one primary object (commonly the successive flow of inbreaths and outbreaths), until attention is relatively stable, and then allowing the field of objects of attention to expand (usually in stages) to include, ultimately, all physical and mental events..." By "detached observation" he means that the "objects of observation are intentionally regarded with an effort to avoid judgment or interpretation" (Kabat-Zinn 1982, p34).

Both factors mentioned by Baer are included in this understanding of mindfulness.

Kabat-Zinn introduces another factor, which he distinguishes from mindfulness but considers necessary to mindfulness practice, the deliberate cultivation of concentration

‘to maintain steady attention’. Moreover he also views ‘detached observation’ as involving avoidance of interpretation of experience.

Linehan (1993) states that “mindfulness skills are central to DBT; they are so important that they are referred to as “core” skills.” She distinguishes three mindfulness “what” skills, and three “how” skills. She terms the three “what” skills “observing”, “describing” and “participating”, and the “how” skills “taking a non-judgmental stance”, “focussing on one thing in the moment”, and “being effective (doing what works)”.

With regard to “observing” she writes: “What the patient learns here is simply to allow herself to experience with awareness, in the moment, whatever is happening, rather than leaving a situation or trying to terminate an emotion.” By ‘describing’ Linehan means the skill of “describing events and personal responses in words”. With regard to “describing” she writes: “Learning to describe requires that the individual learn not to take her emotions and thoughts literally - that is, as literal reflections of environmental events.” Linehan contrasts this with not being able to identify thoughts as thoughts and external events as external events, confusing the two things. The third core mindfulness ‘what’ skill she sees as “the ability to participate without self-consciousness” by which she means “entering completely into the activities of the current moment, without separating oneself from ongoing events and interactions”. She distinguishes mindful participation from ‘mindless’ participation, the latter being participation without paying attention (Linehan, 1993, pp144-147).

Linehan stresses the importance of the first ‘how’ skill, taking a nonjudgmental stance, for the person with borderline personality disorder, to overcome the extremes of

idealisation and devaluation to which they can be prone. She emphasises that DBT involves stressing the consideration of the consequences of behaviours and events, instead of judging them good or bad. With regard to the second 'how' skill she writes: "patients must be taught how to focus their attention on one task or activity at a time, engaging in it with alertness, awareness, and wakefulness". The third 'how' skill, being effective, is concerned with doing what is actually needed in a situation, rather than what is 'right'.

Linehan's understanding of mindfulness includes the two factors that Baer mentions, which Linehan terms 'observing' and 'taking a nonjudgmental stance', but also other factors: concentration ('focussing on one thing in the moment'), 'describing', 'participating' and 'being effective'. 'Describing' is actually the use of verbal language, i.e. a conceptual activity, and thus a form of interpretation. It also involves being able to distinguish between thoughts and external events.

Teasdale and his colleagues see mindfulness as a form of 'metacognitive awareness' or 'metacognitive insight' which breaks up what they term 'depressive interlock' by involving the experiential processing of thoughts rather than ruminative 'thinking about' the content of thoughts. Teasdale writes: "...the essence of mindfulness is to use the intentional control of attention to establish a type of alternative information processing configuration (or cognitive mode) that is incompatible with the depressive interlock configuration". Teasdale quotes Kabat-Zinn: "Mindfulness has been defined as 'paying attention in a particular way, on purpose, in the present moment, and non-judgmentally'" (Teasdale, 1999, p 154). He also describes the mindful state as one involving a 'shift in cognitive set involving "decentering" or "disidentification", in which, rather than simply

being their emotions, or identifying personally with negative thoughts and feelings, patients relate to negative experiences as mental events in a wider context or field of awareness'. 'Metacognitive awareness refers to the extent to which thoughts, for example, are experienced as thoughts (mental events) rather than as aspects of self or direct reflections of truth' (Teasdale *et al.*, 2002, pp276 & 277).

Teasdale's understanding of mindfulness involves several factors: attending to current experience (especially thoughts and feelings); being nonjudgmental about the contents of experience; controlling attention intentionally; 'decentering' or 'disidentification'; and experiential processing of thoughts rather than rumination about their content. Within MBCT training other possible aspects of mindfulness are mentioned. Segal *et al.* describe the skills to be learned in MBCT as 'concentration'; 'awareness/mindfulness of thoughts, emotions/feelings, bodily sensations'; 'being in the moment'; 'decentering; acceptance/nonaversion, nonattachment, kindly awareness'; 'letting go'; "'being' rather than 'doing'", 'non-goal attachment, no special state to be achieved'; 'bringing awareness to the manifestation of a problem in the body' (Segal *et al.* 2002, pp93-4).

Brown and Ryan (2003) discuss the nature of mindfulness. They quote Nyanaponika's description of mindfulness as the "clear and single-minded awareness of what actually happens to us and in us at the successive moments of perception". They distinguish 'awareness' and 'attention' as complementary aspects of consciousness, each present in normal functioning. By 'awareness' they mean "the background 'radar' of consciousness, continually monitoring the inner and outer environment. One may be aware of stimuli without them being at the center of attention". By 'attention' they mean "a process of focussing conscious awareness, providing heightened sensitivity to a

limited range of experience”. They continue: “In actuality, awareness and attention are intertwined, such that attention continually pulls ‘figures’ out of the ‘ground’ of awareness, holding them focally for varying lengths of time” (Brown & Ryan, 2003, p822).

They further write that “mindfulness can be considered an enhanced attention to and awareness of current experience or present reality. Specifically, a core characteristic of mindfulness has been described as *open* or *receptive* awareness and attention...which may be reflected in a more regular or sustained consciousness of ongoing events and experiences” (Brown & Ryan, 2003, pp822-3). Brown and Ryan contrast this with “consciousness that is blunted or restricted in various ways. For example rumination, absorption in the past, or fantasies or anxieties about the future can pull away from what is taking place in the present.” They also contrast mindfulness with compulsive or automatic behaviour, and with the defensively motivated refusal to acknowledge or attend to an aspect of internal or external experience. In their development of a means of assessing mindfulness, the MAAS, Brown and Ryan emphasise mindfulness as the awareness of current experience, and do not explore the aspect of nonjudgmental attitude to that experience.

Brown and Ryan also note similarities between ‘mindfulness’, understood in this way, and other constructs. They note that ‘emotional intelligence’ involves perceptual clarity about one’s emotional states, and expect that mindfulness, insofar as it involves receptive attention to psychological states, would be associated with such clarity. They also note the similarity with receptivity to and interest in new experiences of the ‘openness to experience’ dimension of personality.

They also distinguish mindfulness from various forms of self awareness, such as ‘private self consciousness’, ‘self reflectiveness’, and ‘self monitoring’. They characterise all these as involving cognitive operations on aspects of self through self-examination, which they collectively term ‘reflexive awareness’ and contrast with their understanding of mindfulness as having “little or no inherent relation to reflexive thought” (Brown & Ryan, 2003, p823). Furthermore Brown and Ryan contrast mindfulness to “the trait of *absorption*... a propensity to enter trancelike states of consciousness, which represents being ‘out of touch’ with what is presently occurring” (Brown & Ryan 2003, p827).

Other traits are at times included as aspects of mindfulness practice: “..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 judgments or reactivity” (Segal *et al.*, 2002, p227). Baer (2004) quotes Kabat-Zinn: “..mindfulness includes an affectionate, compassionate quality within the attending, a sense of openhearted, friendly presence and interest”.

Overall, mindfulness, and mindfulness practice, appear to be complex, with a variety of different factors, each of which might contribute to therapeutic change, and there are differences of emphasis about which factors are important. There is also disagreement, in that there is acknowledgement that mindfulness may at times include some degree of conceptualisation about, or interpretation of, the contents of experience (such as Linehan’s “describing” skill), whilst a contrast with cognitive activity is also on occasion emphasised.

Concentration has an ambiguously understood relationship to mindfulness. Kabat-Zinn contrasts concentration and mindfulness meditations but refers to the importance of concentration in mindfulness practice. In MBCT concentration is recognised as very important: “the ability to deploy and maintain attention on a particular focus is central to all other aspects of MBCT” (Segal *et al.*, 2002, p93). Emphasis is nevertheless usually placed upon nonjudgmental awareness.

Mindfulness as a Buddhist Concept.

Analayo (2003) has discussed the relationship between mindfulness and concentration in his work on the ‘four foundations of mindfulness’. With regard to specifically Buddhist spiritual goals he writes (Analayo, 2003, p88): “The central point that emerges when considering the relationship between calm and insight is the need for balance. Since a concentrated mind supports the development of insight, and the presence of wisdom in turn facilitates the development of deeper concentration, calm (*samatha*) and insight (*vipassana*) are at their best when developed in skilful cooperation.” (‘Calm’ here is synonymous with stable deep meditative concentration.)

Within Buddhism there are alternative understandings of the importance of cultivating stable focused concentration. In particular there are differences in understanding what level of concentration needs to be cultivated in order to be able to effectively develop insight. Within the Vipassana school, and also within other schools, there have been teachers who emphasise that only a relatively weak level of concentration (*khanika samadhi* - ‘moment to moment concentration’) needs be developed, and that the further development of stronger samadhi (known as *dhyana*) is not necessary and may even be

counter-productive. The weaker level of samadhi is then used as a basis for insight practice - insight practice using mindfulness of current experience as its core feature, although often moving beyond this.

Such schools can downplay, or even criticise, the cultivation of deep meditative concentration. Thich Nhat Hanh in particular is influential in promoting mindfulness practice (Thich Nhat Hanh, 1988). He is an exponent of the Vietnamese form of Chan (Zen) Buddhism. Within the Chan schools there has long been criticism of meditative absorption (Bielefeldt, 1986) with emphasis instead on *shikan taza* 'just sitting' - a mindfulness practice in the sense of cultivating awareness of one's current experience. In contrast, other teachers emphasise the importance of meditative concentration (e.g. Ayya Khema, 1997; Kamalashila, 1992).

The Sanskrit term translated into English as 'mindfulness' is *smṛti*, which had the original meaning of 'memory'. The two main Buddhist technical meanings of the term *smṛti* are 'memory' and 'awareness'. As it is put in one text: *smṛti* "is not to let what one knows slip away from one's mind. Its function is not to be distracted" (Asanga, 4th Century, quoted in Sangharakshita, 1998, p.104). As one commentator wrote "... as this quotation from the *Abhidharmasamuccaya* suggests, the primary meaning of the word is 'recollection' or even 'memory'. Sometimes *smṛti* quite clearly means recollection or memory, while in other contexts it obviously refers to being aware of something here and now, and sometimes its meaning is a synthesis of the two, which one could term 'mindfulness'" (Sangharakshita, 1998, p105).

Within meditation *smṛti* can simply mean memory of what one is supposed to be doing, i.e. remembering to continue to focus on the object of meditation. There is a particular metaphor used within the Tibetan tradition, relating *smṛti* to the development of 'calm abiding' (*samatha*): "Calm abiding is a state in which one sets one's mind on an object of observation... Setting the mind on the object is likened to tying an elephant to a post. The rope symbolizes mindfulness...; the post symbolizes the object of observation; the elephant symbolizes one's mind..." (Lati Rinbochay, Denma Locho Rinbochay, Zahler & Hopkins, 1983, p50). Tibetan tradition also refers to mindfulness as the antidote to 'forgetting the precept' i.e. losing the chosen object of concentration. Thus here 'mindfulness' refers to continuous non-forgetfulness, with the function of inhibiting distractability.

The other major use of the term *smṛti* refers to awareness of one's current experience. Nyanaponika translates mindfulness as "bare attention", and in an often quoted statement describes it thus: "bare attention is the clear and single-minded awareness of what actually happens to us and in us, at the successive moments of perception." Furthermore he sees it as a "bare registering of the facts observed, without reacting to them by deed, speech or by mental comment which may be one of self-reference (like, dislike etc), judgement or reflection..." (Nyanaponika, 1983, p30). Thus Nyanaponika describes two factors to mindfulness - awareness of current experience, and non-reactivity to that experience. According to Nyanaponika non-reactivity itself, however, has more than one facet - not judging, and a lack of behavioural, emotional or cognitive response.

Within Buddhist tradition there have been two major and closely related ways of cultivating mindfulness: the mindfulness of breathing meditation, and the practices of the ‘four foundations of mindfulness’ (*satipatthana*). The mindfulness of breathing meditation involves cultivating a sustained focus of attention upon the sensations of breathing. The four foundations of mindfulness involve focusing attention upon (i) the body and bodily actions (ii) ‘feelings’ (i.e. the hedonic tone of experiences, whether pleasant, painful or ‘neutral’) (iii) mental states, especially emotional states, and (iv) specific aspects of mental states (Analayo, 2003). The ‘foundations of mindfulness’ go beyond ‘bare attention’ and involve cultivating a conceptual and metacognitive recognition of specific aspects of one’s experience, for example that the experiences that arise are impermanent and not aspects of a ‘self’, or that one’s emotional reactions have an ethical status, whether ‘skilful’ or ‘unskilful’ (to use the Buddhist ethical terms), and have consequences. Such metacognitive aspects to mindfulness practice are described in early texts on mindfulness practice attributed to the Buddha (e.g. *Satipatthanasutta*, see Analayo, 2003).

Kabat-Zinn describes practising mindfulness focussed upon one’s breathing until sufficient concentration is achieved so that a person can then focus on the flow of their thoughts. He refers in this context to the development of ‘moment to moment awareness’. This is probably an implicit reference to *khanika samadhi*. Within the technicalities of Buddhist analyses of mental states *khanika samadhi* closely corresponds to ‘access concentration’ (*upacara samadhi*). This latter refers to continuous uninterrupted mental focus upon a specific object of meditative concentration, without one’s attention being captured by anything else. *Khanika samadhi* is this level of mental

stability of focus applied not to a specific object of concentration but to whatever arises in one's experience, thoughts and feelings in particular.

Sustained concentration is a factor that complicates analysis of the effects of mindfulness meditation. Buddhist tradition recognises meditative concentration itself as having effects upon the mind. The importance of concentration is highlighted if one considers some of the many mental factors (*caittasika*), or mental qualities, traditionally recognised as being associated with healthy, stable concentration. Four *caittasikas* of particular psychological and psychotherapeutic interest are 'tranquillity', 'agility', 'pliancy' and 'workability' (*passadhi, lahuta, muduta, kammannata*). These have been described by Kamalashila (1992, p175), who writes that deep concentration:

“...is characterised by tranquillity or *passadhi*... this means the whole process of calming down, relaxing and releasing unresolved energy. With this release of energy comes a general agility of mind (*lahuta*) - we become increasingly buoyant, light, quick-witted. No concerns are weighing us down, and this freedom gives us the capacity to turn our mind quickly to any object we chose. With this agility positive emotions... arise very quickly, and we can work very clearly and quickly in meditation. There is a quality of emotional freedom. There is no rigidity or hardness. On the contrary, we feel receptive and adaptable in spirit.... this is sometimes called pliancy (*muduta*). Though the mind feels soft and pliant, that doesn't mean it is weak. This softness implies a kind of strength - because there is no brittleness, no tendency to fragment, the mind can really work. So another characteristic of higher consciousness is workability (*kammannata*)...”

The implication of this is that cultivating stable concentration involves the development of qualities of mind which enable one to work with one's mind much more easily, and which thereby enable one to be aware of one's thoughts and feelings without reacting to them automatically.

The Measurement of Mindfulness

Various scales to assess mindfulness have now been devised, although some have only very recently been published and others remain unpublished.

Teasdale and his associates developed the 'Measure of Awareness and Coping in Autobiographical memory (MACAM), which measures metacognitive insight into depressive thoughts and feelings - the ability to recognise and discriminate negative thoughts and feelings, especially within a mildly depressed mood state. It is employed by an interviewer, who rates the metacognitive awareness of a participant/patient who recalls in turn situations similar to mildly depressing situations presented on a tape. This rating has five levels: 1 - minimal discrimination of different thoughts and feelings; 2 - discrimination of different thoughts and feelings; 3 - some discrimination of self and own reactions from the situation; 4 - discrimination of self from thoughts and feelings; 5 - persistent or extensive distancing from thoughts and feelings (Teasdale, Moore, Hayhurst, Pope, Williams & Segal 2002).

Rosenberg has developed the unpublished Mindfulness Inventory (MI). This is a twenty item self report inventory with four subscales: 'mindfulness', 'wellbeing', 'patience' and 'wonderment'. Two of the subscales, 'well-being' and 'wonderment' measure factors

not usually considered aspects of mindfulness. The ‘mindfulness’ subscale is four items assessing getting ‘lost’: ‘I often lose track of time’; ‘I rarely get lost in what I am doing’; ‘People tell me that I am frequently lost in my thoughts’; ‘Sometimes I am so involved in what I am doing that I completely lose track of time’ (Rosenberg, private communication; see appendix 4).

The unpublished Toronto Mindfulness Scale was developed by Bishop et al. (Bishop, Lau, Segal, Anderson, Abbey, Devins, Shapiro, Carlson & Carmody, 2003, unpublished) who define mindfulness to be a “metacognitive skill that facilitates greater awareness of thoughts and feelings and a capacity to relate to them from a decentered perspective so that they are experienced as passing events in the mind rather than inherent aspects of the self or valid reflections of reality”. It is a state measure, of ten items, which assesses openness and acceptance of current experience. It has items such as... ‘I approached each experience by trying to accept it, no matter whether it was pleasant or unpleasant’ and ‘I found myself observing unpleasant feelings without getting drawn into them’ (Appendix 5a).

