Original paper

Mindfulness Based Cognitive Therapy for Mental Health Professionals: A long-term quantitative follow-up study

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Abstract

The authors investigated whether the psychological benefits and meditation practice identified three months after attending a Mindfulness-Based Cognitive Therapy (MBCT) program were maintained in a group of mental health professionals at 18-months follow-up. Of the 23 participants who attended the original MBCT program, 18 agreed to participate. A repeated measures design was employed with the following measures taken: mindfulness; psychological well-being; life satisfaction; trait worry; trait and state anxiety; and an index of weekly meditation practice. A measure of life events and perceived stress (SRRS) was also included. Participants (N = 10) who provided data at each of the three time-points – baseline, 3-months follow-up and 18-months follow-up - were included in the repeated measures ANOVAs. Compared to baseline, a significant improvement in levels of mindfulness, trait anxiety and trait worry, was noted at 18-months follow-up. Three quarters of the current sample maintained some form of meditation practice although weekly amounts of meditation practice were found to be unrelated to psychological well-being. Contrary to prediction, life events and related levels of perceived stress correlated positively with levels of mindfulness. Attending an MBCT group as a mental health professional appears to have a positive impact on psychological well-being and ongoing meditation practice which persists long after the end of the intervention. Reasons for a lack of association between length of weekly practice and psychological well-being, as well as the positive relationship between perceived stress and mindfulness, are discussed.

Keywords

mindfulness; mindfulness based cognitive therapy (MBCT); mental health professionals, meditation, follow up

Introduction

Mindfulness Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002) is a group-based treatment program for patients who are vulnerable to recurrent episodes of clinical depression. Empirical support for its effectiveness has been established. For example, in two randomised controlled trials of MBCT (Ma & Teasdale, 2004; Teasdale et al., 2000), the risk of further relapse was reduced by approximately 50% among patients who had previously experienced three or more depressive episodes.

Baer, Smith, and Allen (2004) have defined the core components of mindfulness as: observing, describing, acting with awareness and accepting without judgement. The MBCT program supports the development of these skills through teaching meditation techniques. By improving self-monitoring skills, people vulnerable to depressive relapse learn to detect negative automatic thoughts as soon as they begin to form. Through increased awareness, people can disengage from the potential spiral of depressogenic thoughts and make more skilful choices about how they respond.

Unlike other cognitive behavioural therapies, Segal et al. (2002) strongly advise that MBCT therapists develop their own personal meditation practice. Part of the rationale for this requirement is that mindfulness is modelled through the instructors' presence as well as through the content of the program. The above recommendation raises two important issues: first, how to train instructors within a publicly funded national health service, and second, whether personal meditation is a realistic and sustainable demand for health professionals.

Segal et al. (2002) suggest that as a first stage of training, professionals should undertake the MBCT program. To date, only one study has evaluated the impact of a MBCT program on the meditation practice of mental health professionals (Ruths, DeZoysa, Frearson, Hutton, Williams, & Walsh, 2012). In this uncontrolled

intervention study, participants attended an average of seven of the eight MBCT sessions provided. Of the 27 professionals who embarked on the program, most (24) attended at least four sessions. Almost two-thirds of these (15/24) continued some form of meditation at 3-months follow-up, with each participant averaging more than two hours of practice per week. Ruths et al. concluded that meditation is a viable practice for committed professionals, despite the significant time constraints.

Adherence to practice over the longer term has been reported for patient populations. For example, Miller, Fletcher, and Kabat-Zinn (1995), and Kabat-Zinn, Lipworth, Burney, and Sellers (1987), reported 56-75% of patients continued to practice some form of meditation after three and four years, respectively. In contrast, longer-term adherence to meditation practice amongst health professionals has not been reported hitherto. Research into this question is needed therefore to inform decisions regarding the cost effectiveness and sustainability of a MBCT intervention.

