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Shorter communication

A randomised controlled trial of a brief online mindfulness-based intervention

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ABSTRACT

Objectives: There is growing evidence that mindfulness has positive consequences for both psychological and physical health in both clinical and non-clinical populations. The potential benefits of mindfulness underpin a range of therapeutic intervention approaches designed to increase mindfulness in both clinical and community contexts. Self-guided mindfulness-based interventions may be a way to increase access to the benefits of mindfulness. This study explored whether a brief, online, mindfulness-based intervention can increase mindfulness and reduce perceived stress and anxiety/depression symptoms within a student population.
Method: One hundred and four students were randomly allocated to either immediately start a two-week, self-guided, online, mindfulness-based intervention or a wait-list control. Measures of mindfulness, perceived stress and anxiety/depression were administered before and after the intervention period.
Results: Intention to treat analysis identified significant group by time interactions for mindfulness skills, perceived stress and anxiety/depression symptoms. Participation in the intervention was associated with significant improvements in all measured domains, where no significant changes on these measures were found for the control group.
Conclusions: This provides evidence in support of the feasibility and effectiveness of shorter self-guided mindfulness-based interventions. The limitations and implications of this study for clinical practice are discussed.

Jon Kabat-Zinn, a pioneer of the application of mindfulness practice and principles in secular therapeutic interventions, defines mindfulness as "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment" (Kabat-Zinn, 2003, p. 145).

There is growing evidence that mindfulness-based interventions have positive consequences for psychological (Brown & Ryan, 2003; Keng, Somski, & Robins, 2011) and physical (Grossman, Niemann, Schmidt, & Walach, 2004) health, in both clinical (Chiesa & Serretti, 2010; Hofman, Sawyer, Witt & Oh, 2010; Vollestad, Nielsen, & Nielsen, 2012) and non-clinical (Eberth & Sedlmeier, 2012; Sedlmeier et al., 2012) populations. The potential benefits of mindfulness underpin a range of therapeutic intervention approaches designed to increase mindfulness in both clinical and community contexts.

The most well established and thoroughly evaluated mindfulness-based interventions are mindfulness-based stress reduction (MBSR) and mindfulness-based cognitive therapy (MBCT). MBSR and MBCT are eight-session group-based therapies that incorporate mindfulness practice with other stress reduction and cognitive therapy approaches. They teach individuals to observe, acknowledge and let go of the thoughts, feelings and emotions that come into awareness (Kabat-Zinn, Lipworth, & Burney, 1985; Shapiro, Astin, Bishop, & Cordon, 2005). MBSR and MBCT do not aim to change direct experience (thoughts, feelings, bodily sensations etc.), but rather they encourage a changed way of relating to it, through the cultivation of a non-judgemental awareness and acceptance of the present-moment.

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Mindfulness principles and practice also form part of the theory and practice of dialectical behavioural therapy (DBT; Linehan, 1993), person-based cognitive therapy (PBCT; Chadwick, 2006; Dannahy et al., 2011; Strauss, Hayward, & Chadwick, 2012) and acceptance and commitment therapy (ACT; Luoma, Hayes, & Walser, 2007), each of which also has a developing evidence base (see Ost, 2008; Vollestadt et al., 2012; for reviews). While each of these mindfulness-orientated interventions is unique, they share some common elements, including the regular practice of mindfulness meditation and other exercises designed to promote mindfulness skills in daily life, both in the therapy setting and during home practice.

Given the measured benefits of mindfulness, the possibility of extending the reach of mindfulness-orientated interventions is beginning to be explored. Methods to increase the availability of mindfulness-based approaches include the dissemination of low-intensity mindfulness-based self-help (MBSH) interventions. Low-intensity approaches rely on reduced practitioner resources and/or use practitioner time in a more cost effective manner (cf. Bennett-Levy et al., 2010). MBSH resources are widely available and include self-help books/workbooks, audio guides, online programmes and mindfulness smart phone apps, which each might increase the parsimony, ease and efficiency of mindfulness interventions (Cavanagh, Strauss, Forder, & Jones, 2013).