The Freiburg Mindfulness Questionnaire (Buchheld & Walsch, 2002) is a trait measure, similar to the Toronto Mindfulness Scale in its assessment of openness to experience (Appendix 5b). In the study reported it was administered twice to participants, once at the beginning and once at the end of mindfulness retreats. A factor analysis of answers for questionnaires at the beginning of the retreats revealed a fourfold factor structure. The same was true of the answers for questionnaires administered at the end of the retreats, although these factors were somewhat different. The factors were, at time 1: ‘present, non-identificatory attention’, ‘accepting non-judgmental attitude’, ‘holistic

acceptance' and 'processful insightful understanding'. At time 2 the factors were: 'present, non-identificatory attention', 'accepting neutral attitude', 'processful understanding' and 'present-ness'. The authors state that these factors 'reflect the theoretical-conceptual characteristics of mindfulness'. They also claim that the data indicate 'one-dimensionality of the construct and the presence of a general factor'. Inspection of the questions of the FMQ reveals other aspects of mindfulness practice included, such as disidentification with thoughts, and kindness towards oneself.

Brown and Ryan (2003) have devised the Mindful Attention Awareness Scale (MAAS), a trait measure for use with the general population. This does not investigate nonjudgmental acceptance and openness, but focuses upon non-distracted awareness of current experience. It is an indirect item scale, as the process of development of the scale left items measuring mindlessness rather than mindfulness. It has items concerned with losing awareness of what one is doing and acting automatically (Appendix 5c).

Three other recently developed but unpublished scales are mentioned by Baer (2004):

The Cognitive Affective Mindfulness Scale (CAMS) is a 12 item scale assessing a traitlike general tendency. It has four contents areas, awareness, attention, acceptance, present focus, with respect to thoughts and feelings. Sample questions are: 'I try to notice my thoughts without judging them'; 'it is easy for me to concentrate on what I am doing'; 'I am able to accept the thoughts and feelings I have'.

The Chadwick Mindfulness Questionnaire (CMQ) has been developed, with a specific use in psychosis, though it comes in two forms, one of which can be used by the general

population. It has sixteen items, with a seven point scale ('agree totally' to 'disagree totally'). The items are concerned with reactions to hearing voices or having distressing thoughts or images. Items begin either with 'usually when I hear voices' or 'usually when I have distressing thoughts or images'. There are four facets - mindful observation, letting go, absence of aversion, non-judging - with the following item endings exemplifying each: 'I am able just to notice them without reacting', 'I feel calm soon after', 'I am able to accept the experience' and 'I judge the thought/image as good or bad'.

The Kentucky Inventory of Mindfulness Skills (KIMS) is based on Dialectical Behaviour Therapy. It has 39 items, looking at four areas - 'observe', 'describe', 'act with awareness', 'accept without judgment'. Each of these is exemplified by the following items: 'I notice when my moods begin to change', 'I'm good at finding words to describe my feelings', 'when I do things, my mind wanders off and I'm easily distracted', 'I tell myself I shouldn't be feeling the way I'm feeling'.

Baer (2004) has investigated six of these mindfulness scales - the MAAS, Toronto, CAMS, KIMS, FMQ and CMQ. She used a sample of 612 students. Her procedure was to have them complete the five trait questionnaires, then do a ten minute breathing meditation, and finally complete the Toronto scale. Baer found that each questionnaire was internally consistent for her sample. Correlations between scales were very significant, ranging between 0.31 (MAAS vs Freiburg) and 0.67 (CAMS and Kentucky), except for the Toronto scale. There was no correlation between the Toronto scale and the MAAS or the Chadwick, and a small, significant correlation (0.16) between the Toronto and the CAMS.

In further study all scales except the Toronto had very significant negative correlations, between -0.55 and -0.31, with a score on a measure of mental health problems, the Brief Symptom Inventory. Baer also used other questionnaires to test for construct validity. The mindfulness trait scales on the whole correlated positively with measures of openness to experience, emotional intelligence, and self-compassion, and negatively with mental health problems, thought suppression, alexythemia ('no words for feelings'), experiential avoidance, absent-mindedness and dissociation. These results support the convergent and discriminant validity of the mindfulness trait scales. The state measure, the Toronto Mindfulness Scale, tended to have no correlation or small correlations,

Baer performed an exploratory factor analysis of the five mindfulness trait measures combined, revealing five factors, and then used stepwise regression analysis to discover the correlations between each of these five factors and the other measures. The five factors that emerged from exploratory factor analysis were - 'observing or noticing experience', 'acting with awareness, avoiding automatic pilot, concentration, non-distraction', 'describing or labelling with words', 'non-judging of self or experience' and 'non-reactivity to internal experience'.

Baer concludes that the existing mindfulness questionnaires appear to include five clear facets of mindfulness, and that a facet level analysis of mindfulness helps to clarify the nature of mindfulness, clarifies relations between mindfulness and other constructs, and suggests that mindfulness is not a renaming of a previously recognised construct. She also concludes that the relationship between state and trait mindfulness needs more investigation.

Conclusion

There have been commonalities and differences in the understanding of mindfulness developing within clinical psychology. Awareness of current experience, combined with a nonjudgmental attitude to that experience are the two factors most commonly mentioned. Most authors, but not all, emphasise nonjudgmentalism. There are also many other factors mentioned as being aspects of mindfulness, or of mindfulness practice. Mindfulness practice is multidimensional, and mindfulness as a construct has more than one facet. The lack of any suitable measure of mindfulness has been an important omission in research on mindfulness. Trait measures of mindfulness have now been developed, which provide the opportunity to conduct better empirical investigation of mindfulness practice, although they differ in the possible aspects of mindfulness they measure. One state measure of mindfulness has been developed, but other state measures of mindfulness are also needed, especially as mindfulness is multidimensional and the existing state measure focuses upon only one dimension. In particular a state measure of mindful concentration needs to be developed, especially as the importance of concentration in mindfulness practice, although acknowledged, has not been emphasised or investigated, and also as traditional Buddhist analysis of concentration points towards therapeutic benefits arising from the concentrated state.

References

- Analayo (2003). *Satipatthana, the direct path to realization*. Birmingham, Windhorse Publications.
- Ayya Khema (1997). *Who is my self? A guide to Buddhist Meditation*. Boston, Wisdom Publications.
- Baer, R.A. (2003). Mindfulness training as a clinical intervention: a conceptual and empirical review. *Clinical Psychology: Science and Practice*, 10, 125-143.
- Baer, R.A. (2004) Talk at conference on 'Mindfulness-based Approaches: Research, Training & Clinical Practice', Bangor University (unpublished).
- Baer, R.A., Smith, G.T. & Allen, K.B. (2004) Assessment of mindfulness by self-report: The Kentucky Inventory of Mindfulness Skills. *Assessment*, 11, 191-206.
- Bielefeldt, C. (1986), Ch'ang-lu Tsung-tse's *Tso-Ch'an I* and the "secret" of Zen meditation; in Gregory (1986).
- Bishop, S.R.(2002). What do we really know about mindfulness based stress reduction? *Psychosomatic Medicine*, 64, 71-83.

Bishop, S.R., Lau, M., Segal, Z., Anderson, N., Abbey, S., Devins, G., Shapiro, S., Carlson, L. & Carmody, J. (2003). Development and Validation of the Toronto Mindfulness Scale (unpublished).

Brown, K.W. & Ryan, R.M. (2003). The benefits of being present: mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*; 84, 822-848.

Buchheld, N. & Walach, H. (2002). Achtsamkeit in Vipassana-Meditation und Psychotherapie: Die Entwicklung des "Freiburger Fragebogens zur Achtsamkeit". *Zeitschrift fuer Klinische Psychologie, Psychiatrie und Psychotherapie*, 50, 153-172.

Gregory, P.N. (Ed.) (1986). *Traditions of Meditation in Chinese Buddhism*; (Kuroda Institute; Studies in East Asian Buddhism 4). Honolulu, University of Hawaii Press,

Hayes, S.C., Jacobson N.S., Follette, V.M., & Dougher, M.J. (Eds.) (1994). *Acceptance and change: content and context in psychotherapy*. Reno, Nevada, Context Press.

Kabat-Zinn, J. (1982). An outpatient program in behavioural medicine for chronic pain patients based on the practice of mindfulness meditation: theoretical considerations and preliminary results. *General Hospital Psychiatry*, 4, 33-47.

Kabat-Zinn, J., Lipworth, L., & Burney, R. (1985). The clinical use of mindfulness meditation for the self-regulation of chronic pain. *Journal of Behavioural Medicine*, 8, 163-190.

Kabat-Zinn, J., Lipworth, L., Burney, R. & Sellers, W. (1987). Four-year follow-up of a meditation-based program for the self-regulation of chronic pain: treatment outcomes and compliance; *Clinical Journal of Pain*, 2, 159-173.

Kabat-Zinn, J. & Chapman-Waldrop, A. (1988). Compliance with an outpatient stress reduction program: rates and predictors of program completion. *Journal of Behavioural Medicine*, 11, 333-352.

Kabat-Zinn, J., Massion, A.O., Kristeller, J., Peterson, L.G., Fletcher, K.E., Pbert, L., Lenderking, W.R. & Santorelli, S.F. (1992). Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *American Journal of Psychiatry*, 149, 936-943

Kamalashila (1992). *Meditation, the Buddhist way of tranquillity and insight*. Glasgow, Windhorse Publications.

Kohlenberg, R.J., Hayes, S.C. & Tsai, M. (1993). Radical behavioral psychotherapy: two contemporary examples, *Clinical Psychology Review*, 13, 579-592

Kristeller, J.L. & Hallett, C.B. (1999). An exploratory study of a meditation-based intervention for binge eating disorder; *Journal of Health Psychology*, 4, 357-363

Kurtz, R. (1990) *Body-centered psychotherapy: the Hakomi method*. LifeRhythm.

Lati Rinbochay, Denma Locho Rinbochay, Zahler, L. & Hopkins, J. (1983). *Meditative states in Tibetan Buddhism*. London, Wisdom Publications

Linehan, M.M. (1993). *Cognitive-behavioural treatment of borderline personality disorder*. New York, The Guilford Press.

Linehan, M.M., Armstrong, H.E., Suarez, A., Allmon, D. & Heard, H.L. (1991). Cognitive-behavioural treatment of chronically parasuicidal borderline patients; *Archives of General Psychiatry*, 48, 1060-1064.

Linehan, M.M., Heard, H.L. & Armstrong, H.E. (1993). Naturalistic follow-up of a behavioural treatment for chronically parasuicidal borderline patients; *Archives of General Psychiatry*, 50, 971-974

Linehan, M.M., Tutek, D.A., Heard, H.L. & Armstrong, H.E. (1994). Interpersonal outcome of cognitive behavioural treatment for chronically suicidal borderline patients. *American Journal of Psychiatry*, 151, 1771-1776

Marlatt, G. A. (1994). Addiction, mindfulness, and acceptance. In Hayes, Jacobson, Follette & Dougher (1994; pp175-197)

Marlatt, G.A. & Gordon, J.R. (1985). *Relapse prevention: maintenance strategies in the treatment of addictive behaviours*. New York, Guilford Press

Nyanaponika Thera (1983) *The heart of Buddhist meditation*. London, Rider

Sangharakshita (1998). *Know your mind; the psychological dimension of ethics in Buddhism*. Birmingham, Windhorse Publications.

Segal, Z. V., Williams, J.M.G. & Teasdale J.D. (2002). *Mindfulness-based cognitive therapy for depression*. London, Guilford Press.

Teasdale, J.D. (1999). Metacognition, mindfulness and the modification of mood disorders. *Clinical Psychology and Psychotherapy*, 6, 146-155.

Teasdale, J.D., Williams, J.M.G., Soulsby, J.M., Segal, Z.V., Ridgeway, V.A., & Lau, M.A. (2000); Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology*, 68, 615-623.

Teasdale, J.D., Moore, R.G., Hayhurst, H., Pope, M., Williams, S., & Segal, Z.V. (2002) Metacognitive awareness and prevention of relapse in depression: empirical evidence. *Journal of Consulting and Clinical Psychology*, 70, 275-287

Thich Nhat Hanh (1988), *The sutra on the full awareness of breathing*. Berkeley, Parallax Press.

Williams, J.M.G., Teasdale, J.D., Segal, Z.V. & Soulsby, J. (2000); Mindfulness-based cognitive therapy reduces overgeneral autobiographical memory in formerly depressed patients; *Journal of Abnormal Psychology*, 109, 150-155

**The Development of a State Measure
of Mindfulness**

Abstract

Objectives.

To develop and assess the psychometric properties of a questionnaire measuring mindfulness and concentration, as state variables, for use with meditating and non-meditating participants.

Method.

A short mindfulness exercise was devised. A preliminary questionnaire was developed, to assess mindfulness and concentration during this exercise, and piloted. A second version of the questionnaire was then devised, based upon results of the pilot study. The second questionnaire was then administered to participants from one of three groups - more experienced meditators, less experienced meditators, and non-meditators. Participants' answers were analysed using facility, factor, and principal components analysis. Other questionnaires were administered to explore validity.

Results.

Selection of items with appropriate facility indices gave a twenty item subset with a five factor structure. Further selection based upon factor loadings gave a ten item subset of these twenty questions, loading onto a single factor, 'mindful concentration'.

Conclusions.

The item sets derived are promising tools for assessing aspects of state mindfulness, but require further development.

Introduction

In recent years mindfulness practice has been increasingly used for therapeutic purposes within clinical psychology. Kabat-Zinn, Linehan, and Teasdale, Segal and Williams, have each developed therapeutic interventions based upon mindfulness training. Mindfulness Based Stress Reduction, Dialectical Behaviour Therapy, and Mindfulness Based Cognitive Therapy have become major therapeutic interventions for chronic pain and stress, borderline personality disorder, and depression respectively (Kabat-Zinn, 1982; Linehan, 1993; Segal, Williams & Teasdale, 2002).

Along with the growth and dissemination of these therapeutic approaches the clinical research literature on the use of mindfulness has expanded rapidly. This research has had limitations (Baer, 2003; Bishop 2002). In particular there has been until very recently a lack of suitable measures for assessing mindfulness, a lack which seriously limits the conclusions that can be reached about whether increased mindfulness, if indeed it occurs, is the factor responsible for any health improvements in treatments based upon mindfulness training. The objective of the present study therefore was to develop a suitable measure of mindfulness.

The assessment of mindfulness has complexities. There are different facets to the construct of mindfulness. Baer writes “...mindfulness is the nonjudgmental observation of the ongoing stream of internal and external stimuli as they arise” (Baer, 2003, p125). This understanding implies that mindfulness has two facets at least, awareness of current experience, and a non-judgmental attitude to that experience. Teasdale emphasises another facet. He conceives of mindfulness as involving metacognitive awareness, or recognition, of thoughts and feelings as they arise (Teasdale, Moore, Hayhurst, Pope, William, & Segal, 2002, p277). From this perspective mindfulness practice entails the development of such metacognitive awareness, which is seen as the important factor inhibiting the development of depressive relapse through its disruption of ‘depressive interlock’.

Non-reactivity may also be a facet of mindfulness. Nyanaponika, a Buddhist writer often quoted in the psychological literature, considers mindfulness to be characterised by a “bare registering of the facts observed, without reacting to them by deed, speech or by mental comment which may be one of self-reference (like, dislike etc), judgement or reflection...” (Nyanaponika, 1983, p30).

There is also a complicating factor in understanding mindfulness, which is the issue of ‘concentration’. Kabat-Zinn explicitly mentions that mindfulness meditation, whilst it “presupposes concentration to maintain steady attention...” nevertheless “emphasises the detached observation, from one moment to the next, of a constantly changing field of objects” (Kabat-Zinn 1982, p34). In Mindfulness Based Cognitive Therapy (MBCT) concentration is recognised as very important: ‘the ability to deploy and

maintain attention on a particular focus is central to all other aspects of MBCT' (Segal *et al.*, 2002, p93).

Within the Buddhist theoretical or 'Abhidharma' analysis of mental states, mindfulness is seen as a factor which helps with the development and strengthening of concentration. Concentration is also recognised as helping the development and strengthening of mindfulness. This implies a feedback loop between mindfulness and concentration (Analayo, 2003). This implies that conclusions about the efficacy of mindfulness have to take into account the question of the role of concentration.

Many mental health problems can be recognised as involving the capture of attention by intrusive thoughts and feelings. Such states of mind have opposite characteristics to those of the mindful or mindfully concentrated state, and can be described as being characterised by 'mindlessness'. This term has been used (Brown & Ryan, 2003) to refer to a mental state in which awareness of current behaviour and experience is lost, so that one becomes preoccupied by thoughts and feelings concerned with past or future, and in which one functions 'on automatic pilot'. The implication therefore is that mindfulness training may help the treatment of many different mental health problems through the cultivation of improved concentration, and the consequent inhibition of such cognitive capture.

Because of the typical occurrence of poor concentration, with intrusive thoughts and feelings, in mental health problems, and the implication from this about the possible involvement of a low level of mindfulness in the maintenance of such problems, it was decided to develop a measure of mindfulness and concentration which could be used

very generally, including within clinical and research contexts. It was decided to develop a self-report questionnaire. Such an assessment tool, for use with the general adult population, must not require a specialised understanding of mindfulness, or specialised vocabulary, on the part of a person being assessed.