As well as developing and sustaining a meditation practice, a second issue concerns whether MBCT provides psychological benefit for professionals as well as their patients. Existing research has shown that mental health professionals are particularly vulnerable to increased stress levels (Margison, 1987) and to workplace burnout (Farber & Heifetz, 1982). Mindfulness-based intervention programs such as mindfulness-based stress reduction (MBSR) have been associated with improved psychological well-being in this group. For example, Shapiro, Astin, Bishop, and Cordova (2005) demonstrated reductions in stress, and increases in quality of life and self-compassion, among mental health care professionals following a MBSR program. Similar results were reported by Shapiro, Brown, and Biegel (2007) among therapists in training. In addition, nurses undertaking a MBSR program reported reduced levels of emotional exhaustion and depersonalisation (Cohen-Katz et al., 2005). Ruths et al (2012) found significant

improvements in mindfulness and psychological well-being at the end of a MBCT program, with gains in mindfulness being maintained at 3-months follow-up. Those participants who continued meditating showed significant improvements at follow-up in mindfulness and psychological well-being, and significant reductions in psychological distress (as measured by the Brief Symptom Inventory), trait anxiety (the tendency to feel anxious, most of the time, across a variety of situations) and trait worry (the tendency to engage in worrying thoughts, most of the time). Furthermore, amount of time spent meditating correlated significantly with trait anxiety and psychological well-being. Specifically, the more time health professionals spent meditating after the MBCT program was completed the more psychological well-being and less trait anxiety they reported. The authors concluded that MBCT was a promising tool for promoting psychological well-being in staff as well as patients. As yet, no study has investigated the sustainability of these effects beyond three months.

Ma and Teasdale (2004) noted that the MBCT program was largely ineffective in reducing relapse levels among those patients with recurrent clinical depression who reported severe life events. By way of explanation, Teasdale et al. (2000) suggested that in times of acute distress, the cognitive resources needed to attend to one's experience in a mindful way may be severely compromised. Less is known about the impact of stressful life events on mindfulness in a non-clinical population undertaking a MBCT program. The current study provided an opportunity to identify the existence and nature of any such associations.

In summary, this paper describes a long-term quantitative follow-up study of mental health professionals who had attended an MBCT program 18 months earlier. It is the second paper in a three-part series, incorporating Ruths et al's original pilot study (2012) and De Zoysa, Ruths, Walsh, and Hutton's (in press) qualitative follow-up of

the same cohort. In the current study, measures of psychological distress and well-being were repeated from the original pilot study with the inclusion of a life events measure and perceived stress measure. The hypotheses for this study were as follows: First, statistically significant improvements in mindfulness observed at 3-months follow-up will be maintained at 18-months follow-up; in addition, improvements in psychological well-being, trait worry and trait anxiety which approached significance at 3-months follow-up will be maintained at 18-months follow-up (H1); second, the majority of participants will maintain some form of meditation practice at 18-months follow-up (H2); third, the positive association between self-reported practice and both trait anxiety and psychological well-being identified at 3-months follow-up will be maintained at 18-months follow-up (H3); fourth, changes in psychological well-being will be related to changes in mindfulness at 18-months follow-up (H4); and fifth, numbers of life events encountered during the previous year and their stressfulness will be negatively related to mindfulness at 18-months follow-up (H5).

Method

Participants

The population of interest was the 23 mental health professionals who completed the MBCT program and had participated in Ruths et al.'s original study. The original sample comprised of 24 participants but one participant was excluded due to their involvement with this research. All participants were contacted by e-mail with an information sheet attached describing the study. Recipients of the e-mail were asked to reply stating whether or not they wished to participate and, if so, to provide an address to which a questionnaire pack could be sent. Potential participants who had not replied within a month were phoned to establish whether or not they wished to take part. Of the

23 participants approached, 18 agreed to take part in the follow-up study. Table 1 shows the demographics and other relevant characteristics of the sample at baseline, 3-months follow-up and 18-months follow-up.

Insert Table 1 about here

Sample characteristics did not differ across time in terms of age, prior meditation experience or mean number of sessions attended and were similarly weighted in terms of profession and gender splits. The majority of the current sample was female and employed as Clinical Psychologists. The other professions within the group were Social Worker, Research Psychologists and Psychiatrist. Only one participant had a regular mindfulness practice prior to the MBCT program. The mean number of sessions attended by the sample was seven and this was also the mode. All 18 participants in this follow-up study were defined as White, which was further defined as British (13), Irish (1), Scottish (1), former USSR (2) and unspecified (1). The majority of the sample (78%) reported having no religious affiliation, being atheist or agnostic. Of the remainder, one participant defined themselves as Buddhist and two others as Christian. The number of years qualified ranged from 0 to 27 years with a median of 4.5 years. Only one participant had attended another mindfulness course since completing the original programme.

Design and Procedures

Ruths et al. (2012) conducted a prospective uncontrolled intervention study, with measures administered at three time points: baseline (week 0), end of intervention (week 8) and at 3-months follow-up (week 20). The current study extended the design

to re-administer measures at 18 months follow-up. Scores were then compared between baseline, 3-months follow-up and 18-months follow-up.

