

Article title: An exploration of formal and informal mindfulness practice and associations with wellbeing

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Abstract

Mindfulness has transdiagnostic applicability but little is known about how people first begin to practice mindfulness and what sustains practice in the long term. The aim of the present research was to address this gap in knowledge by exploring the experiences of a large sample of people practicing mindfulness, including difficulties with practice and associations between formal and informal mindfulness practice and wellbeing. In this cross-sectional study 218 participants who were practicing mindfulness or had practiced in the past completed an online survey about how they first began to practice mindfulness, difficulties and supportive factors for continuing to practice, current wellbeing and psychological flexibility. Participants had practiced mindfulness from under a year up to 43 years. There was no significant difference in the frequency of formal mindfulness practice between those who had attended a face-to-face taught course and those who had not. Common difficulties included finding time to practice formally and falling asleep during formal practice. Content analysis revealed “practical resources”, “time/routine”, “support from others”, and “attitudes and beliefs” were supportive factors for maintaining mindfulness practice. Informal mindfulness practice was related to positive wellbeing and psychological flexibility. Frequency (but not duration) of formal mindfulness practice was associated with positive wellbeing, however neither frequency nor duration of formal mindfulness practice were significantly associated with psychological flexibility. Mindfulness teachers will be able to use the present findings to further support their students by reminding them of the benefits as well as normalising some of the challenges of mindfulness practice including falling asleep.

Key words: mindfulness, wellbeing, psychological flexibility, stress, survey, content analysis

Introduction

Mindfulness practice has become increasingly popular in recent years and training in mindfulness skills is now widely available through a variety of courses, workshops, internet programmes and apps, and through one-to-one sessions. Despite this, we know little about how people first begin to practice mindfulness, how often people practice, difficulties they experience and how people support their practice. There are also uncertainties about how much mindfulness practice is required to produce beneficial effects, and regarding the role of informal mindfulness. Understanding these issues is important in order to support the maintenance of mindfulness practice and to promote resilience and wellbeing in the long term.

Mindfulness has been defined as “paying attention in a particular way: on purpose, in the present moment, and nonjudgementally” (Kabat-Zinn, 2004a, p.4). In other words, choosing to bring the attention to a particular aspect of present experience (such as the breath) without attaching to emotions or thoughts that might arise about or as a result of the experience. This non-judgemental awareness involves acceptance of experience as it is, including those experiences considered to be unpleasant. Non-judgemental awareness is an important aspect of psychological flexibility, which has some overlap with mindfulness. Psychological flexibility is the ability to be fully present and “to change, or persist in, behaviour when doing so serves valued ends.” (Biglan, Hayes & Pistorello, 2008, p.142). There is preliminary evidence to suggest that psychological flexibility may be a mechanism of change in mindfulness-based interventions. For example, Duarte and Pinto-Gouveia (2017) found psychological inflexibility mediated the effects of a mindfulness-based intervention on burnout, compassion fatigue, depression and stress in a sample of oncology nurses. Processes of mindfulness and acceptance are known to reduce human suffering (Hayes & Plumb, 2007) and experiential avoidance is a predictor of poor psychological outcomes (Hayes, Wilson, Gifford, Follette & Strosahl, 1996). The ability to be fully present with experiences, accepting them as they are, can enable people to become aware of their automatic habits and unhelpful reactions, and make more skilful choices. Mindful awareness can be cultivated through both “formal” and “informal” mindfulness practice. While there are no widely agreed definitions of “formal” and “informal” practice, formal mindfulness practice can be considered to take place when practitioners specifically set aside time to engage in mindfulness meditation practices such as the body scan, sitting meditation and mindful movement.