Questionnaire Construction

The construction of a suitable self-report questionnaire has different phases. Firstly, questionnaires need to include items that adequately cover the content areas of the construct that is being assessed. A pool of items is generated to appropriately cover content areas, based upon the developers' own experience and understanding, consultation with experts in the construct being assessed, and studying the relevant literature. A suitable answering method needs to be developed, as well as a suitable instruction set. The preliminary questionnaire is then piloted and evaluated for comprehensibility and ease of use, employing participants from the target population, preferably more than once. After such piloting, a suitably sized sample of participants is then used in order to explore the psychometric properties of the item set, investigate reliability, and to make a further selection of items to constitute the next version of the questionnaire. Validity is explored by using other measures which may be theoretically expected to correlate, positively or negatively, with the target construct. Further studies can then be undertaken, to test validity further, and to use confirmatory factor analysis to explore the reliability and validity of the factor structure.

Rust and Golombok recommend the use of a simple measure, the facility index, in item analysis and selection. The facility index for an item is calculated by summing the scores for the item for each respondent, and then dividing this total by the number of respondents. Items with facility indices at or near an extreme score are usually not included in the final version of the questionnaire, because of their inability to discriminate between individuals on the attribute being assessed (Rust & Golombok, 1989). Sometimes such items may be included, because a non-typical response on such an item, when it does occur, may be informative. An item with a non-extreme facility index is also not included if the population distribution of scores for that item is very narrow. Items should also possess reasonable 'discrimination', correlating at least 0.2 with the overall questionnaire score.

Clark & Watson (1995) recommend common factor analysis or principal components analysis to analyse structure and further select questions. Items that have a loading greater than 0.35 (common factor analysis) or 0.4 (principal components analysis) onto the first non-rotated factor are recommended for retention for questionnaires targeting a single factor construct. Floyd & Widaman (1995) recommend common factor analysis as preferable to principal components analysis, as the latter can over-estimate loadings onto a factor and underestimate correlations between factors. Later confirmatory factor analysis also works less well when principal components analysis is used initially.

A multiple factor structure can be used in a questionnaire if the target construct is recognised as having different dimensions. However if the dimensions are completely independent this raises the question of whether they can be subsumed under one

construct. Ideally there should be some correlation between subscales, but not above 0.3 as they could then be subsumed into one scale (Clark & Watson, 1995).

Measures of Mindfulness

Before this study began there was one trait measure of mindfulness, the Mindfulness Inventory (MI), which had been developed, by Rosenberg (Appendix 4). Work on this measure was unpublished. The MI has twenty questions contributing to an overall score. It has four subscales: 'mindfulness', 'wellbeing', 'patience' and 'wonderment'. Two of its four dimensions - 'wellbeing' and 'wonderment' - are arguably not aspects of mindfulness. The specific subscale of 'mindfulness' on the MI is derived from answers to four questions, each of which is concerned with the notion of 'getting lost' in an activity one is doing, such getting lost being seen to be the opposite of mindfulness. This is a rather narrow item set for reasonable content validity of this subscale. The 'patience' subscale is of interest, as patience is seen in Buddhism as an important trait to develop, and it is possible that patience is associated with the non-reactivity that can be seen as an aspect of mindfulness. In a reliability study, Cronbach's alpha was 0.67 for the overall scale and 0.71 for the mindfulness subscale.

Teasdale *et al.* (2002) developed the 'Measure of Awareness and Coping in Autobiographical Memory (MACAM), a measure of awareness of thoughts and feelings, in their development of Mindfulness Based Cognitive Therapy. MACAM assesses the ability to recognise or discriminate different negative thoughts and feelings as they arise, particularly in a mildly depressed state. Whilst being related to

mindfulness, or a specific application of mindfulness, it is not a measure of general mindfulness. It is not a self-report measure but derives from interviewer ratings in a specific context of an interview concerned with depressive thoughts and feelings.

After this project began, and while data were being gathered, two trait measures of mindfulness became available, the Freiburg Mindfulness Questionnaire (Buchheld & Walach, 2002) (available in German only), and the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003). A state measure, the Toronto Mindfulness Scale (TMS; Bishop, Lau, Segal, Anderson, Abbey, Devins, Shapiro, Carlson & Carmody, unpublished), also became available.

Both the Toronto Mindfulness Scale and the Freiburg Mindfulness Questionnaire are measures which focus upon mindfulness as the non-judgmental acceptance of, and ‘openness’ towards, current experience. As a state and trait measure respectively, they complement each other in assessing mindfulness as non-judgmental acceptance of experience.

The TMS was developed by Bishop and his colleagues (Appendix 5a). They define mindfulness to be a “metacognitive skill that facilitates greater awareness of thoughts and feelings and a capacity to relate to them from a *decentered perspective* so that they are experienced as passing events in the mind rather than inherent aspects of the self or valid reflections of reality”. The TMS is a ten item scale based upon a single factor, which can be described as the nonjudgmental openness to current experience. Typical items are ‘I remained open to whatever thoughts and feelings I was experiencing’ and ‘I approached each experience by trying to accept it, no matter

whether it was pleasant or unpleasant'. Cronbach's alpha for the scale was 0.76. The ten items of the TMS were selected following principle components analysis and selection of items from the original item set that individually discriminated between groups differing in meditation experience.

The Freiburg Mindfulness Questionnaire (Buchheld & Walsch, 2002) is a thirty item trait measure which also assesses an open, nonjudgmental approach to experience. Its questions also tap other possible facets of mindfulness, such as non-identification with thoughts and feelings (Appendix 5b).

Buchheld and Walsch administered a thirty-eight item questionnaire at the beginning and end of a mindfulness meditation retreat, with the participants' answers then factor analysed. Thirty items were retained. Two somewhat different factor structures were derived, one from the answers to the first administration, the other from the second. Thus the factor structure of the questionnaire was not stable. For each a four factor structure was derived.

The factors were, at time 1: 'present, non-identificatory attention', 'accepting non-judgmental attitude', 'holistic acceptance' and 'processful insightful understanding'. At time 2 the factors were: 'present, non-identificatory attention', 'accepting neutral attitude', 'processful understanding' and 'present-ness'. The authors state that these factors 'reflect the theoretical-conceptual characteristics of mindfulness'. They also claim that the data indicate 'one-dimensionality of the construct and the presence of a general factor'. Cronbach's alpha was 0.92 and 0.94,

with average inter-item correlations of 0.32 and 0.33 for the earlier and later administrations respectively.

One limitation of the FMQ is that it was developed for use with people learning mindfulness meditation and requires training to understand its questions. The TMS also has the limitation that it requires training to use, due to its specialised vocabulary.

In direct contrast to these two scales, Brown and Ryan have developed a trait measure, the Mindful Attention Awareness Scale, for use with a more general population (Appendix 5c). This does not investigate non-judgmental acceptance and openness, but focuses upon non-distracted awareness of current experience (Brown & Ryan, 2003). Thus the MAAS differs significantly from the TMS and FMQ. The MAAS has fifteen items, each of which directly assesses the opposite of mindfulness. Example items are: 'It seems I am "running on automatic" without much awareness of what I'm doing' and 'I find myself doing things without paying attention'.

The process of item selection for the MAAS resulted in items directly assessing the opposite of mindfulness. There was an extensive study of the validity and reliability of the MAAS however, which supports its usefulness in assessing mindfulness (Brown & Ryan, 2003).

Overall these attempts at assessing mindfulness point to some of the possible factors that might bring about therapeutic change through practising mindfulness: nonjudgmental openness to experience; the metacognitive ability to recognise specific

aspects of one's experience, especially of thoughts and emotions; and the ability to remain attentive to current experience.

However, of these scales, MACAM was unsuitable for use in this study, and of the others only the Mindfulness Inventory was available at the start of this present study. The Toronto Mindfulness Scale was discovered just before main data collection; the Freiburg Mindfulness Questionnaire and Mindful Attention Awareness Scale were discovered during data collection.

Aim

The aim of the present study was to develop a state measure of mindfulness, one specifically including assessment of concentration, for use with the general adult population.

It was decided to develop a state measure, rather than a trait, in order to be able to assess mindfulness during specific periods, in particular during, or just after, a period of mindfulness practice. This is to ascertain whether such practice has had any immediate effects. A trait measure could later be developed to study longer-term effects. It was also considered that a state measure, a self-report questionnaire, concerned with experience during a specific mindfulness exercise, might prove to be a useful indicator of capacity to change in a clinical context.

The measure developed in the present study differs in various ways from each of the measures of mindfulness mentioned above, also resembling each in some way. It is a

state measure, and so resembles only the Toronto Mindfulness Scale in this regard. It is developed for use with the general population, avoiding specialist language and attitudinal measures, and in this resembles the MAAS and differs from the TMS and FMQ. Unlike the other measures, the current study involves the assessment of concentration, because of the recognised importance of concentration for mindfulness meditation.

Method

The study was divided into two, with the first phase, study 1, being concerned with selection of a mindfulness exercise, preliminary item selection and questionnaire development, piloting the exercise and questionnaire, and making changes based upon participants' responses and feedback. The second phase, study 2, was concerned with administering the questionnaire developed in study 1 to a sample of meditating and non-meditating participants, to analyse factor structure, reliability and validity, and to further select items as a result of this analysis to form a second version of the questionnaire.

Ethical permission was sought and obtained from the University of Sheffield Psychology Department's ethics committee. As no patients were being sought as participants, permission from an N.H.S. ethics committee was not required.

Study 1 - Development of mindfulness exercise and preliminary questionnaire

The first study was in three phases: selection of a mindfulness exercise; item development and preliminary questionnaire development; pilot study of the preliminary questionnaire, using meditators and non-meditators.

The measure being developed is intended for use within the general adult population, as an assessment tool, as well as for use in research on mindfulness training. (It is also hoped that further development could extend it for use with a clinical population).

Given that mindfulness meditation is used as a means of changing mental state, both in a Buddhist and in a clinical context, it was appropriate to use a short mindfulness exercise and assess a person's state during that exercise, by employing a self-report questionnaire completed immediately after the exercise.

Method

Materials

A short mindfulness and concentration exercise was devised. This was a brief, five minute period of 'mindfulness of breathing' meditation, a commonly used means of developing mindfulness, and used in both MBSR and MBCT. The emphasis in the mindfulness of breathing meditation is also upon focused mindful concentration upon the breath. Though usually omitted from the psychological conceptualisation of mindfulness, the importance of concentration is acknowledged within both MBSR and MBCT.

It was decided to give the following written instructions about how to do the exercise:

“The five minute mindfulness exercise consists of the following. Please read the instructions for it so that you know what to do before beginning the exercise:

1. sit down in a quiet room where you are not going to be disturbed by other people
2. close your eyes and let yourself get as comfortable as possible
3. when you are ready, notice the sensations of breathing
4. keep your attention focused on the sensations of breathing, as well as you can
5. if thoughts, feelings or other sensations occur, be aware of them, but keep the focus of your attention on the sensations of breathing, as well as you can
6. keep the exercise going for five minutes, then bring your attention back to the outside world and, when you are ready, open your eyes.”

These instructions were devised to include two factors - concentrated focus upon the breath, combined with awareness of other experience (rather than focus upon the breath and trying to *exclude* other experience from awareness).

A five minute period, rather than longer, was chosen in order to encourage participation, especially amongst non-meditators, although one concern was whether it would make the exercise too easy to distinguish readily between people. A longer period could be used if the shorter proved too easy. Norms could also be developed for different time periods, including full versions of the mindfulness of breathing meditation.

During the study, in order to obtain as wide a spread of answers as possible, to aid with item selection, as well as to encourage participation, it was also decided to give experienced meditators the choice to report about a five minute portion of their most recent 'mindfulness of breathing' practice, rather than the mindfulness exercise above.

Item selection and content validity

To generate a pool of potential questions with appropriate content validity, two sources of understanding of mindfulness were drawn upon: experienced meditators' understanding of mindfulness; the literature on mindfulness practice, both Buddhist and psychological. The author's own practice and study of mindfulness also informed the process of item generation.

Participants and Procedure

Seven experienced meditators from a local Buddhist Centre were interviewed about their understanding of mindfulness and concentration. Five were interviewed on their own, two interviewed together. Interviews were either at the meditators' homes or at the Buddhist Centre. The meditators were members of a Buddhist order, with a minimum of ten years experience of meditation, including mindfulness meditation. Six of them had experience teaching mindfulness meditation to beginners. Their answers were recorded by hand, and also audiotaped. The audiotapes were not transcribed but used to check for accuracy of quotation where appropriate.

They were asked the following questions:

1. What is mindfulness; what do you understand by the term 'mindfulness'?
2. What different aspects, or different dimensions are there to mindfulness?
3. Of what things can one be mindful?
4. What are the consequences of being mindful?
5. What do you understand by 'concentration', especially within meditation?

Relevant statements from each interview were selected and written down together.

The collected set of statements was then examined for general themes or content areas, regarding the aspects of mindfulness, its effects, the phenomena of which one could be mindful, and the nature of concentration.

Results

The meditators' statements concerning the nature and dimensions of mindfulness could be grouped under three broad content areas, some of which could be further subdivided. Individual statements could at times fit into more than one of these content areas.

(i) 'awareness of current experience' - noticing what one is doing, or what one is experiencing, as it is happening. Typical statements used by the meditators were:

*'mindfulness is a consciousness of what you're doing, being in the moment doing it';
'consciousness of what is actually happening'; 'deliberate awareness'; 'it's being present with your experience'.*

They also identified aspects of metacognition and reflexive awareness existing alongside awareness of current experience:

'there's a certain reflexive consciousness at work, so that you're aware you're sitting, standing...'; 'mindfulness is a kind of overview while being present in your experience'; 'it requires an inner observer'; 'one is also looking at what is happening in the mind in the sense of trying to catch the beginning of something unskilful'; 'the ability to discriminate in terms of one's actions in order to fulfil a purpose'.

(ii) 'recollection and memory of purpose' - continually remembering what one is supposed to be doing, or what one has decided to do. The meditators mentioned:

'part of that mindfulness is remembering what you're doing so you don't get distracted'; 'recollectedness - bringing ourselves back, an act of remembering'; 'continuity of purpose'; 'mindfulness of purpose'; 'remembering to be aware in the specific context of Buddhist practice'.

One mentioned recollection in explicit association with awareness and reflexive awareness:

'it's the faculty of recollection so that you have an awareness of what you do... normally you're engrossed... but you've got a self-reflective faculty so you can be aware of what you're doing'.

(iii) 'non-distractedness' - being able to attend to what one has chosen to focus upon, or being able to control attention, rather than having one's attention distracted away onto other things, especially thoughts not concerned with one's current activity.

'not being pulled away into the past or the future'; 'my concentration is with what I'm doing'; 'the ability to pay attention to what's coming into the senses, rather than being lost in a mental world'; 'the ability to choose where we put our attention'; 'you bring all of yourself, all of your mind, onto the object and task and whatever's going on at that moment'; 'the ability to be in the present, focussed on a particular object or objects, and to stay with that focus'; 'the ability to choose where we put our attention'; 'an undistracted state'.

They described various effects of mindfulness - *'clarity of mind'; 'contentment'; 'happiness'; 'mindfulness creates concentration'; 'bringing negative states to heel'.*

They distinguished various aspects of experience of which one could be mindful:

'the four foundations of mindfulness' [i.e. the body and physical sensations, the hedonic tone of experience ('vedana'), mental state, specific aspects of mental state]; *'being aware of mental and physical processes'; 'mindfulness of purpose'; 'there's a strong ethical element; you become aware of your patterns'; 'mindfulness of other people'.*

Thus they distinguished one's own mental processes, physical processes, actions, purpose, and in particular the ethical nature of one's actions, as objects of

mindfulness. They also mentioned mindfulness of other people. There is an evident metacognitive aspect to their construal of mindfulness of purpose or the ethical nature of one's actions, in that such mindfulness involves recognition of some characteristic of experience whilst it is being experienced.

One meditator specifically mentioned an enhanced mindfulness of mental reactions to the hedonic tone of experiences, based upon a deep level of concentration:

'in a higher level of Buddhist practice, which I can achieve only on retreat or something like that, you can have this very moment to moment awareness of - when something impinges on us, you get 'contact', and we get a very immediate 'vedana'- a positive or negative hedonic tone - and the reaction to that... that all happens so quickly that it's incredibly difficult in normal life to be aware of it, but when we are very concentrated, and in a very good mental state, we can see that happening, see our response to it..'

When asked to characterise concentration, and possibly distinguish it from mindfulness, they considered concentration to be both stability of mental focus, and a state achieved during meditation - a psychologically integrated state, sometimes referred to as 'absorption'. Some distinguished concentration as focussed 'narrow' awareness in contrast to a more 'broad' awareness in mindfulness:

'choosing a narrow range of experience and staying with it, though it can be broader, one can work with many things at once, but they still 'hang together' as one cohesive experience'; 'in meditative concentration we are rounding up our

whole self and focussing our whole self - a sense of unity; it's something you build, focus and breadth'; 'it's a tremendous depth charge, it has its own mental realm'; 'it's when you are putting as much energy as you can into one particular activity'; 'absorption - the mind has really calmed down, all your energies are flowing into one particular point, so there's a sense of expansion, you've gone beyond the discursive mind into a much bigger sense of the mind, and where things are very pliant, so if you think about something you can sustain that without the mind drifting off'; 'absorbed, focussed, not aware of exteriors, quite pure, so that it feels very calm and quiet, because it's so beautifully still'.