The MBCT program was delivered to a group of mental health professionals over an 8-week period in line with the manual for relapse prevention of depression (Segal et al., 2002). Two follow-up sessions were also provided. Each participant was invited to purchase a copy of the book "Full Catastrophe Living" by Jon Kabat-Zinn (1990) as well as their own meditation CDs. Being a non-clinical group, the emphasis was placed on distressing emotional states rather than clinical depression. Sessions lasted approximately two hours each. Meditation exercises were taught and practised at each session, and space was made available for participants to discuss and share their experience of each type of meditation (e.g., sitting meditation, body scan, three-minute breathing exercise, mindful moving and mindful walking).

The facilitator also sought to educate the participants about CBT, in particular about the nature of thoughts as mental events rather than fact, and the role of behavioural activation. Participants were encouraged to identify situations where strong emotions arose and to record their thoughts, bodily sensations and behaviours associated with these emotions. The links between thinking, feeling and behaving were made explicit from these records.

As well as delivering the program content, the facilitator (FAR) aimed to model the spirit of mindfulness throughout their teaching and mode of enquiry. The facilitator had amassed seven years of CBT experience and more than two years of personal meditation practice. In addition, he had attended a seven-day intensive residential workshop of MBSR training for health professionals. All sessions were videoed with consent of the participants for supervision purposes.

By way of homework, participants were asked to meditate six out of seven days of the week, for up to 45 minutes at a time, using guided meditation CDs. As well as these guided formal practices, participants were encouraged to practice mindfulness more informally, for example through everyday activities such as washing up, brushing teeth, driving, etc. They agreed to record the duration, frequency and type of meditation practices they followed each week.

Measures

The following measures were used in Ruths et al.'s initial study and were repeated in the current study 18 months later. An additional measure of stressful life events was added to the questionnaire booklet.

Mindfulness: Mindfulness was measured using the *Mindful Awareness Attention Scale* (MAAS; Brown & Ryan, 2003). This 15-item self-report measure assesses the frequency of mindless states across a number of domains - cognitive, emotional, interpersonal and general. Psychometric data attest to the reliability and validity of the MAAS (Brown & Ryan, 2003). It was selected as the most valid measure of mindfulness available at the time the data were collected.

Psychological well-being: Psychological well-being was measured using the *General Health Questionnaire* (GHQ-12; Goldberg & Williams, 1988). The GHQ-12 is widely used in intervention studies as it enquires about changes in well-being during the previous month.

Life satisfaction: Global Life satisfaction was measured with the *Satisfaction with Life Scale* (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). Using just five statements and a seven point scale, participants are invited to evaluate their life satisfaction according to their own criteria. The measure is believed to be sufficiently

sensitive to detect post intervention change (Diener et al., 1985; Pavot, Diener, Colvin, & Sandvik, 1991).

Trait worry: the *Penn State Worry Questionnaire* (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990) was used to assess individuals' tendency towards excessive worry, a trait which is similar to, but distinct from, anxiety. The measure contains sixteen items and uses a five-point rating scale. Higher scores indicate greater levels of worry. Good evidence of reliability and discriminant validity is provided by Meyer et al. (1990).

Trait and State Anxiety: Trait and State anxiety were measured using the *State-Trait Anxiety Inventory* (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Each scale contains twenty items and a four-point response scale. Both scales are widely used in psychological research and possess good psychometric properties.

Meditation practice: A weekly self-report diary was devised by Ruths et al. to record both frequency and duration of informal practice per day (e.g. breathing spaces, brief mindful walking, eating or doing a routine activity mindfully) and frequency and duration of formal practice per week (e.g., sitting with or without a tape, formal walking or yoga). These data were converted to a weekly measure of practice for ease of comparison across different data collection points.

Life events and stress: This study used the Life Events Inventory adapted from Holmes and Rahe's (1967) Social Readjustment Rating scale (SRRS). This is a list of 43 life events found to precede the onset of illness and consequently thought to make significant demands upon an individual's coping resources. The current measure was adapted by inviting participants to rate the level of stress associated with each life event endorsed.

Ethical considerations

Ethical approval for this study was obtained from both the relevant NHS Trust and the University of East London Research Ethics Committee. Informed consent was received from all participants to partake in the research. Questionnaire data were labelled by numeric codes to preserve confidentiality.