Cavanagh et al., 2013 have conducted a meta-analysis of 15 RCTs evaluating mindfulness and acceptance-based self-help and concluded that the field shows early promise. The meta-analysis showed significant benefits of MBSH in comparison to control conditions for mindfulness skills and for symptoms of anxiety and depression. Almost all of these 15 studies evaluated book-based or audio-based self-help interventions. In the context of the rapid expansion of e-health and e-mental health programmes (Jorm, Morgan & Mahli, 2013; Marks & Cavanagh, 2009), further growth in the development and evaluation of online mindfulness training programmes is anticipated and necessary (cf. Monshat, Vella-Brodrick, Burns, & Herrman, 2011). Segal (2011) has noted that the evolution of mindfulness-based interventions is likely to be in the delivery of online programmes, because of the greater reach and cost effectiveness that this medium provides.

To date, two groups have published feasibility studies of online mindfulness-based interventions, but both have methodological limitations. One was underpowered to detect intervention effects (Glück & Maercker 2011), the other relied on an uncontrolled study design (Krusche, Chylorova, King & Williams, 2012). The present study aims to address these methodological issues by evaluating the impact of a brief MBSH online intervention using an adequately-powered RCT design in a student sample. Investigating the potential of this kind of intervention in student populations is particularly pertinent as recent surveys indicate high rates of psychological distress, but relatively low rates of treatment seeking within this group (Bewick, Gill, Mulhern, Barkham, & Hill, 2008; Macaskill, 2012; Monk, 2004). E-mental health programmes may be particularly attractive to this predominantly young, computer literate population and help to meet this treatment gap.

Method

Participants

Participants were 104 students (92 female) from a university in the South of England who had responded to either a recruitment email or posters that had been placed around the University campus. Age ranged from 19 to 51 years ($M = 24.70$ years, $SD = 6.44$ years). The study protocol was approved by the ethics committee at the host university and informed consent was obtained from each participant prior to participation.

Materials

All participants had access to a computer and to the University's virtual learning environment.

Five facet mindfulness questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer & Toney, 2006)

This 39-item self-report scale is used to measure changes in participant's tendency to be mindful in daily life. Participants were asked to what extent each of the statements are true of them. Each item is on a 5-point Likert-type scale from 1 – *never or very rarely true* to 5 – *very often or always true*. The FFMQ showed good internal consistency at baseline in this sample, Cronbach's alpha = 0.91.

Perceived stress scale (PSS; Cohen & Williamson, 1988)

The 10-item Perceived Stress Scale (PSS) is designed to measure how unpredictable, overloaded or uncontrollable participants have found their lives. The scale asks participants to rate how often they have felt or thought they had been out of control, overloaded and unpredictable during the last two weeks on a 5-point Likert-type scale from 0 – *never* to 4 – *very often*. The PSS showed good internal consistency at baseline in this sample, Cronbach's alpha = 0.91.

Patient health questionnaire for depression and anxiety (PHQ-4)

The PHQ-4 is a brief screening measure for anxiety and depression, focussing on experiences during the previous two weeks (Kroenke, Spitzer, Williams, & Löwe, 2009). Four items are answered on a four point Likert scale ranging from 0-*not at all*, to 3-*nearly everyday*; an example item being: "Over the past two weeks have you been feeling down, depressed, or hopeless?" Total score is determined by adding together the scores for each of the four items. Scores are rated as normal (0–2), mild (3–5), moderate (6–8), and severe (9–12). The PHQ-4 showed good internal consistency at baseline in this sample, Cronbach's alpha = 0.87.

Engagement and experience questionnaire

In order to assess participants' engagement with the mindfulness, online intervention they were asked to indicate how often they had practiced mindfulness meditation during the two-week intervention, how frequently they intended to continue to practice (0–*not at all* to 4–*at least once a day*), and how frequently they had read intervention related emails (0–*never* to 4–*always*). In order to assess participants' experience of the mindfulness, online intervention, they were asked how beneficial they thought the two-week intervention had been for them (0–*not at all* to 4–*very beneficial*).

The online mindfulness-based intervention

The 'Learning Mindfulness Online' intervention was delivered using the University's virtual learning facility, built with an open source learning management system, Moodle. The learning content consisted of information about mindfulness and mindfulness practice and audio-based practices that users were invited to follow. Participants were given access to the intervention for a period of 14 days. Upon log-in, a welcome page appeared, providing information on what to expect within each section of the programme. The programme had five different sections, excluding the welcome page: *What is Mindfulness?* (text and video about the history and benefits of mindfulness), *Daily Mindfulness Practice* (a choice of guided mindfulness meditations with instructions for use, detailed below), *Daily Practice FAQ* (information regarding what experiences to expect), *My Daily Journal* (space to reflect on their mindfulness experience), *Study Information, Help and Assistance* (study information sheet, contact email for researchers, university