To further identify content areas, the meditators' answers were supplemented by ideas about mindfulness from the literature, both psychological and Buddhist. The specific area mentioned in the psychological literature that was not referred to in these meditators' replies was that of the 'nonjudgmental' or 'open' approach to experience.

The possible content areas to be included in the questionnaire were therefore :

- memory for ongoing task, recollection of purpose
- stability of concentration, non-distraction
- awareness of current experience
- self awareness, metacognition (including awareness of ethical nature of thoughts and feelings)
- nonjudgmental attitude to experience
- psychological integration

It was also decided to include questions about the effects of mindfully concentrating, in particular changes in mental or psychophysical state noticed by the participant, and changes in the quality of perception of the meditation object (the breath).

Two of the above dimensions, each attitudinal or evaluative, were excluded:

(i) mindfulness of the ethical nature of thoughts and feelings

This is a specifically Buddhist analysis, not usable in a general population.

(ii) nonjudgmental acceptance of thoughts and feelings.

This was excluded because specialised understanding of terminology (such as 'being open' to one's experience) would be required, and also because the main object of mindfulness was to be the sensations of breathing, rather than thoughts and feelings, which are the typical objects for a nonjudgmental attitude.

Questions relating to each of the selected content areas, and appropriate to a mindfulness of breathing exercise, were generated. At times it was difficult or impossible to generate questions that related to one content area only. For some content areas it was difficult to devise many items. Thus questions about 'psychological integration' applicable to a brief five minute exercise tended to be indistinguishable from questions about non-distraction, and therefore this content area was also dropped. A total of 45 items was finally arrived at, for inclusion in a preliminary questionnaire (Appendix 3a).

The questionnaire was divided into three parts. The first part consisted of questions concerned with the exercise as a whole; the second part involved questions concerned with experience of distractions or potential distractions; the third section was concerned with possible effects of mindful concentration.

A seven point Likert scale was chosen for answers to the preliminary questions. It was recognised that a seven point Likert scale might prove too long, in that actual answers might bunch into, for example, trimodal distributions. Nevertheless a seven point scale was adopted in order to provide better discrimination between groups. Scores would be from 1 to 7.

There were in fact three versions of Likert scale, depending upon the type of question. As the questionnaire was divided into three sections, each had a corresponding scale. One issue was whether participants in the pilot evaluation study would find this rather complex answering method, and its accompanying seven point Likert scales, too difficult either to understand or use. The scales and accompanying instructions were as follows:

For questions 1 to 20:

The numbers after each question are codes for length of time during the exercise.

Please answer each question by circling the number which comes closest, as well as you can estimate it, to your experience during the exercise. Circle 'dk' if you do not know or cannot remember.

0 = none of the time
1 = a little of the time
2 = some more of the time
3 = half the time
4 = more than half the time
5 = most of the time
6 = all of the time
dk = don't know

For questions 21 to 35:

The following questions are about things that you might have experienced during the exercise, such as the experience of thoughts and feelings. The codes are very similar to those in section 1, except they refer to the proportion of time that the experience occurred.

- 0 = none of the time (that the experience happened)
- 1 = a little of the time (that the experience happened)
- 2 = some more of the time (that the experience happened)
- 3 = half the time (that the experience happened)
- 4 = more than half the time (that the experience happened)
- 5 = most of the time (that the experience happened)
- 6 = all of the time (that the experience happened)
- dk = don't know

For questions 36 to 45:

For the remaining questions the numerical codes mean the following:

- 0 = completely untrue
- 1 = mostly untrue
- 2 = more untrue than true
- 3 = half true
- 4 = more true than untrue
- 5 = mostly true
- 6 = completely true
- dk = don't know

Again, for each question circle the number code which corresponds most closely with your experience during the exercise.

Pilot evaluation of questionnaire

A small pilot study, using the preliminary questionnaire, was undertaken, using seven meditators and seven non-meditators. This was accompanied by an evaluation questionnaire (Appendix 6) asking the participants about the comprehensibility of questions and how easy or difficult it was to answer the questions. Meditators were also asked to comment whether there were any aspects of mindfulness that did not seem to be covered by any items.

Generally participants, both meditators and non-meditators, found the questions easy to understand and the answering method comprehensible and reasonably easy to use. Thus thirteen out of the fourteen people found the answering method 'easy' to understand. Nine participants found the answering method throughout 'easy' to use, three participants found most of it 'easy' to use but had a little difficulty with one or other of the sections, one participant (a meditator) found a fixed choice system of answering a "mechanical" way of describing inner experience, one participant (a meditator) wrote "I found the answering method seemed inaccurate for my experience. I often wanted a 'yes or 'no'". Everyone found the instructions easy to understand. Items 21 and 22 were highlight as difficult to understand by two non-meditators, items 23 and 32 by one non-meditator. Items 8, 32, 33, 36 were described by one non-meditator as difficult to answer, items 16 and 17 described as such by two non-meditators.

Given that the majority of participants had found the answering method easy to use, in whole or for the most part, the answering method was retained unchanged. The meditators did not consider there to be any significant omissions, of aspects of basic mindfulness, from the content of the questions.

A selection of items was then made. Items which everyone had scored the same, at an extreme, were removed (items 9, 18, 25, 35, 41, 43). Item 21 was removed, as being the direct contrary to question 23, and because its negative phrasing combined with the answering system appeared to cause confusion. The mean score of all items for meditators was 4.3, for non-meditators 3.9. Given the sample size this difference was not statistically significant.

A new question was introduced, analogous to one on the Toronto Mindfulness Scale (which became available at this time) concerning 'distance'. Despite reservations about how this item might be understood it was decided to include it. No other new questions were included that were similar to those from the Toronto Mindfulness Scale, as this scale dealt with nonjudgmental openness to experience, which had already been excluded as a dimension to be assessed by this questionnaire.

A second version of the questionnaire was constructed from the retained items, with the addition of the new item.. It contained 39 items (Appendix 3b).

Study 2 - Validity and Reliability

Aims

To select items with adequate facility, discrimination, internal consistency and reliability, and to explore the factor structure and validity of the selected item set.

Design

The MCQ1 was then administered to a sample of participants including experienced meditators, less experienced meditators, and non-meditators. To explore convergent and discriminant validity other questionnaires were also administered - the Cognitive Failures Questionnaire (CFQ), the Mindfulness Inventory, and the General Health Questionnaire (GHQ12). The results were analysed using facility indices and discrimination, to select a reduced item set, which was then analysed for underlying

factors, and for reliability. Correlations with the other questionnaires were analysed to explore convergent and discriminant validity.

Participants

Three groups of people participated: more experienced meditators, less experienced meditators, and non-meditators. The sample overall was a sample of convenience. The more experienced meditators (over six years experience) were obtained at a Buddhist convention, less experienced meditators (at least three months experience) at a city Buddhist Centre, and non-meditators in various ways. At the Buddhist Convention and Centre a poster was displayed advertising the study and inviting participation, with questionnaires available nearby. Non-meditators were recruited by the same method at the author's place of work. Members of a local church agreed to participate. Questionnaires were also made available at a psychological special interest group conference. Various people known to the author agreed to participate and also took extra questionnaires to ask other people if they would like to participate. All the meditators had experience of the mindfulness of breathing meditation; all of the more experienced meditators, and many of the less experienced, would also have practised at least one other meditation practice.

A total of 343 questionnaires were collected by potential participants; of these a total of 128 were returned (37.3%). Analysing this into subgroups, questionnaires were returned by 58 out of 150 (38.6%) more experienced meditators, 31 out of 54 (57.4%) less experienced meditators, and 39 out of 139 (28%) non-meditators.

Fifty five (43%) of the participants were male, 73 (57%) were female. Because of the ways of obtaining the different participant groups there were differences between the groups in gender proportions; thus a majority of the more experienced meditators were male (36 out of 58, or 62.1%), whilst a majority of less experienced meditators (24 out of 31, or 77.4%), and of non-meditators (27 out of 39, or 69.2%), were female.

The age range was 17 to 70 with a mean of 44.9 years and a standard deviation of 11 years. There was no significant age difference between genders. Analysis of variance revealed a significant age difference ($F=7.04$, $p<.001$) between meditation type groups. The more experienced meditators were older (mean age 48.4, s.d. 8 years) than less experienced meditators (mean 38.8, s.d. 14.5) and non-meditators (mean age 43.6, s.d. 10.2 years).

Measures

Mindfulness Inventory

The Mindfulness Inventory (MI; Rosenberg, unpublished) is a 20 item questionnaire with four subscales: mindfulness, well-being, patience, wonderment. Each question is answered using a 5-point Likert scale, from 'strongly agree' to 'strongly disagree'.

The mindfulness subscale is comprised of four items assessing getting 'lost' in what one is doing and 'losing track' of time. (See appendix 4a) The overall alpha coefficient for the scale is 0.67 and the Guttman split half reliability is 0.53, indicating reasonable internal consistency reliability (Rosenberg, personal communication).

Cognitive Failures Questionnaire

The Cognitive Failures Questionnaire (CFQ; Broadbent, Cooper, Fitzgerald & Parkes, 1982) assesses common cognitive errors and lapses of attention in everyday life. It has 25 questions, each answered with a 5-point Likert scale concerning the frequency of each item, from 'very often' to 'never'. (See appendix 4b) Coefficient alpha for the scale was reported as 0.89, and item-total score correlations exceed 0.23 for 23 of the 25 questions, indicating reasonable internal consistency. Factor analysis revealed one general factor (Broadbent et al. 1982).

General Health Questionnaire (GHQ-12)

The General Health Questionnaire (GHQ-12; Goldberg, 1972) is a commonly used self-report twelve-item questionnaire for assessing basic aspects of mental health. There are two ways of scoring the answers, one using a 4-point Likert scale, from 'better than usual' to 'much less than usual', the other scoring 0 for the two less severe answers and 1 for the two more severe answers to each question. (See appendix 4c) There is evidence of good reliability and validity for this measure. Hardy et al. (1999) report a coefficient alpha of 0.89 and a test-retest correlation of 0.73. They also report a score of 4 or more on the simpler binary scale as indicative of minor psychiatric caseness in an English population

Mindfulness and Concentration Questionnaire (MCQ)

The preliminary Mindfulness and Concentration Questionnaire developed in study one was used. (See appendix 3a.) It contains thirty nine items. There are three

sections of questions, the questions in each section being answered with a seven point Likert scale appropriate to that section. The instructions for the MCQ include instructions for a five minute mindfulness of breathing exercise, the MCQ questions being concerned with experience during that exercise.

Results

Selection of items and tests of reliability

Initial item analysis was made through examination of the scoring ranges for each item. This showed that many questions had mean scores near to the end of the scoring range, rather than towards the middle. A selection of items was therefore made, by retaining items whose facility index was not at an extreme, with a mean score between 3 and 5 (with item mid-range score being 4, range 1 to 7). This left 20 items, which together can be termed the MCQ20 (Appendix 3c). All items removed had mean scores at the upper end of the scoring range. Retained items also tended to have mean scores above the halfway point of the scale. Cronbach's alpha was 0.899 for this twenty item set. Item-total score correlations were at or above 0.418. The mean inter-item correlation was 0.313. The split half correlation was 0.627. These figures indicate good internal consistency and reliability. The distribution of MCQ20 scores was not significantly different from a normal distribution (Kolmogorov-Smirnov statistic = .055, $p > .2$; Shapiro-Wilk statistic = .990, $p = .459$).

Factor analysis and further item selection

Factor analysis, using SPSS, of the twenty item set selected revealed a five factor structure. However, as communality estimates greater than 1 were encountered during iteration, for each form of factor analysis used, interpretation of these factors must be cautious. Given that principal component analysis was stable under iteration, and that the first four factors derived were very similar to the first four factors from factor analysis (with similar levels of item-factor correlation) principal components analysis was used as the main analytical tool, with the results of factor analysis used for comparison.

Principal component analysis of SPSS, of the 20 retained items revealed five factors with eigenvalues greater than one. A Varimax rotation was then performed, leading to five rotated factors (see Table 1, p65).

A further selection of items was then undertaken, selecting those items loading onto the first factor from the unrotated principal components analysis with a loading of 0.35 or more, and which did not have a greater loading on one of the other four factors (Clark & Watson, 1995, p317). This gave the ten items loading onto the first rotated factor. These ten items together can be regarded as forming a ten item 'mindful concentration' subset of the questionnaire, to be referred to as the MCQ10 item set (Appendix 3d). The distribution of MCQ10 scores was not significantly different from a normal distribution (Kolmogorov-Smirnov statistic = .062, $p > .2$; Shapiro-Wilk statistic = .981, $p = .069$).

Table 1 - factor-item loadings from principal components analysis

Question	Factors (Rotated)				
	1	2	3	4	5
1. I was distracted by thoughts or feelings	.795	.301	.076	.034	.010
4. It was easy to keep my attention on the breath	.881	.167	.176	-.063	.068
7. Feelings and thoughts came into my mind	.765	.127	-.126	-.031	.115
11. I could stay focused on the breath	.852	.165	.251	-.008	.111
14. I was aware of my body	.177	.248	.732	.092	-.210
17. My mind did what I wanted it to do	.780	.080	.182	-.077	.141
19. I was aware of my muscles moving as I breathed	.144	-.039	.682	.299	-.012
20. I was aware of my body posture	.095	.096	.842	-.070	.250
23. When feelings and thoughts came into my mind I stayed aware of the breath	.641	.019	.389	.302	.194
24. When feelings and thoughts came into my mind I could stay <i>focused</i> on the breath	.671	-.024	.388	.240	.207
26. The feelings and thoughts that came into my mind were pleasant	.301	.353	.027	-.234	.581
31. When distractions happened I quickly lost awareness of the breath	.589	.069	.150	.415	-.009
33. When thoughts and feelings happened I was aware of myself as I experienced them	.511	-.296	.393	.133	.348
34. When thoughts and feelings happened I got 'caught up' in them	.669	.130	-.160	.411	.013
35. When thoughts and feelings happened it seemed like I was observing them with a bit of distance from them	.125	.063	.030	.200	.828
36. The more I focused on the breath, the more interesting it became	.244	.684	.041	.344	.196
37. The more I focused on the breath, the more complex the sensations of breathing became	-.031	.368	.236	.730	.077
38. The more I focused on the breath, the more subtleties of sensation I noticed	.121	.550	.157	.667	.073
42. The exercise gave me energy	.121	.800	.172	.106	.034
45. The exercise has made my mind more concentrated	.165	.886	-.029	.133	.050

Cronbach's alpha for these ten items together was 0.913. Item-MCQ10 total correlations were all above 0.5. The mean inter-item correlation was 0.527. The split-half correlation was 0.715. These figures indicate good internal consistency and reliability for the ten item set.

Factor analysis, whether least squares or maximum likelihood, also gave five factors. The first four rotated factors were very similar to the first four rotated factors of the principal components analysis (PCA). The ten items loading significantly onto the first factor of the PCA were also those items loading onto the first factor from factor analysis. The next three factors from factor analysis were effectively the same as PCA factors two, three and four, though in a different order. The fifth factor from factor analysis was different to PCA factor five, with items associated with distraction, or lack of distraction, by thoughts and feelings loading onto this factor (items 23, 24, 31 and 33).

Validity of the MCQ20 and MCQ10 item sets

The validity of the 20-item and 10-item versions of the MCQ was considered through tests of convergent validity and discriminant validity. It was expected that the MCQ would be significantly positively correlated with other mindfulness measures (the MIT), and negatively with a scale of mental health problems (GHQ12) and cognitive failures (CFQ). It was also predicted that experienced meditators would have higher MCQ scores than less experienced meditators or non-meditators.

GHQ, CFQ, MIT, age and meditation frequency scores were not normally distributed, using Kolmogorov-Smirnov and Shapiro-Wilk tests of normality. Correlations were therefore calculated using Kendal's Tau.

The MCQ20 correlated in the expected direction with most measures. It correlated significantly with meditation frequency ($\tau = 0.131, p < .05$) and highly significantly with Mindfulness Inventory total score ($\tau = 0.252, p < .001$). The MCQ20 score had a significant negative correlation with GHQ Likert score ($\tau = -0.123, p < .05$) and a highly significant negative correlation with the Cognitive Failures Questionnaire score ($\tau = -0.232, p < .001$). The MCQ20 score did not correlate significantly with the MI 'mindfulness' subscale score; however it correlated very significantly with the MI 'well-being' and 'patience' subscales, and significantly with the 'wonderment' subscale ($\tau = .180, p < .01$; $\tau = .230, p < .001$; $\tau = .133, p < .05$ respectively).