Results

The analysis was carried out on all participants who had a data point at baseline, 3-months follow-up and 18-months follow-up (N=10). The sample was too small to divide into meditators and non-meditators. The variables under analysis met the conditions for parametric tests.

A series of repeated measures ANOVAs revealed a significant main effect of time in relation to mindfulness, $F(2,18)=12.21$, $p<.01$, trait anxiety, $F(2,18)=9.31$, $p<.01$, and trait worry, $F(2,18)=6.91$, $p<.01$). The main effect of time did not quite reach statistical significance in the case of psychological well-being, $F(2,18) = 2.87$, $p =.083$. Furthermore, there was no significant effect of time either on state anxiety, $F(2,18) = 2.32$, $p =.127$ or life satisfaction, $F(2,16) = 2.25$, $p = .137$ (see Table 2 below).

Insert Table 2 about here

Post hoc pairwise comparisons were made between baseline and 3-months follow-up, baseline and 18-months follow-up, and 3-months and 18-months follow-up. Mindfulness and trait anxiety showed significant improvement from baseline at 3-months follow-up and at 18-months follow-up. At 18-months follow-up, additional significant improvement from baseline was noticed with trait worry. Thus, the gains

found in the short term were all maintained in the long term, with the exception of psychological well-being which did not reach statistical significance.

Hypothesis 2 stated that the majority of participants would maintain some form of meditation practice at 18-months follow-up. The phrase 'meditation practice' covered both formal (e.g. sitting meditation) and informal (e.g. 3-minute breathing spaces) practices. Ruths et al. found that 15 out of 18 participants maintained a meditation practice at 3-months follow-up. The mean length of meditation practice per week was 197 minutes (SD = 75 minutes) during the intervention and, in those still meditating, 166 minutes (SD = 167 minutes) at 3-months follow-up.

In the current study, 13 out of 17 participants (one participant was excluded as their measure of meditation practice was incomplete) still maintained some form of meditation practice at 18-months follow-up. There was no statistically significant difference between the proportions of participants meditating at 3-months follow-up (15 out of 18; 83.3%) and at 18-months follow-up (13 out of 17; 76.5%) ($p>0.05$, McNemar test).

Preliminary exploration of the practice data showed that they did not follow a normal distribution and were subject to outliers and unequal variances. Consequently, the median amount of practice was calculated during the initial MBCT program (185 minutes), at three months follow-up (98 minutes) and at 18-months follow-up (84 minutes). Among those participants (N = 13) who maintained some form of practice at 18-months follow-up, the median length of practice dropped by only 14 minutes across the two follow-up periods. A Wilcoxon paired-samples test shows that this decrement was not statistically significant ($Z=-1.52$, $p>0.05$). Taken together the results indicate that the proportion of participants still meditating, and the average length of time spent meditating, was maintained at 18-months follow-up.

Hypothesis 3 stated that the significant associations between self-reported practice and both trait anxiety (r_s = -.52, p=.047) and psychological well-being (and r_s = .52, p=.037) observed by Ruths et al. at 3-months follow-up would be maintained at 18-months follow-up. In the current study, levels of trait anxiety and psychological well-being were no longer significantly correlated with time spent meditating (r_s = -.24, p=0.227, N=12 and r_s = -.11, p=0.370, N=12, respectively). It is possible that overall 'time spent meditating' (which includes both formal and informal practice in the above study) was not a sensitive enough measure to explore the relationship between practice and both trait anxiety and psychological well-being. Therefore, the categories of informal practice (N=11) and formal practice (N=8) were analysed separately. This revealed a significant correlation between levels of mindfulness and duration of *informal* practice (r_s = .734, p=0.02; the original P value of 0.005 was manually adjusted using Bonferroni's correction for multiple comparisons). This association did not hold for formal practice. Overall, hypothesis three was not supported by the data but an association between amount of informal meditation practice and level of mindfulness at 18-months follow-up came to light.

Hypothesis 4 stated that changes in psychological well-being would be related to changes in mindfulness at 18-months follow-up. The variables of interest were those that had shown significant differences between baseline and follow-up assessment (at 3 months and/or 18 months). These were mindfulness, trait anxiety, trait worry and psychological well-being. Changes in mindfulness were found to correlate significantly both with changes in trait anxiety and changes in psychological well-being (r_s = -.581, p=.009; r_s = .470, p=.03, respectively). However, changes in mindfulness did not correlate significantly with changes in trait worry. As expected, changes in trait worry did correlate with changes in trait anxiety (r_s=.640, p=.003).