The MCQ10 did not significantly correlate with as many measures as did the MCQ20, but the results are in the expected direction. MCQ10 score correlated very significantly with MI score ($\tau = .157, p < .01$) and, in a negative direction, with CFQ score ($\tau = -.246, p < .01$). MCQ10 score did not correlate significantly either with GHQ scores or meditation frequency. As well as with the MCQ20 score, meditation frequency correlated significantly with MI score ($\tau = .427, p < .001$) and MI subscale scores, GHQ score ($\tau = -0.172, p < .05$), GHQ Likert score ($\tau = -0.198, p < .01$) and CFQ score ($r = -0.212, p < .001$)

Table 2 - Correlations between MCQ, meditation frequency and other scales

	MCQ20	MCQ10	Meditation Frequency
Mindfulness Inventory (total)	.252***	.157**	.427***
MI Patience subscale	.230***	.131*	.284***
MI Well-being subscale	.180**	.117*	.339***
MI Mindfulness subscale	.081	.046	.240***
MI Wonderment subscale	.133*	.084	.213**
General Health Questionnaire:			
GHQ-12 dichotomous scale	-.099	-.086	-.172*
GHQ-12 Likert scale	-.123*	-.091	-.198**
Cognitive Failures Questionnaire	-.232***	-.246**	-.212***
Meditation Frequency	.131*	.010	

*= p<.05, **= p<.01, ***= p<.001, Kendal's Tau-b (One tailed tests)

The lack of MCQ10 correlation with meditation frequency, with a significant but small correlation between MCQ20 score and meditation frequency, together reflect highly significant correlations between meditation frequency and specific questions on the MCQ20 not included in the MCQ10. These were questions concerning improvement during the exercise.

One way analysis of variance between groups, based upon overall meditation experience, gave the following significant differences: CFQ (F=5.614, p<.01), and MI (F= 54.523, p<.001). There were also significant differences on each subscale of the MI: 'mindfulness'(F=23.2, p<.001), 'patience'(F=19.17,p<.001), 'wonderment' (F=3.58, p<.05) and 'wellbeing' (F=61.27, p<.001). (See Table 3a, p68.) Group distributions on these scores were not significantly different from the normal distribution.) The GHQ score was highly non-normal, as was one of the meditation group distributions for the GHQL score, preventing analysis of variance. Using the Kruskal-Wallis test revealed significant meditation group differences in GHQ and

GHQL scores ($H = 7.86, p < .05$, and $H = 91.72, p < .001$ respectively). (See Table 3b, p69.) Analysis of variance between meditation experience groups revealed no significant differences on MCQ20 or MCQ10 score.

There were significant correlations between age and MI score ($\tau = .233, p < .001$), between age and CFQ score ($\tau = -0.145, p < .05$), and between age and GHQ score ($\tau = -0.164, p < .05$), using two tailed tests. There was a significant correlation between age and MCQ20 score, using a two tailed test ($\tau = .139, p < .05$). There were significant differences between genders on meditation frequency ($K = 1.42, p < .05$) and MI score ($F = 10.278, p < .01$).

Table 3a - Correlations and F values between sample variables and scale scores

	age	gender	meditation group
	(Kendal's tau-b)	(F value, 1df)	(F value 2df)
MCQ20	.139*	.022	1.498
MCQ10	.115	.400	2.364
Meditation frequency	.102	-----	-----
CFQ	-.145*	-----	5.614**
GHQ12	-.164*	-----	-----
GHQ12 Likert	-.114	-----	-----
MI	.233***	10.278**	54.523***

*= $p < .05$, **= $p < .01$, ***= $p < .001$;
 All subgroup score distributions not significantly different from the normal distribution, using Kolmogorov-Smirnov and Shapiro-Wilks tests.

Correlations were also computed between other measures, to check the validity of these measures with the population sample used, especially with regard to the unpublished Mindfulness Inventory. There were highly significant correlations between GHQ, MI and CFQ scores. GHQ score, GHQ Likert score and CFQ score

each had a highly significant negative correlation with MI score (tau = -0.261, tau = -0.317, & tau = -0.377, respectively, all $p < .001$). The GHQ score and GHQ Likert score were also significantly correlated with CFQ score (tau = .194, $p < .01$ and tau = .254, $p < .001$).

Table 3b - Further associations between sample variables and scale scores

	gender (Kolmogov-Smirnov K)	meditation group (Kruskal-Wallis H)
Meditation frequency	1.42*	-----
CFQ	0.57	-----
GHQ12	0.43	7.86*
GHQ12 Likert	0.96	91.7***

*= $p < .05$, **= $p < .01$, ***= $p < .001$;
Distributions significantly non-normal for at least one subgroup on each score

Discussion

Discrimination, internal consistency and reliability

The process of item selection led to item sets with good discrimination, reliability and internal consistency. Both the MCQ20 and MCQ10 item sets demonstrated good discrimination, having each item-total score correlation well above 0.2. For both the item sets, measures of internal consistency and reliability were good, although the MCQ10 mean inter-item correlation was a little above the recommended range, of 0.15 to 0.5. This might point to a slightly too homogeneous set of questions in this item set.

Validity and analysis of factors

In this section the factors identified in the principal components analysis will be discussed in relation to item content and convergent and discriminant validity.

Inspection of the questions loading onto each of the first four rotated factors of principal components analysis leads to straightforward interpretations of these factors. Thus factor one may be interpreted as 'mindful concentration', factor two as 'improvement', factor three as 'body awareness', and factor four as 'awareness of the breath'. The first four factors derived from factor analysis were effectively the same as these factors.

Factor one - mindful concentration

This is concerned with control over one's attention, and in particular with the ability to retain an awareness of the breath and not be distracted away from such an awareness by thoughts and feelings. The ten questions loading onto this factor together form the 'MCQ10' item set.

The robustness of the MCQ10 is confirmed by good convergent and discriminant validity demonstrated by its correlations with the Cognitive Failures Questionnaire and the Mindfulness Inventory. The MCQ10 total score has a highly significant negative correlation with the CFQ score. It also has a very significant correlation with Mindfulness Inventory score, mainly associated with significant correlations to two subscales of the Mindfulness Inventory, 'patience' and 'well-being'. The negative

correlation with the CFQ supports the discriminant validity of the MCQ10 item set, as one would predict that mindful concentration would be inversely proportional to cognitive failures associated with poor concentration and memory in daily life. The correlation with the Mindfulness Inventory overall score also supports convergent validity to some extent. The very significant correlation with the MI 'patience' subscale points towards factor one being associated with non-reactivity to emotionally arousing stimuli.

However, it was also expected that the MCQ10 would correlate with the measure of mental health, the GHQ12, and with the MI mindfulness subscale. These correlations were not significant, suggesting that the validity of the MCQ10 is limited. There are, though, alternative explanations for the non-significant correlations.

It is possible that the nature of the answering system for the GHQ has blunted its utility. The GHQ uses relative frequencies of problems, compared to their usual frequencies, rather than absolute frequencies. This may lead it to overestimate the severity of minor temporary disturbance and to underestimate the severity of chronic mental health problems. Such a problem would tend to minimise an expected negative correlation between GHQ and MCQ scores.

The GHQ12 may also over-emphasise physical complaints. Indeed, there were comments written by a couple of participants on the GHQ answer sheet to this effect. However the GHQ12 is generally still considered a reliable measure, despite such criticisms. Nevertheless, in retrospect a questionnaire asking about absolute levels of symptomatology, rather than comparative levels, would have been preferable.

Another possibility is that the five minute mindfulness exercise was too easy to discriminate between concentration difficulties for the range of mental health within the population sampled in this study. The many items with high mean scores dropped from the preliminary item set lends weight to this possibility.

The lack of correlation with the MI mindfulness subscale implies that a variable unrelated to mindful concentration is being measured by this subscale - that 'losing track of time' and 'losing oneself' in what one is doing are independent of mindful concentration. This is not what would be expected. This lack of correlation undermines convergent validity. To complicate the issue, both the MCQ10 and the MI mindfulness subscale correlate negatively with CFQ scores. It is possible that the 'mindfulness' subscale of the MI itself has limited validity, with too narrow a range of questions.

Factor two - improvement

Factor two, 'improvement', implies change due to doing the mindfulness exercise. The questions loading onto this factor have very significant correlations with meditation frequency and meditative experience, whilst other questions from the MCQ20 set on the whole do not. The significant correlation between MCQ20 score and meditation frequency is mainly accounted for by questions loading onto this factor. An implication of this is that the state of mindful concentration may be variable, affected by environmental and other conditions, but meditation practice gives increased ability to deliberately improve mindful concentration from whatever concentration level one starts with.

There was also a significant negative correlation between the MCQ20 and the GHQ Likert score. This correlation is mainly due to the last two questions of the MCQ20, which were concerned with the mindfulness exercise resulting in more energy and bringing about more concentration. This suggests that the ability to improve concentration during the exercise is also correlated with better mental health.

Factor three - body awareness

Factor three is associated with awareness of the body during the mindfulness exercise. The questions loading onto this factor did not have significant loadings, positive or negative, onto factor one. The implication is therefore that this factor does not represent distraction (which would imply negative loadings onto factor one) but an awareness of current experience, possibly a 'wider' awareness than an awareness of what the attention is being focused upon.

Factor four - awareness of the breath

Questions loading onto factor four were mainly concerned with awareness of the breath. Two of these questions were originally included to assess the effects of being able to focus upon the sensations of breathing, in terms of becoming more aware of the actual characteristics of those sensations. This factor is therefore suggestive of increasing awareness of the specific characteristics of the sensations of breathing due to focussing attention upon them. It thus contrasts with factor three, which itself may imply a wider awareness of current experience. This is suggestive of the distinction Brown and Ryan (2003) make between 'attention' and 'awareness'.

Factors three and four together imply a distinction between mindful concentration and awareness of current experience. Thus mindful concentration involves recollection of task, non-distraction, and more control over attention, whereas factors three and four involve awareness of current experience, an awareness that may be improved by mindful concentration.

Factor five

Factor five is associated with just two questions. The question about ‘distance’ was a late inclusion, stimulated by the Toronto Mindfulness Scale, and was included because it was thought that participants would probably understand its meaning, without explanation or training. Whatever participants’ actual understanding of this question, it is clearly assessing a different factor than that assessed by questions loading onto other factors. The other question loading onto factor five concerned experiencing pleasant thoughts and feelings. As these two questions are rather different it is difficult to interpret this factor. Moreover factor analysis did not derive this factor, but a different one, concerned with distraction. Given the lack of agreement between PCA and factor analysis on a fifth factor, as well as the limitations to both methods, it is better to consider the derivation of the fifth factor as too unreliable for this factor to be interpreted.

Further issues of validity

Although having only indirect implications to the question of the validity of the MCQ, it is worthwhile to note the correlations between other measures and meditation

frequency and experience, especially given that mindfulness practice is taught to improve mental health.

Meditation frequency had significant correlations to scores on the MI, GHQ and CFQ, indicating robust associations between mindfulness meditation frequency, better mental health and fewer daily cognitive failures. These correlations were paralleled by significant differences on these tests between meditation level groups. (There was a highly significant difference between these groups on MI score and GHQ Likert scale score, a very significant difference on CFQ score, and a significant difference on GHQ score.) It is tempting to conclude that these correlations imply that mindfulness meditation leads to fewer cognitive failures, improved mental health and improved 'well-being', 'patience', 'wonderment' and 'mindfulness'. However it is also possible with these data to conclude that those with better mental health, better MI scores, and fewer daily cognitive failures, are likely to meditate more.

In contrast, on analysis of variance there were no significant meditation group differences on MCQ20 or MCQ10 scores, although the difference on MCQ10 score was at the .098 significance level. This undermines construct validity in that one would expect the more experienced meditators to have higher MCQ10 and MCQ20 scores.

One complicating factor in comparing groups in this way is that participants from both the more experienced and the less experienced meditation groups in this sample practise other forms of meditation as well, with the more experienced meditators often having preferred meditation practices other than mindfulness. The questionnaire

contained a question about frequency of mindfulness meditation, not frequency of overall meditation practice. Given that other forms of meditation may affect mindfulness and concentration, this would reduce the correlation between mindfulness meditation frequency and MCQ scores.

Furthermore there is the question whether non-meditating participants tended to be self-selectively those who did better at the exercise. The participants were a sample of convenience, rather than a random sample. There is also a phenomenon known as 'beginner's mind', in which meditators are known to become concentrated more easily in their first attempts at meditation than subsequently. The standard deviation of MCQ scores for non-meditators was lower than for either of the other two groups. The response rate for non-meditators was also lower.

On the other hand meditation frequency and meditation group membership were robust enough to give significant correlations with other test scores. Thus the lack of a significant difference across groups may reflect that the MCQ, and in particular the MCQ10, measures a state that is very susceptible to current or recent events and activities. The MCQ20 score did correlate with meditation frequency, due to the questions concerning improvement during the mindfulness exercise. This may imply that frequent mindfulness practice enhances the ability to deliberately improve concentration, once one decides to do this, but that any practice-induced enhancement of concentration level during daily life can be affected strongly by other factors. Buddhist tradition has a practice of 'guarding the doors of the senses' to protect against the meditator being unduly influenced by external stimuli.

Relationship of MCQ with literature on mindfulness

This study is the first stage in the development of a measure of mindfulness. It differs from other mindfulness scales that have been developed in that it is a state measure involving the assessment of concentration during mindfulness practice. It has identified the existence of a primary 'mindful concentration' factor as well as other factors, in particular an 'improvement' factor and 'awareness' factors, within the practice of a short mindfulness exercise. The MCQ10 and MCQ20 item sets can form the bases for further development of a self-report state measure assessing mindful concentration, improvement during mindfulness practice, and awareness of current experience.

Of the mindfulness scales developed whilst this study was being conducted, only the Toronto Mindfulness Scale is a state measure. The MCQ and the Toronto are very different, as the latter is concerned with the single factor of non-judgmental openness to experience, whilst this content area was excluded from the preliminary MCQ item set.

After the completion of data gathering in this study other unpublished trait scales of mindfulness have appeared, but no state measures. Baer (2004) has studied the validity of the trait scales developed so far, and also factor analysed the scales together, revealing a five factor structure underlying these trait mindfulness scales - 'observing or noticing experience', 'acting with awareness, avoiding automatic pilot, concentration, non-distraction', 'describing or labelling with words', 'non-judging of

self or experience' and 'non-reactivity to internal experience'. She also concluded that the relationship between state and trait mindfulness needs more investigation.

The MCQ10 item set is concerned with the second of the factors Baer describes. The 'body awareness' and 'awareness of the breath' factors of the MCQ20 parallel the 'observing or noticing experience' factor of the trait scales, although dividing it into two. The 'improvement' factor of the MCQ20 is different to Baer's factors, which were derived from trait measures not assessing change during a mindfulness exercise.

Limitations to the study

One limitation of this study was that the sample of participants was not a random sample, but a sample of convenience, leading to age and gender differences between subsamples, that had further consequences. There was a significant correlation between age and MCQ20 score which probably reflects the older average age of experienced meditators. There was significant correlation between gender and meditation frequency, as there was a higher percentage of men in the experienced meditator group. Mindfulness Inventory score was highly significantly correlated with age, and very significantly associated with gender. These differences are attributable to the age and gender differences between meditation groups, combined with a highly significant association between meditation group and MI score.

It would have been preferable to include a subsample of participants who had been referred to mental health services. Resource and time problems prevented this.

A measure of number of years since starting meditation, as well as frequency of all meditation practice, would both have been useful. A measure of mental health problems using absolute frequencies, rather than comparative, would also have been preferable. It would also have been better to have a larger sample of non-meditators.

Reliability is also likely to have been reduced because the participants did the mindfulness exercise on their own, rather than in a group under the same conditions. Allowing meditators to choose a five minute period of a longer mindfulness of breathing meditation rather than doing the exercise, will also have reduced reliability.

Future Research

Further work with the MCQ10 and MCQ20 item sets needs to be done before they could be used as valid and reliable measures, of mindful concentration and of other aspects of a mindful state, respectively. Further study, using the five minute mindfulness exercise, but also using other time periods, could be done, using confirmatory factor analysis to test the factor structure.

Correlations between MCQ10 and MCQ20 scores and other mindfulness scale scores could also be investigated, now that there are a variety of trait mindfulness scales. Correlations between MCQ and the Toronto state scale would be worthwhile to explore, in particular to investigate how much mindful concentration aids being mindful in the sense of being able to exercise nonjudgmental acceptance of thoughts and feelings as they occur. The role of each factor in treatments based upon mindfulness training could then be explored.

It might also be worth extending the non-MCQ10 item set of the MCQ20 so that the other factors identified by the factor analysis here can be assessed more fully. Future work could also develop norms for the MCQ10 and MCQ20 for different situations, population groups (in particular people seeking treatment for mental health problems), time periods, and instruction sets. A wider number of other measures could also be used in investigating validity. One area of further investigation concerns which factors - behavioural, internal state factors, trait factors, and external conditions, may influence the level of mindful concentration.

Clinical Implications

The clinical implications of the development of the MCQ are twofold. The first implications stem from the potential use of the MCQ in research upon mindfulness based treatments. The use of a fully developed MCQ in such research would help clarify which aspects of these treatments are effective, by allowing the assessment of mindful concentration to be included. This could then influence the further development of these treatments.

The other clinical implications arise from the potential use of the MCQ within a therapeutic context as an assessment tool, irrespective of whether or not mindfulness training is part of therapy. The MCQ could be administered before, during and after therapy. The relationship between mindful concentration and therapeutic progress could be investigated, and whether MCQ scores prior to therapy correlate with

therapeutic outcome. If there were such a correlation this could then lead to the recognition of when mindfulness training is particularly indicated as an intervention.

Conclusions

This study has been the first stage in the development of a state measure of mindfulness. It has identified a main factor in state mindfulness, that may be termed 'mindful concentration', as well as factors concerned with awareness of current experience and improvement during a short mindfulness exercise. Further work needs to be done before the measure could be regarded as adequately reliable and valid.

Whilst this study was in progress other measures of mindfulness have been developed. These are mainly trait measures. This measure complements those measures in being a state measure and in assessing mindful concentration.

References

Analayo (2003). *Satipatthana, the direct path to realization*. Birmingham, Windhorse Publications.

Baer, R.A. (2003). Mindfulness training as a clinical intervention: a conceptual and empirical review. *Clinical Psychology: Science and Practice*, 10, 125-143.

Baer, R.A. (2004). Talk at conference on 'Mindfulness-based Approaches: Research, Training & Clinical Practice', Bangor University. (unpublished)

Bishop, S.R.(2002). What do we really know about mindfulness based stress reduction? *Psychosomatic Medicine*, 64, 71-83.

Bishop S.R., Lau M., Segal Z., Anderson N., Abbey S., Devins G., Shapiro S., Carlson L. & Carmody J. (2003). Development and validation of the Toronto mindfulness scale. (unpublished).

Broadbent, D.E., Cooper, P.F., Fitzgerald, P. & Parkes, K.R.(1982). The cognitive failures questionnaire (CFQ) and its correlates. *British Journal of Clinical Psychology*, 21, 1-16.

Brown, K.W., & Ryan, R.M. (2003). The benefits of being present: mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84, 822-848.

Buchheld N. & Walach H. (2002). Achtsamkeit in Vipassana-Meditation und Psychotherapie: Die Entwicklung des "Freiburger Fragebogens zur Achtsamkeit". *Zeitschrift fuer Klinische Psychologie, Psychiatrie und Psychotherapie*, 50, 153-172.

Clark, L.A. & Watson, D. (1995). Constructing validity: basic issues in objective scale development. *Psychological Assessment*, 7, 309-319.

Floyd, F.J. & Widaman, K.F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment*, 7, 286-299.

Goldberg, D.P. (1972). *The detection of psychiatric illness by questionnaire* (Maudsley Monograph No. 21). Oxford, England, Oxford University Press

Hardy, G.E., Shapiro, D., Haynes, C.E. & Rick, J.E. (1999). Validation of the general health questionnaire-12 using a sample of employees from England's health care services. *Psychological Assessment*, 11, 159-165.

Haynes, S., Richard, D. & Kubany, E. (1995). Content validity in psychological assessment: a functional approach to concepts and methods. *Psychological Assessment*, 7, 238-247.

Kabat-Zinn, J. (1982). An outpatient program in behavioural medicine for chronic pain patients based on the practice of mindfulness meditation: theoretical considerations and preliminary results. *General Hospital Psychiatry*, 4, 33-47.

Linehan M. (1993). *Cognitive-behavioural treatment of borderline personality disorder*. New York, Guilford Press.

Nyanaponika Thera (1983) *The heart of Buddhist meditation*. London, Rider.

Rosenberg, E. (University of California) Private communication

Rust, J. & Golombok, S. (1989). *Modern psychometrics; the science of psychological measurement*. London, Routledge.

Segal, Z.V., Williams, J.M.G. & Teasdale J.D. (2002). *Mindfulness-based cognitive therapy for depression*. London, Guilford Press.

Smith, G.T. & McCarthy, D.M. (1995). Methodological considerations in the refinement of clinical assessment instruments. *Psychological Assessment*, 7, 300-308.

Teasdale J.D., Williams J.M.G., Soulsby J.M., Segal Z.V., Ridgeway V.A., & Lau M.A. (2000). Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology*, 68, 615-623.

Teasdale, J.D., Moore, R.G., Hayhurst, H., Pope, M., Williams, S., & Segal, Z.V. (2002). Metacognitive awareness and prevention of relapse in depression: empirical evidence. *Journal of Consulting and Clinical Psychology*, 70, 275-287.

Critical Appraisal

Origins of the research

The origins of this research come from my own experience of mindfulness meditation. I early realised from personal practice that through such meditation one can cultivate a relaxed, focused, alert state of mind. I had also discovered when attending meditation retreats that developing the level of meditative concentration known as access concentration so that it becomes stable allows one to be aware of one's primary emotional and cognitive reactions without reacting further to them, and that old habitual patterns of thought and emotion seem to dissolve when one does this. This struck me as having important therapeutic implications, although I realised that attending such intensive retreats to develop such stable concentration would typically be out of the question in a therapeutic context.

Despite that limitation my experience led me to introduce mindfulness practice as a clinical intervention with my clients when it appeared to be suitable, for example as an alternative to relaxation exercises, and also when I suspected that improved concentration and/or a non-reactive approach to one's thoughts and feelings would be beneficial. Thus I discovered that people with obsessional problems seemed to respond well to mindfulness of breathing meditation, especially when combined with explicit instructions about just observing all thoughts, and one's reactions to them, and letting them come and go, rather than trying to exclude them from awareness or to neutralise them.

I also read extensively in the Buddhist meditational literature, including the ancient abhidharma analyses of mental states as well as more modern commentaries and expositions informed by them.

Such experience led me to consider doing research on mindfulness as a clinical intervention. This was in the late nineteen eighties. For a variety of reasons I did not pursue this. Fortunately for clinical psychology, other people did pursue it. The work of Jon Kabat-Zinn became increasingly widely known, as did the work of Marsha Linehan. John Teasdale and his colleagues Mark Williams and Ziden Segal also started exploring the use of mindfulness training for the treatment of depression. Reading the research on the treatments based upon mindfulness it was evident that there was no method of assessing mindfulness. This spurred me to consider again doing research on mindfulness. Aware that my only published research was dated 1981, I realised it would be helpful and appropriate to do the P.Q. D.Clin. Psy. to re-learn and improve upon my meagre research skills (if indeed any were left).

Allocating time and maintaining motivation

Starting the post-qualification course soon clarified one reason why I had last published research in 1981 - the problem of having adequate time and energy to do it. In particular the research process of this particular study, like other projects of the post-qualification course, has been dominated by problems of allocating and retaining suitable periods of time in order to undertake it. Short periods of time devoted to the project seemed to be taken up with re-engaging with the topic. I realised early on that pressures of other work, as well as family demands, meant that suitable periods of

time, combined with the energy available to do research related work, could not be guaranteed. Time allocated to research would be invaded by other tasks that could not be put aside, for example attending court as an expert witness, and the preparation for this. A demanding full day's work in the NHS is also not the best preparation for an evening considering construct validity. Or, having become engaged with the research on a particular day I would have to stop in order to pick up my son from school and then make the dinner. The research process therefore tended to be characterised by periods of activity with relatively long gaps between. Writing the research report and literature review has been particularly difficult in this regard. I now realise that it has been only recently, having had some weeks mostly free of other work that I have had suitable periods of time to devote to the writing-up.

Looking back I am also aware that a stop-start process meant that my memory of the details of the project could degrade in the periods away from the project. For example in preparing the thesis for submission I note that I received an email informing me of ethical clearance, but not a formal letter, and was expected to contact the committee to request the letter, which I omitted to do. I also omitted to seek approval for the intended journal for the literature review.

Motivation has been difficult. A process dominated by gaps followed by periods that require re-engagement, when work is generally demanding anyway, has often led me to ask myself 'why am I doing this?'. This is despite a main reason for doing the post-qualification D.Clin.Psy. being to learn more about, and have expert support on, research methods specifically so that I could do research on mindfulness.

Designing the research

The overall design of the research was straightforward, in following standard ways of developing a measure, basically developing and piloting a questionnaire, for content validity, and then exploring its psychometric properties and construct validity. I was aware of the need for an iterated process of questionnaire construction, but for the purposes of the DClinPsy this could only be a relatively brief, truncated two stage process.

In retrospect it would have been helpful to ask the experienced meditators to volunteer possible items to be included in the questionnaire, and/or have them rate suggested items on a Likert type scale. During the first study it would also have been better to have had a feedback questionnaire with close-ended questions answerable using Likert-type scales, rather than open-ended questions.

Item generation was difficult; it being difficult to think of relevant questions that related to only one content area/aspect of mindfulness. Since the first part of the study other mindfulness questionnaires have become available, which would have been helpful earlier on in providing models for items.

Data collection

Originally I had planned upon gathering data mainly with people in groups, once a group had agreed to participate, with myself explaining the project, taking people through the mindfulness exercise, and then asking people to complete the

questionnaires whilst I was with them. The opportunity arose for obtaining data more easily, from meditators doing the exercise in their own time, at a Buddhist convention. I therefore decided to advertise the project, and have a display with questionnaires available, at the convention. This gave me a non-random sample - there were more male experienced meditators participating because I attended a men-only part of the convention, not the mixed part, and was able to give a short talk about the research.. My wife attended the women-only part, and advertised the project and displayed a poster with questionnaires, but was not able to give a short talk. Neither of us were able to attend the mixed gender part of convention, when there were many more people not at either of the two single gender parts of the convention.

The most difficult aspect of data collection was obtaining enough non-meditators. Many people expressed interest (for example at work), but less actually took a questionnaire, and fewer completed it. One local church group agreed to participate. Unfortunately some of those from that group who expressed interest had experience of mindfulness meditation, rather than being non-meditators, whom I needed more. Eventually I obtained the minimum number of non-meditators that prior power analysis had identified as necessary, and halted data collection in order to analyse the results.

Literature review

In writing the literature review I have been aware of the currently fast-changing psychological literature on mindfulness. There has been much development since I

began this research project, especially in the development of several scales assessing mindfulness, where previously none existed. This demonstrates the relevance of this research project, but changes the context in which it has been carried out.

In writing about psychologists' interpretations of Buddhism I have been concerned to remain with the central psychological questions concerning the nature and dimensions of mindfulness. Nevertheless I have been aware that the engagement of psychologists with Buddhism is itself an issue worthy of academic study, although socio-cultural rather than psychological. 'Nonjudgmentalism' is not just a term indicating the importance of countering patients' at times over-critical approach to their mental states, but is also a term used more widely. Also in my past discussions with psychologists interested in Buddhism, the issue of deep concentration can also trigger ideological objections because it can be interpreted as implying a hierarchy of mental states, which can be seen as *ipso facto* ideologically suspect. Such issues could provide the subject matter for doctorates in sociology.

Data analysis

Item selection is a complex issue. On the one hand there is the question of removing items with extreme scores. On the other hand such items can be very useful in that an infrequent score on the item may provide useful information. A low score on an item on which most people score highly might be a significant indicator of problems of mindful concentration, for example. This issue raises the issue of the population sampled, and in particular that a clinical subsample was not included.

Originally I had intended to have a subsample of participants who were having treatment with, or had been referred to, mental health services, as I had potential clinical implications of the scale in mind. However an explicit clinical subsample was excluded in order to make the project manageable. Further work utilising a clinical sample could employ the original item set from study one, to compare such a sample's scores with those of the sample already obtained, and to investigate whether there are items that should be retained because of their utility in distinguishing clinically significant poor mindfulness.

With regard to the use of factor analysis there are different opinions as to how large a sample is required, in comparison to the number of items in a questionnaire, to obtain stable factor solutions. One rule of thumb is a five to one ratio of sample size to items. However stable solutions can occur at a lower ratio, or may occur only at a higher ratio. For the MCQ twenty item set a five to one ratio implies the need for a sample of a hundred. Factor analysis with the sample of 128, a ratio of over six to one, gave a possibly unstable five factor solution. Principal components analysis gave an apparently stable five factor solution, with the first four factors the same as from factor analysis. A preliminary principal components analysis, with less than a hundred returned questionnaires at that time, gave a very similar factor structure to that obtained with the sample of 128.

Writing up

The process of writing up the literature review and research thesis has been very influenced by problems of time allocation. Over the last month I have had much more

time to devote to it, which has resulted in substantial progress, although approaching very close to the deadline. Unfortunately on reading the Course Handbook, which stated that submission could be up to five years after registration, I concluded I had until the end of January 2005 to complete. In order to meet the forthcoming deadline for submissions I am therefore submitting the work although I do not consider it to be in its final form.

Further limitations

The process has been one of realising mistakes after they have been committed.

Various mistakes have been made, as well as those already mentioned. Not keeping abreast of other people's efforts in developing mindfulness scales is one. Originally I asked John Teasdale whether there was anyone developing a mindfulness scale, or intending to do so. He referred me to Erika Rosenberg, and her Mindfulness Inventory, as the only one of which he knew. She knew of no other people attempting it. I should later have repeated such a query, as in a field attracting lots of interest such a situation can change fast. Computerised literature searches do not reveal such information. They also can be months behind what actually has been published, so that one can miss an important published paper until it finally appears in the electronic data base.

One particular mistake was letting meditators chose to report upon a period from a longer mindful of breathing meditation, rather than just doing the five minute mindfulness exercise. This was done to make it more likely that meditators would

participate. The mistake was compounded by an error whereby a question at the end of the questionnaire, asking meditators which alternative they had followed, was inadvertently omitted when I had a batch of questionnaires printed. This prevented analysis of possible differences.

Another mistake was not including questions going into more detail about meditation practice, such as types of meditation practised, and frequency of non-mindfulness meditation.

I am also uneasy with the complex answering method, although it seems to have been used well enough, and although in the pilot study it was for the most part understood and used easily. Other areas which I would try to improve upon in future are improving the process of developing content validity of all items of the questionnaire, administering the questionnaire in groups to improve consistency in time periods and understanding instructions.

Learning points

Having never attempted to construct a self-report questionnaire before, it has been very instructive doing so. I realise that I understand much more about the issues of scale construction, and their complexities, than I originally did. So in reading the manual for a psychometric test I now find I am much more aware of issues of validity, reliability, and factor structure. This extra awareness has also had the particular advantage, in my expert witness work, of giving me increased depth of understanding in the selection of psychometric tests and in being able to talk more

comprehensively about issues of validity and reliability of a test, if I were to be questioned about such an issue in court.

Being engaged in psychological research again has also highlighted its rigours and complexities, and has enhanced my appreciation of good psychological research and the people who do it. Moreover, through omission I have discovered how important is networking in a research area, in order to keep abreast of new developments.

As an applied psychologist another learning point has been the development of an appreciation of the issues of construct validity concerning the meaning and use of any psychological term, not just a term referring to a construct being actively assessed.

Appendix 1a

Instructions to Authors for the Clinical Psychology Review

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CLINICAL PSYCHOLOGY REVIEW

INSTRUCTIONS TO AUTHORS

AIMS AND SCOPE: *Clinical Psychology Review* publishes substantive reviews of topics pertinent to clinical psychology. Its purpose is to help clinical psychologists keep up-to-date on relevant issues outside of their immediate areas of expertise by publishing scholarly but readable reviews. Papers cover diverse issues, including: psychopathology, psychotherapy, behavior therapy, behavioral medicine, community mental health, assessment and child development.

Reviews on other topics such as psychophysiology, learning theory, and social psychology, often appear if they have a clear relationship to research or practice in clinical psychology. Integrative literature reviews and summary reports of innovative ongoing clinical research programs are also sometimes published. Reports on individual research studies are not appropriate.

SUBMISSION REQUIREMENTS: All manuscripts should be submitted to Alan S. Bellack, The University of Maryland at Baltimore, Department of Psychology, 707 W. Lombard St., Suite 501, Baltimore, MD 21201, USA. Submit three (3) high-quality copies of the entire manuscript, the original is not required. Allow ample margins and use double-spaced throughout. Papers should not exceed 30 pages (including references). One of the paper's authors should enclose a letter to the Editor, requesting review and possible publication; the letter must also state that the manuscript has not been previously published and has not been submitted elsewhere. One author's address (as well as any updating address change), telephone and FAX numbers, and E-mail address (if available) should be included; this individual will receive all correspondence from the Editor and Publisher.

Papers accepted for *Clinical Psychology Review* may not be published elsewhere in any language without written permission from the author(s) and publisher's written acceptance for publication. The author(s) must complete a Transfer of Copyright Agreement form.

COMPUTER DISKS: Authors are encouraged to submit a 3.5" (114) 3.5" floppy disk to the editorial office. Please observe the following criteria: (1) Send only hard copy when first submitting your paper. (2) When your paper has been accepted, revised if necessary, and accepted, send a disk containing the final version with the final hard copy. If the disk cannot be converted, the hard copy will be used. (3) Specify what software was used, including which release, e.g., WordPerfect 6.0a (4) Specify what computer was used (IBM compatible PC, Apple Macintosh, etc.). (5) The article file should include all textual material (text, references, tables, figure captions, etc.) and separate illustration files, if available.

(6) The file should follow the general instructions on style arrangement and, in particular, the reference style of this journal as given in the instructions to contributors. (7) The file should be single-spaced and should use the wrap-around end-of-line feature, i.e., returns at the end of paragraphs only. Place two returns after every element such as title, headings, paragraphs, figure and table captions. (8) Keep a back-up disk for reference and safety.

TITLE PAGE: The title page should list (1) the article; (2) the author's name and affiliation at the time the work was completed; (3) a concise running title; and (4) an unnumbered footnote giving an address for reprint requests and acknowledgments.

ABSTRACT: An abstract should be submitted that does not exceed 200 words in length. This should be typed on a separate page following the title page.