Hypothesis 5 stated that both the number of life events encountered by participants, and their degree of stressfulness, would be negatively related to Mindfulness at 18-months follow-up. Contrary to expectations, a positive correlation was observed between number of life events and mindfulness at 18-months follow-up, r_s = .766, p=.002, N=12. As life events can be categorised as positive (e.g. a holiday) as well as negative (e.g. losing a job), the individual stress rating attributed to these events was also analysed. Again, the correlation between mindfulness and the stressfulness of experienced life events was positive and significant, r_s =.543, p=.034, N=12. Unexpectedly, the more life events a person experienced during the previous year, and the more stressful they found them, the higher their mindfulness scores were at 18-months follow-up.

Discussion

Compared to baseline measures, significant improvements in levels of mindfulness, trait anxiety and trait worry were observed at 18-months follow-up. The other dependent variables (psychological well-being, state anxiety and life satisfaction) also showed improvements from baseline but these changes did not reach statistical significance. Similar proportions of participants were meditating at 18-months follow-up (76%) compared to 3-months follow-up (83%). The average weekly time spent meditating (98 v 84 minutes) did not decline significantly from 3-months follow-up to 18 months follow-up. Contrary to Ruths et al.'s (2012) findings, no significant association was detected between length of self-reported practice and measures of psychological well-being. However, when practice was split into formal and informal categories, levels of mindfulness were found to correlate positively with informal practice. Finally, and unexpectedly, positive correlations were found between levels of

mindfulness and both life events and their perceived stressfulness at 18-months follow-up.

MBCT as a non-clinical intervention

The results suggest that participating in the MBCT programme can have beneficial effects for mental health professionals as well as their clients. Significant improvements were seen in trait levels of anxiety and worry. This is compatible with findings from other non-clinical populations using the MBSR program (Astin, 1997; Shapiro, Schwartz, & Bonner, 1998). Unique to the current study is the demonstration that these mental health benefits persist 18 months after the original intervention, suggesting that MBCT might lead to long lasting change. This was achieved without any follow-up sessions offered beyond the 3-month time point.

Mindful awareness and attention (MAAS) has been conceptualised as a process variable mediating the overall beneficial effect of meditation practice. In line with this, Brown and Ryan (2003) demonstrated a positive correlation between MAAS and psychological well-being. However, none of the studies reported above looked at whether changes in mindfulness were related to the changes in other outcome measures. The current study showed an association between changes in mindfulness and changes in both trait anxiety and psychological distress. A possible functional mechanism is that mindful attention produces a slowing down of perceptual processing which counteracts the hypervigilance associated with trait anxiety (Eysenck, 1992). This may be experienced as calming and relaxing (Benson, Beary, & Carol, 1974). Such deliberative processing may also provide participants with an opportunity to self regulate their emotions. However, changes in mindfulness did not correlate with changes in trait worry. A possible explanation is that increased mindfulness does not reduce a tendency

to worry, but does alter one's relationship to the worrying thoughts e.g. viewing them as transient mental events rather than statements of fact (Roemer & Orsillo, 2002).

Adherence to meditation practice

The number of health professionals who continued some form of meditation practice (formal and/or informal) at 18-months follow-up was similar to the proportions reported by Miller et al. (1995) and Kabat-Zinn et al. (1987) using patient groups. In addition, the median weekly length of practice did not decrease significantly. This suggests that moderate to high adherence rates (in terms of numbers practising) can be found in professional as well as patient populations. Furthermore, the *amount* of meditation practice per week is also being maintained over the long-term. This is an impressive finding in a group of busy mental health professionals with little or no previous meditation experience who attended a relatively short training program. The data regarding adherence to practice suggest that asking mental health professionals to incorporate a meditation practice into their lives might be a sustainable option.

Meditation practice and psychological well-being

No significant associations were detected between overall practice time and scores on the psychological outcome measures at 18-months follow-up. These results are at odds with those of Ruths et al. (2012) but similar to those of Shapiro, Brown and Biegel (2007) who found no effect of weekly mindfulness practice time on changes in distress and well-being amongst therapists in training. However, when practice data were split into formal and informal categories in the current study, mindfulness was found to be related to the duration of informal practice but not the duration of formal practice.