KEYWORDS: Authors should include up to six keywords with the article. Keywords should be selected from the APA list of index descriptions, unless otherwise agreed with the Editor.

STYLE AND REFERENCES: Manuscripts should be carefully prepared using the *Publication Manual of the American Psychological Association*, 4th ed., 1994 for style. The reference section must be double spaced, and all works cited must be listed. Avoid abbreviations of journal titles and incomplete information.

Reference Style for Journals:
 Reichenberg, M. J. (1984). The treatment of addiction by aversive conditioning with apomorphine. *Behavior Research and Therapy*, 22, 287-294.
 For Books:
 Barkley, D. H., Hays, S. C., & Nelson, R. O. (1984). *The scientific foundations: Research and accountability in clinical and behavioral settings*. Hillsdale, NJ: Prentice-Hall.

TABLES AND FIGURES: Do not send glossy prints, photographs or original artwork until acceptance. Copies of all tables and figures should be included with each copy of the manuscript. Upon acceptance of a manuscript for publication, original, unenriched photographs and artwork must be submitted, unenriched and on glossy paper. Photographs, blue ink or pencil are not acceptable. Use black India ink and type figure legends on a separate sheet. Write the article title and figure number lightly in pencil on the back of each.

PAGE PROOFS AND OFFPRINTS: Page proofs of the article will be sent to the corresponding author. These should be carefully proofread. Except for typographical errors, corrections should be minimal, and resending the text is not permitted. Corrected page proofs must be returned within 48 hours of receipt. Along with the page proofs, the corresponding author will receive a form for ordering offprints and full copies of the issue in which the article appears. Twenty-five (25) free offprints are provided; orders for additional offprints must be received before printing in order to qualify for lower publication rates. All author offprint requirements should be included on the offprint order form.

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Appendix 1b

Instructions to Authors

for the

British Journal of Clinical Psychology

Notes for contributors

The *British Journal of Clinical Psychology* publishes original contributions to scientific knowledge in clinical psychology. This includes descriptive comparisons, as well as studies of the assessment, aetiology and treatment of people with a wide range of psychological problems in all age groups and settings. The level of analysis of studies ranges from biological influences on individual behaviour through to studies of psychological interventions and treatments on individuals, dyads, families and groups, to investigations of the relationships between explicitly social and psychological levels of analysis.

The following types of paper are invited:

- Papers reporting original empirical investigations;
- Theoretical papers, provided that these are sufficiently related to the empirical data;
- Review articles which need not be exhaustive, but which should give an interpretation of the state of the research in a given field and, where appropriate, identify its clinical implications;
- Brief Reports and Comments (see below)

1. Circulation

The circulation of the journal is worldwide. Papers are invited and encouraged from authors throughout the world.

2. Length

Pressure on journal space is considerable and papers should be as short as is consistent with clear presentation of the subject matter. Papers should normally be no more than 5,000 words, although the Editor retains discretion to publish papers beyond this length in cases where the clear and concise expression of the scientific content requires greater length.

3. Refereeing

The journal operates a policy of anonymous peer review. Papers will normally be scrutinized and commented on by at least two independent expert referees (in addition to the Editor) although the Editor may process a paper at his or her discretion. The referees will not be made aware of the identity of the author. All information about authorship including personal acknowledgements and institutional affiliations should be confined to the title page (and the text should be free of such clues as identifiable self-citations ('In our earlier work...')).

4. Submission requirements

- (a) All manuscripts must be submitted online via Editorial Manager® at www.bpsjournals.co.uk. Submission of a paper implies that it has not been published elsewhere and that it is not being considered for publication in another journal.
- (b) Contributions must be typed in double spacing with wide margins. All sheets must be numbered.
- (c) Tables should be typed in double spacing, each on a separate piece of paper with a self-explanatory title. Tables should be comprehensible without reference to the text. They should be placed at the end of the manuscript with their approximate locations indicated in the text.
- (d) Figures can be included at the end of the document or attached as separate files, carefully labelled in initial capital/lower case lettering with symbols in a form consistent with text use. Unnecessary background patterns, lines and shading should be avoided. Captions should be listed on a separate page. The resolution of digital images should be at least 300 dpi.
- (e) For articles containing original scientific research, a structured abstract of up to 250 words should be included with the headings: Objectives, Design, Methods, Results, Conclusion. Review articles should use these headings: Purpose, Methods, Results, Conclusions (more details on Structured Abstracts can be obtained by contacting the Journals Department).
- (f) Bibliographic references in the text should quote the author's name and the date of publication thus: Smith (1994). Multiple citations should be given alphabetically rather than chronologically: (Jones, 1998; King, 1996; Parker, 1997). If a work has two authors, cite both names in the text throughout: Page and White (1995). In the case of reference to three or more authors, use all names on the first mention and et al. thereafter except in the reference list.
- (g) References cited in the text must appear in the list at the end of the article

in current APA style. The list should be typed in double spacing in the following format:

Herbert, M. (1993). *Working with children and the Children Act* (pp. 76-106). Leicester: The British Psychological Society.

Moore, R.G., & Blackburn, I.M. (1993). Sociotrophy, autonomy and personal memories in depression. *British Journal of Clinical Psychology*, 32, 460-462.

Particular care should be taken to ensure that references are accurate and complete. Give all journal titles in full.

- (h) SI units must be used for all measurements, rounded off to practical values if appropriate, with the Imperial equivalent in parentheses
- (i) In normal circumstances, effect size should be incorporated.
- (j) Authors are requested to avoid the use of sexist language.
- (k) Authors are responsible for acquiring written permission to publish lengthy quotations, illustrations etc for which they do not own copyright.
- (l) For guidelines on editorial style, please consult the *APA Publication Manual* published by the American Psychological Association, Washington DC, USA (<http://www.apastyle.org>).

5. Brief reports and comments

These allow publication of research studies and theoretical, critical or review comments with an essential contribution to make. They should be limited to 2000 words, including references. The abstract should not exceed 120 words and be structured under these headings: Objective, Method, Results, Conclusions. There should be no more than one table or figure, which should only be included if it conveys information more efficiently than the text. Title, author and name and address are not included in the word limit.

6. Publication ethics

Any study published in this journal must pay due respect to the well-being and dignity of research participants. The British Psychological Society's Ethical Guidelines on Conducting Research with Human Participants must be shown to have been scrupulously followed. These guidelines are available at <http://www.bps.org.uk/about/rules5.cfm>. Before submitting an article to the journal, it is recommended that all authors read *Principles of Publishing* which is available on the BPS website.

www.bps.org.uk/documents/principlesofpublishing.pdf

7. Supplementary data

Supplementary data too extensive for publication may be deposited with the British Library Document Supply Centre. Such material includes numerical data, computer programs, fuller details of case studies and experimental techniques. The material should be submitted to the Editor together with the article, for simultaneous refereeing.

8. Post acceptance

PDF page proofs are sent to authors via email for correction of print but not for rewriting or the introduction of new material. Authors will be provided with a PDF file of their article prior to publication for easy and cost-effective dissemination to colleagues.

9. Copyright

To protect authors and journals against unauthorized reproduction of articles, The British Psychological Society requires copyright to be assigned to itself as publisher, on the express condition that authors may use their own material at any time without permission. On acceptance of a paper submitted to a journal, authors will be requested to sign an appropriate assignment of copyright form.

10. Checklist of requirements:

- Abstract (100-200 words).
- Title page (include title, authors' names, affiliations, full contact details).
- Full article text (double-spaced with numbered pages and anonymised)
- References (APA style). Authors are responsible for bibliographic accuracy and must check every reference in the manuscript and proofread again in the page proofs.
- Tables, figures, captions placed at the end of the article or attached as a separate file.

Appendix 2

Ethical Permission

from the

Psychology Department Ethics Sub-committee

Subj: **Re: ethics - research project health warning**
Date: 10/04/2003 10:26:19 GMT Daylight Time
From: p.sheeran@sheffield.ac.uk
To: Nagadhatu@aol.com

Sent from the Internet ([Details](#))

Dear Ian,

Thanks for the additional info on your proposal. With this safeguard in place, the Department Ethics Sub-committee (DESC) is pleased to approve the ethics of your project "Development of a Mindfulness and Concentration Questionnaire".

Do let me know if you want a formal letter of approval.

Good luck with the research.

Best Wishes,

Paschal Sheeran

Chair, DESC

Appendix 3a

MCQ

Original preliminary 45 item set

Preliminary MCQ full item set

* indicates items removed during study one

1. I was distracted by thoughts or feelings (D, RP)
2. I remembered what I was supposed to be doing (RP)
3. I was distracted by noises (D, RP)
4. It was easy to keep my attention on the breath (ST)
5. I was aware of the breath (ACE)
6. I had no awareness of what I was doing (ACE, SA)
7. Feelings and thoughts came into my mind (D, ACE)
8. I was sleepy (D, ACE)
9. * I got distracted by bodily sensations such as itches, aches and pains (D, RP, ACE)
10. I forgot what I was supposed to be doing (RP)
11. I could stay focused on the breath (ST, ACE)
12. My mind was alert (ST)
13. It was difficult to stay focused on the breath (ST, D, RP, ACE)
14. I was aware of my body (ACE, D)
15. It was difficult to bring my mind back to the breath if it had been distracted away (ST, RP)
16. I was aware of myself as I did the exercise (SA)
17. My mind did what I wanted it to do (ST)
18. * I was in a dreamy state (D, ACE)
19. I was aware of my muscles moving as I breathed (ACE, D)
20. I was aware of my body posture (ACE, D)
21. * When thoughts/ feelings happened I did not lose awareness of the breath (D, ST, RP, ACE)
22. When noises or other external events happened I stayed aware of the breath (D, ST, RP, ACE)
23. When feelings and thoughts came into my mind I stayed aware of the breath (D, ST, RP, ACE)
24. When feelings and thoughts came into my mind I could stay *focused* on the breath (D, ST, RP, ACE)
25. * The feelings and thoughts that came into my mind were intense (D, ACE)
26. The feelings and thoughts that came into my mind were pleasant (D, ACE)
27. The feelings and thoughts that came into my mind were about things that worry or upset me (D, ACE)
28. When thoughts and feelings happened I recognised they were happening (ST, ACE, SA)
29. When thoughts and feelings arose I was able to let them go without getting caught up in them (ST, D, RP)
30. I could recognise when I was beginning to get distracted (D, SA, RP)
31. When distractions happened I quickly lost awareness of the breath (D, ACE, ST)
32. When thoughts and feelings happened I was able to recognise
what type of thought or feeling they were (D, ACE, SA)
33. When thoughts and feelings happened I was aware of myself as I experienced them (D, ACE, SA)
34. When thoughts and feelings happened I got 'caught up' in them (D)
35. * When thoughts and feelings happened I was overwhelmed by them (D)
- (35. new) When thoughts and feelings happened it seemed like I was observing them with a bit of distance from them (ACE, SA)
36. The more I focused on the breath, the more interesting it became (E, ACE)
37. The more I focused on the breath, the more complex the sensations of breathing became (E, ACE)
38. The more I focused on the breath, the more subtleties of sensation I noticed (E, ACE)
39. The exercise made me more tranquil (E)
40. When the exercise finished I wanted to stay sitting quietly (E)
41. * I could not wait to finish the exercise (E)
42. The exercise gave me energy (E)
43. * The exercise was unpleasant (E, ACE)
44. The exercise has made my mind clearer (E)
45. The exercise has made my mind more concentrated (E, ST)

Letters in brackets indicate putative content areas related to item. D = distraction; RP = memory/recollection of purpose; ST = stability of focus/ control of attention; SA = self awareness and meta-cognition; ACE = awareness of current experience; E = effects of mindfulness exercise

Appendix 3b

MCQ for study 2

Full questionnaire and instructions

Thank you for reading this.

You are invited to take part in a psychology research study.

I am developing a questionnaire to assess 'mindfulness' and concentration - the Mindfulness and Concentration Questionnaire (MCQ). You are invited to help in this process. To do this you will have to:

1. Read the instructions on the next page
2. *Either* do a five minute 'mindfulness' exercise *or* do the full 'mindfulness of breathing'
3. Fill-in a questionnaire (the MCQ) about your experience during the exercise or meditation
4. Then fill-in three other questionnaires. These deal with a variety of things, such as everyday lapses of memory and your experience of general well-being.
5. Return the questionnaires to me

Filling-in the questionnaires will take approximately twenty minutes.

What is the purpose of the study?

'Mindfulness' practice is being used increasingly in the treatment of mental health problems. It typically involves learning to concentrate on the sensations of breathing or other simple sensations. Treatments based upon mindfulness practice seem to be effective in helping overcome mental health problems. The MCQ is being developed in order to understand more precisely what is beneficial in such treatments.

Why have I been chosen?

As wide a variety of people as possible are being approached to try out the questionnaire. This is so that its useful questions can be identified.

Will my taking part in this study be kept confidential?

Yes. The questionnaires are filled-in anonymously.

What are the possible disadvantages or risks of taking part? What if something goes wrong?

There is little or no risk in taking part. Some people might find sitting concentrating on the breath difficult. Some people might experience distressing thoughts and feelings - though it is likely that they will already be aware of such thoughts and feelings anyway. (Mindfulness practice is in any case actually taught to help one deal more effectively with such things.) It is possible that completing some questions on the GHQ12 questionnaire may draw your attention to problems you experience. If you are worried that these are serious, or are worried about distressing thoughts and feelings, I would advise you to contact your GP.

Are there any benefits from taking part?

No. However, if you have not done it before you might discover that you like mindfulness practice and would like to do more of it.

What will happen to the results of the study?

The results will be reported in a thesis submitted to Sheffield University. They may well also be reported in a suitable academic journal. No references will be made to individual people taking part in the study, in either the thesis or the journal article.

Who has reviewed the study?

The study has been reviewed by the research committee of the Dept. of Clinical Psychology at the University of Sheffield, and the ethics committee of the Dept. of Psychology at the University of Sheffield.

Thank you for reading this.

[name], Clinical Psychologist

The Mindfulness and Concentration Questionnaire (MCQ) *(preliminary version)*

Please read this page before using the MCQ

The Mindfulness and Concentration Questionnaire (MCQ) is answered after doing a five minute mindfulness exercise. The questions of the MCQ are about your experience during that mindfulness exercise.

The MCQ may also be used by mindfulness meditators, who can use its questions to refer to a period of time during an immediately proceeding mindfulness meditation, for example the last five minutes of that meditation.

The five minute **mindfulness exercise** consists of the following. Please read the instructions for it so that you know what to do before beginning the exercise:

1. sit down in a quiet room where you are not going to be disturbed by other people
2. close your eyes and let yourself get as comfortable as possible
3. when you are ready, notice the sensations of breathing
4. keep your attention focused on the sensations of breathing, as well as you can
5. if thoughts, feelings or other sensations occur, be aware of them, but keep the focus of your attention on the sensations of breathing, as well as you can
6. keep the exercise going for five minutes, then bring your attention back to the outside world and, when you are ready, open your eyes.

Having done the exercise or meditation the questionnaires can then be answered.

There are four questionnaires:

1. **The Mindfulness and Concentration Questionnaire.**
This asks questions about your experience during the mindfulness exercise/ meditation you have just completed.
2. **The Cognitive Failures Questionnaire.**
This asks questions about common everyday lapses of attention and memory.
3. **The Mindfulness Inventory**
This asks questions concerning mindfulness and related aspects of experience in everyday life.
4. **The General Health Questionnaire**
This asks some basic questions about your state of mental health.

The Mindfulness and Concentration Questionnaire (MCQ) (preliminary version)

The numbers after each question are codes for length of time during the exercise.

Please answer each question by circling the number which comes closest, as well as you can estimate it, to your experience during the exercise. Circle 'dk' if you do not know or cannot remember.

0 = none of the time
 1 = a little of the time
 2 = some more of the time
 3 = half the time
 4 = more than half the time
 5 = most of the time
 6 = all of the time
 dk = don't know

- | | | | | | | | | |
|--|---|---|---|---|---|---|---|----|
| 1. I was distracted by thoughts or feelings | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 2. I remembered what I was supposed to be doing | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 3. I was distracted by noises | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 4. It was easy to keep my attention on the breath | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 5. I was aware of the breath | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 6. I had no awareness of what I was doing | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 7. Feelings and thoughts came into my mind | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 8. I was sleepy | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 10. I forgot what I was supposed to be doing | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 11. I could stay focused on the breath | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 12. My mind was alert | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 13. It was difficult to stay focused on the breath | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 14. I was aware of my body | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 15. It was difficult to bring my mind back to
the breath if it had been distracted away | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 16. I was aware of myself as I did the exercise | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 17. My mind did what I wanted it to do | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 19. I was aware of my muscles moving as I breathed | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 20. I was aware of my body posture | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |

The Mindfulness and Concentration Questionnaire (MCQ)
(preliminary version)

The following questions are about things that you might have experienced during the exercise, such as the experience of thoughts and feelings. The codes are very similar to those in section 1, except they refer to the proportion of time that the experience occurred.

- 0 = none of the time (that the experience happened)
- 1 = a little of the time (that the experience happened)
- 2 = some more of the time (that the experience happened)
- 3 = half the time (that the experience happened)
- 4 = more than half the time (that the experience happened)
- 5 = most of the time (that the experience happened)
- 6 = all of the time (that the experience happened)
- dk = don't know

- | | |
|---|------------------|
| 22. When noises or other external events happened
I stayed aware of the breath | 0 1 2 3 4 5 6 dk |
| 23. When feelings and thoughts came into my mind
I stayed aware of the breath | 0 1 2 3 4 5 6 dk |
| 24. When feelings and thoughts came into my mind
I could stay <i>focused</i> on the breath | 0 1 2 3 4 5 6 dk |
| 26. The feelings and thoughts that came
into my mind were pleasant | 0 1 2 3 4 5 6 dk |
| 27. The feelings and thoughts that came into my mind
were about things that worry or upset me | 0 1 2 3 4 5 6 dk |
| 28. When thoughts and feelings happened I recognised
they were happening | 0 1 2 3 4 5 6 dk |
| 29. When thoughts and feelings arose I was able to
let them go without getting caught up in them | 0 1 2 3 4 5 6 dk |
| 30. I could recognise when I was
beginning to get distracted | 0 1 2 3 4 5 6 dk |
| 31. When distractions happened
I quickly lost awareness of the breath | 0 1 2 3 4 5 6 dk |
| 32. When thoughts and feelings happened I was able to
recognise what type of thought or feeling they were | 0 1 2 3 4 5 6 dk |
| 33. When thoughts and feelings happened I was aware of
myself as I experienced them | 0 1 2 3 4 5 6 dk |
| 34. When thoughts and feelings happened I got
'caught up' in them | 0 1 2 3 4 5 6 dk |
| 35. When thoughts and feelings happened it seemed
like I was observing them with a bit of distance from them | 0 1 2 3 4 5 6 dk |

The Mindfulness and Concentration Questionnaire (MCQ)
(preliminary version)

For the remaining questions the numerical codes mean the following:

- 0 = completely untrue
- 1 = mostly untrue
- 2 = more untrue than true
- 3 = half true
- 4 = more true than untrue
- 5 = mostly true
- 6 = completely true
- dk = don't know

Again, for each question circle the number code which corresponds most closely with your experience during the exercise.

- | | | | | | | | | |
|--|---|---|---|---|---|---|---|----|
| 36. The more I focused on the breath,
the more interesting it became | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 37. The more I focused on the breath, the more complex
the sensations of breathing became | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 38. The more I focused on the breath,
the more subtleties of sensation I noticed | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 39. The exercise made me more tranquil | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 40. When the exercise finished I wanted to stay sitting quietly | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 42. The exercise gave me energy | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 44. The exercise has made my mind clearer | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |
| 45. The exercise has made my mind more concentrated | 0 | 1 | 2 | 3 | 4 | 5 | 6 | dk |

Age:.....

Gender:.....male/female

Have you ever done the 'mindfulness of breathing' meditation before?..... yes/no

If you have done the 'mindfulness of breathing' before, how long ago did you first do it?.....

If you *have* done the 'mindfulness of breathing' before, how frequently have you done it in the last three months, on average? (If you started doing it less than three months ago, how frequently have you done it since starting?)..... not at all/ less than once a week/ at least once a week

If you have done the 'mindfulness of breathing' on average *less than once a week*, how many times *per month* have you done it, on average, in the last three months?..... 0 1 2 3 4 (Please circle closest estimate)

If you have done the 'mindfulness of breathing' on average *at least once a week*, how many times *per week* have you done it, on average, in the last three months?.... 1 2 3 4 5 6 7 (Please circle closest estimate)

Please now fill-in the three further questionnaires. Thank you very much indeed for your help.

Appendix 3c

MCQ20 Item Set

MCQ20 item set

1. I was distracted by thoughts or feelings	0	1	2	3	4	5	6	dk
4. It was easy to keep my attention on the breath	0	1	2	3	4	5	6	dk
7. Feelings and thoughts came into my mind	0	1	2	3	4	5	6	dk
11. I could stay focused on the breath	0	1	2	3	4	5	6	dk
14. I was aware of my body	0	1	2	3	4	5	6	dk
17. My mind did what I wanted it to do	0	1	2	3	4	5	6	dk
19. I was aware of my muscles moving as I breathed	0	1	2	3	4	5	6	dk
20. I was aware of my body posture	0	1	2	3	4	5	6	dk
23. When feelings and thoughts came into my mind I stayed aware of the breath	0	1	2	3	4	5	6	dk
24. When feelings and thoughts came into my mind I could stay <i>focused</i> on the breath	0	1	2	3	4	5	6	dk
26. The feelings and thoughts that came into my mind were pleasant	0	1	2	3	4	5	6	dk
31. When distractions happened I quickly lost awareness of the breath	0	1	2	3	4	5	6	dk
33. When thoughts and feelings happened I was aware of myself as I experienced them	0	1	2	3	4	5	6	dk
34. When thoughts and feelings happened I got 'caught up' in them	0	1	2	3	4	5	6	dk
35. When thoughts and feelings happened it seemed like I was observing them with a bit of distance from them	0	1	2	3	4	5	6	dk
36. The more I focused on the breath, the more interesting it became	0	1	2	3	4	5	6	dk
37. The more I focused on the breath, the more complex the sensations of breathing became	0	1	2	3	4	5	6	dk
38. The more I focused on the breath, the more subtleties of sensation I noticed	0	1	2	3	4	5	6	dk
42. The exercise gave me energy	0	1	2	3	4	5	6	dk
45. The exercise has made my mind more concentrated	0	1	2	3	4	5	6	dk

Appendix 3d

MCQ10 Item Set

The Mindful Concentration Questionnaire (MCQ-10) - Items

1. I was distracted by thoughts or feelings
4. It was easy to keep my attention on the breath
7. Feelings and thoughts came into my mind
11. I could stay focused on the breath
17. My mind did what I wanted it to do
23. When feelings and thoughts came into my mind I stayed aware of the breath
24. When feelings and thoughts came into my mind I could stay *focused* on the breath
31. When distractions happened I quickly lost awareness of the breath
33. When thoughts and feelings happened I was aware of myself as I experienced them
34. When thoughts and feelings happened I got 'caught up' in them

Appendix 4a

Mindfulness Inventory

Appendix 2

Mindfulness Inventory (Rosenberg)

This questionnaire contains a series of statements about how people view themselves and the world. Circle the number that corresponds to how much you agree or disagree with each statement, in terms of how true each statement is of you.

- Circle 1 if the statement is definitely false for you or you strongly disagree.
- Circle 2 if the statement is mostly false or you disagree.
- Circle 3 if the statement is about equally true or false, or if you cannot decide, or if you are neutral on the statement.
- Circle 4 if the statement is mostly true or you agree.
- Circle 5 if the statement is definitely true or you strongly agree.

	1	2	3	4	5
	strongly disagree	disagree	neutral	agree	strongly agree
1. My emotions often get the best of me.	1	2	3	4	5
2. When listening to a lecture, it is easy for me to push aside irrelevant thoughts.	1	2	3	4	5
3. I tend to dwell in the past.	1	2	3	4	5
4. I cannot take the time to explain things to someone who is confused by a simple task.	1	2	3	4	5
5. I get agitated when I am around people who do things slowly.	1	2	3	4	5
6. I am generally a patient person.	1	2	3	4	5
7. I am continually amazed at the beauty of life.	1	2	3	4	5
8. My relationships are often filled with complete turmoil.	1	2	3	4	5
9. Little things often put me to tears.	1	2	3	4	5
10. I've experienced the idea of "time standing still."	1	2	3	4	5
11. Sometimes I am so involved in what I am doing that I completely lose track of time.	1	2	3	4	5
12. People tell me that I am frequently lost in my thoughts.	1	2	3	4	5
13. The world is a wondrous place.	1	2	3	4	5
14. I believe there is some joy to be found in each passing day.	1	2	3	4	5
15. I often annoy people because I hurry them along.	1	2	3	4	5
16. I rarely get lost in what I am doing.	1	2	3	4	5
17. My mind is constantly buzzing with activity	1	2	3	4	5
18. I often lose track of time	1	2	3	4	5
19. The world does not provide much spark for me	1	2	3	4	5
20. I am able to focus entirely on whatever I am doing at that particular moment	1	2	3	4	5

The following items on the MI are reverse-coded:

1,3,4,5,8,9,11,12,15,17,18,19

That is, given that each item is rated on a 1-5 scale, any of the items listed above with a value of 1 should be given a value of 5 (and vice versa); and item (of the items listed above) with a value of 2 should be given a value of 4 (and vice versa); any item with a value of 3 would remain a 3. Once you've done the reverse scoring, you can easily create the subscales.

Listed below are the items that make up each of the four orthogonal factors of the MI. The order of the items within the subscales is a reflection of how strongly the items loaded with their respective factors.

1) Wonderment: Items 14 + 13 + 19 + 7

14. I believe there is some joy to be found in each passing day.

13. The world is a wondrous place.

19. The world does not provide much spark for me (R)

7. I am continually amazed at the beauty of life.

2) Patience: Items 5 + 6 + 15 + 4

5. I get agitated when I am around people who do things slowly. (R)

6. I am generally a patient person.

15. I often annoy people because I hurry them along. (R)

4. I cannot take the time to explain things to someone who is confused by a simple task. (R)

3) Mindful: Items 18 + 16 + 12 + 11

18. I often lose track of time (R)

16. I rarely get lost in what I am doing.

12. People tell me that I am frequently lost in my thoughts (R)

11. Sometimes I am so involved in what I am doing that I completely lose track of time. (R)

4) Well-being: Items 1 + 9 + 3

1. My emotions often get the best of me. (R)

9. Little things often put me to tears. (R)

3. I tend to dwell in the past. (R)

Other items: 2, 8, 10, 17, 20

2. When listening to a lecture, it is easy for me to push aside irrelevant thoughts.

8. My relationships are often filled with complete turmoil (R)

10. I've experienced the idea of "time standing still."

17. My mind is constantly buzzing with activity (R)

20. I am able to focus entirely on whatever I am doing at that particular moment

Appendix 4b

Cognitive Failures Questionnaire

Cognitive Failures Questionnaire

The following questions are about minor mistakes which everyone makes from time to time, but some of which happen more often than others. We want to know how often these things have happened to you in the last six months. Please circle the appropriate number .

	Very Often	Quite often	Occasionally	Very rarely	Never
1. Do you read something and find you haven't been thinking about it and must read it again?	4	3	2	1	0
2. Do you find you forget why you went from one part of the house to the other?	4	3	2	1	0
3. Do you fail to notice signposts on the road?	4	3	2	1	0
4. Do you find you confuse right and left when giving directions?	4	3	2	1	0
5. Do you bump into people?	4	3	2	1	0
6. Do you find you forget whether you've turned off a light or a fire or locked the door?	4	3	2	1	0
7. Do you fail to listen to people's names when you are meeting them?	4	3	2	1	0
8. Do you say something and realize afterwards that it might be taken as insulting?	4	3	2	1	0
9. Do you fail to hear people speaking to you when you are doing something else?	4	3	2	1	0
10. Do you lose your temper and regret it?	4	3	2	1	0
11. Do you leave important letters unanswered for days?	4	3	2	1	0
12. Do you find you forget which way to turn on a road you know well but rarely use?	4	3	2	1	0
13. Do you fail to see what you want in a supermarket (although it's there)?	4	3	2	1	0
14. Do you find yourself suddenly wondering whether you've used a word correctly?	4	3	2	1	0
15. Do you have trouble making up your mind?	4	3	2	1	0
16. Do you find you forget appointments?	4	3	2	1	0
17. Do you forget where you put something like a newspaper or a book?	4	3	2	1	0
18. Do you find you accidentally throw away the thing you want and keep what you meant to throw away - as in the example of throwing away the matchbox and putting the used match in your pocket?	4	3	2	1	0
19. Do you daydream when you ought to be listening to something?	4	3	2	1	0
20. Do you find you forget people's names?	4	3	2	1	0
21. Do you start doing one thing at home and get distracted into doing something else (unintentionally)?	4	3	2	1	0
22. Do you find you can't quite remember something although it's 'on the tip of your tongue'?	4	3	2	1	0
23. Do you find you forget what you came to the shops to buy?	4	3	2	1	0
24. Do you drop things?	4	3	2	1	0
25. Do you find you can't think of anything to say?	4	3	2	1	0

Appendix 4c

General Health Questionnaire - 12

GENERAL HEALTH QUESTIONNAIRE (GHQ-12)



Name: Date:

Please read this carefully.

We should like to know if you have had any medical complaints and how your health has been in general, over the last few weeks. Please answer ALL the questions simply by underlining the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those that you had in the past.

It is important that you try to answer ALL the questions.

Thank you very much for your co-operation.

Have you recently . . .

1. been able to concentrate on whatever you're doing?	Better than usual	Same as usual	Less than usual	Much less than usual
2. lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
3. felt that you are playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less useful
4. felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less than usual
5. felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
6. felt you couldn't overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual
7. been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual
8. been able to face up to your problems?	More so than usual	Same as usual	Less so than usual	Much less able
9. been feeling unhappy and depressed?	Not at all	No more than usual	Rather more than usual	Much more than usual
10. been losing confidence in yourself?	Not at all	No more than usual	Rather more than usual	Much more than usual
11. been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
12. been feeling reasonably happy, all things considered?	More so than usual	About same as usual	Less so than usual	Much less than usual

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Appendix 5a

Toronto Mindfulness Scale

Toronto Mindfulness Scale

I remained open to whatever thoughts and feelings I was experiencing

I noticed the kinds of things my attention tended to become involved with

I notice when I became lost in my thoughts, daydreams or fantasies

I was aware of my experiences constantly changing

I found myself observing unpleasant feeling without getting drawn into them

I noticed how my feelings expressed themselves in my body as physical sensations

**I noticed how my mind tended to cling to certain thoughts and feelings
that I was experiencing**

**I acknowledged each thought or feeling regardless of
whether it was pleasant or unpleasant**

**I felt as if I was watching my thoughts and feelings in my mind,
as if I had some distance from them**

**I approached each experience by trying to accept it, no matter whether it was
pleasant or unpleasant**

Appendix 5b

Mindful Attention Awareness Scale

Mindful Attention Awareness Scale

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

Appendix 5c

Freidburg Mindfulness Questionnaire

Freiburger Mindfulness Questionnaire (second trans.)

1. I am open to the experience of the moment.
2. I recognise that I am not identical with my thoughts.
3. I feel in my body while eating, cooking, cleaning, speaking.
4. When I notice that I was absent I gently return to the experience of the moment.
5. I can value my self worth.
6. I experience how my feelings express themselves in my body.
7. I stay in contact with unpleasant, painful sentiments and feelings.
8. I pay attention to the motives of my actions.
9. I let myself be easily carried away by my thoughts and feelings.
10. I notice that I do not need to react to what just comes into my mind.
11. I observe my thoughts without identifying myself with them.
12. I observe how my thoughts come and go.
13. I lose myself in the contents of my thoughts.
14. I am aware of the fleetingness and transience of experiences.
15. I consider things from several perspectives.
16. I see how I create my own suffering.
17. I see my faults and difficulties without condemning myself.
18. I experience feelings, without having to react to them.
19. I accept myself as I am.
20. I feel [also] in unpleasant sentiments
21. I am in contact with my experiences here and now.
22. I take unpleasant experience on.
23. I observe the coming and going of experiences.
24. I am friendly towards my self when things go wrong.
25. I observe my feelings, without losing myself in them.
26. In difficult situations I can pause..
27. I defend myself inwardly against unpleasant feelings.
28. I experience moments of inner peace and composure, even if there is external pain and unrest.
29. I am impatient with myself and my fellow men.
30. I can smile over it when I see how I sometimes make life difficult for myself.

Appendix 6

Evaluation Questionnaire

Appendix 7

Sample letter to potential participant group

{Name, address, date}

Dear Reverend....

I am a clinical psychologist looking for people who would like to help me by participating in my research project. I wonder if members of your congregation would like to help?

What is this research project about?

Mindfulness meditation, and mindfulness exercises, are being used increasingly in the treatment of mental health problems, and in the control of chronic pain. A reliable method of assessing mindfulness and concentration will help in research on these treatments, and in making them more effective.

Hence I am developing a method of assessing mindfulness and concentration. The method consists of a five minute mindfulness exercise - basically sitting down quietly and concentrating on the sensations of breathing - followed by a questionnaire which asks about one's experience during that exercise.

To develop an effective method and questionnaire I have to try out preliminary versions on as many people as possible. I especially need people who do not practise mindfulness meditation.

What do volunteers have to do?

Take a set of instructions and questionnaires and, at a suitable time and place for them, read the instructions, do the mindfulness exercise, complete the questionnaires, and then return them to me (in a stamped-addressed envelope provided). Everything is filled-in anonymously. As well as the preliminary version of my questionnaire there are some other questionnaires; people's answers to these help me assess the validity and usefulness of my own questionnaire.

What do you have to do?

Look at the enclosed example of research instructions and questionnaires. It takes twenty minutes or so for someone to do the mindfulness exercise and complete the questionnaires, so it does require helpful people prepared to give time to it.

If members of your church would like to help with the research project then please fill-in the reply slip and return it to me in the envelope provided. You could also telephone me if you wished. I could then liaise with you how best to distribute the questionnaires.

I could provide a poster, together with an open box containing the questionnaires. These can be displayed together in a suitable place. This is a method which has already worked well elsewhere.

Yours sincerely