Informal practice is considered equally important as formal practice. Its function is both to extend the *qualities* of mindfulness outside a set practice time and to encourage a 'way of being' which permeates everyday life (Kabat-Zinn, 2003). Hayes and Shenk (2004) and Bishop et al. (2004) have suggested that any technique which increases mindfulness is a "mindfulness technique" and need not necessarily be meditation. This raises the question of how influential the amount of formal practice is, above and beyond informal practice. As yet, there are no empirical data to support formal practice as the main vehicle for change in psychological well-being (Smith, 2004).

Mindfulness and life events

During periods of acute stress, automatic processing (akin to mindlessness) may be resorted to in order to preserve cognitive resources (Eysenck & Keane, 2002). Automatic processing makes fewer demands on working memory; well-learned routines requiring minimal cognitive processing are preferred to more cognitively demanding novel responses. Therefore, it was hypothesised that levels of mindfulness might be compromised by the presence of stressful life events. Paradoxically, the opposite finding was observed such that higher numbers of life events and higher levels of related perceived stress were associated with greater levels of mindfulness at 18-months follow-up.

One possible explanation of this unexpected positive association between stressful life events and mindfulness is that an increased awareness of internal mental states may mean that people who are mindful are more likely to notice, and therefore report, changes in stress levels. Another possibility is that there is something about stressful life events that actually increases mindful awareness; Brown and Ryan (2003) found higher levels of mindfulness in their sample of cancer patients than in a control group. Researchers such as Brennan (2001) suggest that when faced with a serious life event,

individuals may focus upon existential issues such as personal growth and mindful living. Thus, the occurrence of stressful life events may provide a trigger to become more mindful.

Limitations and further research

The current study did not feature a control group. Consequently, any links between psychological well-being and mindfulness can only be made tentatively. The follow-up group was self-selecting and the numbers for comparison were small due to the repeated measures design. This limited the analysis of subgroups. Future research might seek to compare outcome measures between those who have continued meditating and those who have stopped.

The choice of measures for the current research was also limited by its repeated measures design. Since the original study was conducted, alternative measures of mindfulness have become available e.g. The Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Baer et al., 2008). The FFMQ incorporates five components: observing, describing, acting with awareness, non-judging of inner experience and non-reactivity of inner experience. Further research might seek to identify those elements of mindfulness that possess the most therapeutic value.

The current study found that higher numbers of life events and perceived stress were associated with greater levels of mindfulness. Further research might investigate which types of life event (e.g. positive, negative, those amenable to change) are associated with changes in mindfulness. Furthermore, qualitative research is needed to explore how program attendance impacts on participants' professional activity as well as their personal well-being. Such work is reported by DeZoysa et al. (in press) in the third study in this three-part series.

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Table 1

Table 1: Background information for sample

	Baseline	3-months follow-up	18-months follow-up
No. of eligible participants[1]	27	24	23
No. of participants in study	24	18	18
Mean age of participants (yrs)	35	35	35
No. of Clinical Psychologists (no. in training in parenthesis)	14(+2)	12	14
No. of Research Psychologists	5	3	2
No. of Psychiatrists	2	2	1
No. of Social Workers	1	1	1
Gender split (male/female)	6/18	5/13	4/14
Mean years of CBT experience	6	5	4
Mean no. of sessions attended	7	7	7

[1] Participants who had attended four or more sessions of the MBCT programme.

Table 2

Table 2: Comparison of mean scores on all outcomes measures over time

Measure	N[2]	Baseline mean	3mth Follow-up mean	18mth Follow-up mean	F value (df)	Baseline v 3mth Follow-up	Baseline v 18mth Follow-up[3]
Mindfulness	10	50.30	61.90	60.80	12.21 (2,18) P<0.01 **	P=0.006 **	P=0.010 *
Trait Worry	10	41.20	34.30	34.20	6.91 (2,18) P=0.006 **	P=0.098 ns	P=0.020 *
Trait Anxiety	10	39.10	32.60	32.10	9.31(2,18) P=0.002 **	P=0.003 **	P=0.034 *
Psychological well-being	10	11.60	8.40	9.50	2.87 (2,18) P=0.083 ns		
State Anxiety	10	37.50	35.70	31.30	2.32 (2,18) P=0.127 ns		
Satisfaction with Life[4]	9	22.78	24.11	25.22	2.25 (2,16) P=0.137 ns		

*= <0.05; **= <0.01; ns= not significant

[2] The sample size is reduced from 18 to 10 as only participants with a score at each timepoint could be included in the repeated measures analysis

[3] There were no significant differences between 3-month follow-up and 18-month follow-up values for any measure

[4] One SWLS measure was missing from Ruths *et al.* (2012) data set.