1 Informal mindfulness practice involves weaving mindfulness into existing routines through engaging in
2 mindful moments and bringing mindful awareness to everyday activities, such as mindful eating or
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4 mindfully washing the dishes.
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10 Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 2004b) and Mindfulness-Based Cognitive
11 Therapy (MBCT; Segal, Williams & Teasdale, 2013) are the most widely available standardised
12 Mindfulness-Based Interventions (MBIs). Both involve eight weekly sessions and recommend daily
13 home practice consisting of both formal and informal mindfulness practice for around 45 minutes per
14 day. Some studies have reported significant associations between amount of formal home practice and
15 symptom reduction or other outcomes (Crane et al. 2014; Hawley et al. 2014). However, it is not clear
16 how much formal home practice is required to produce benefits. Although daily formal home practice
17 is recommended as part of MBCT, Crane et al. (2014) found that practicing on an average of three or
18 more days per week was sufficient to prevent relapse into depression. Improvements in symptoms have
19 also been reported from evaluations of adapted interventions that involved fewer course sessions,
20 shorter sessions, and shorter formal practices for homework (Cash, Ekouevi, Kilbourn, & Lageman,
21 2015; Hoge et al. 2013). Furthermore, not all studies examine the relationship between home practice
22 and outcome, some studies report an absence of association, and the precise relationship between home
23 practice and outcome is therefore unclear (Quach, Gibler & Jastrowski Mano, 2016; Vettese, Toneatto,
24 Stea, Nguyen & Wang, 2009).
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42 Informal mindfulness involves generalising mindfulness skills to everyday life. For example, Hanley,
43 Warner, Dehili, Canto and Garland (2015) studied the effect of mindfully washing the dishes and found
44 partial increases in positive affect and partial decreases in negative affect. Hindman, Glass, Arnkoff
45 and Maron (2015) reported greater mindfulness and self-compassion in participants of a Mindful Stress
46 Management-Informal (MSM-I) group compared to a waitlist control group. The homework for the
47 MSM-I group involved informal mindfulness practice only. In a study on sleep disturbance, Shapiro,
48 Bootzin, Figueredo, Lopez and Schwartz (2003) reported participants who practiced more informal
49 mindfulness felt more rested after sleeping (according to self-rated measures of sleep quality).
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58 However other studies do not support a relationship between informal mindfulness practice and
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1 outcomes (RCTs such as Crane et al., 2014; Hawley et al., 2014). More recent research has pointed to
2 the key role of informal mindfulness in developing the ability to pay attention to internal and external
3 experiences. Cebolla et al. found frequency of informal practice predicted the “observing” facet of
4 mindfulness as measured by the Five Facet Mindfulness Questionnaire (Cebolla et al. 2017). The
5 evidence regarding the effects of informal mindfulness is therefore unclear and Crane et al. (2014)
6 suggest further research is needed before conclusions can be drawn.
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14 Difficulties with formal and informal home practice have been reported by participants of MBIs such
15 as remembering to practice, motivation, finding time, concerns about “getting it right”, and falling
16 asleep during practice (Allen, Bromley, Kuyken, &Sonnenberg, 2009; Hindman, Glass, Arnkoff &
17 Maron, 2015; Kabat-Zinn, 2004b; Martinez et al., 2015; Moore & Martin, 2015; Morgan, Simpson &
18 Smith, 2015; Segal, Williams & Teasdale, 2013). Participants sometimes fall asleep during the longer
19 mindfulness practices such as the body scan, particularly those new to mindfulness meditation (Kabat-
20 Zinn, 2004b; Segal, Williams & Teasdale, 2013). If individuals fall asleep they are prevented from
21 engaging in the actual practice of mindfulness and this could result in a lack of benefit or even feelings
22 of failure or self-critical thoughts about “not being able to do it”, and in some cases deciding not to
23 continue. It is important to understand more about sleep during practice and particularly attitudes to
24 falling asleep so that teachers and individuals can discuss the issue more openly, addressing any
25 feelings of failure, and make adjustments where necessary (e.g. practicing at a different time).
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41 Attrition rates for MBIs range from 15-30% (Carmody & Baer, 2008; Crane & Williams, 2010; Kabat-
42 Zinn & Chapman-Waldrop, 1988). Increasing understanding of difficulties with mindfulness practice
43 may help to reduce attrition rates as well as providing insights that could inform methods of supporting
44 people to continue to practice mindfulness in the long term. Support for continued formal and informal
45 practice is essential to ensure that health and wellbeing gains achieved from the initiation of
46 mindfulness practice are not lost, and to promote further resilience and wellbeing in the long term.
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55 Little is known about how people practicing mindfulness first begin and how they continue to practice,
56 particularly those new to mindfulness or those who did not begin to practice through a standardised
57 course. The present study proposes to address the gaps in the literature by exploring how a large
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1 sample of people practicing mindfulness first began to practice and how they continue to practice (both
2 formally and informally), including difficulties and supportive factors. Additionally, the present study
3 investigates the relationship between mindfulness practice and the current wellbeing and psychological
4 flexibility of participants, and whether attending a face-to-face taught course is associated with more
5 frequent formal mindfulness practice. Increased understanding of these areas will provide potential
6 avenues for future research as well as informing the delivery of MBIs and providing insights to support
7 the maintenance of long-term mindfulness practice, thus promoting improvements in health and
8 wellbeing.
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20 **Method**

22 **Participants**

24 Participants were recruited through the social and professional networks of the first author and via
25 online advertising (e.g. mindfulness websites, Facebook, Twitter). Volunteers were requested who
26 currently practice mindfulness or who had practiced mindfulness in the past but were not practicing at
27 the moment, and who would be willing to take part in an online questionnaire about their experiences
28 and current wellbeing. No incentives were offered for taking part.
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30 Two hundred and eighteen participants (174 female) took part in the study. The mean age of
31 participants was 44.5 years (SD = 11.7, range 20-77). Fifty-two participants (23.9%) identified
32 themselves as mindfulness teachers with experience of delivering a range of mindfulness-based
33 approaches (formal courses such as MBSR or MBCT, taster sessions or drop-ins, or teaching
34 mindfulness one-to-one). Participant characteristics are shown in Table 1 below.
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46 **Table 1:** Participant characteristics

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53 Participants were asked to select one of 7 options to describe how they first began to practice
54 mindfulness, as illustrated in figure 1 below. “Other” was a free-text option and the most common
55 responses in this category were Buddhism (5), other types of meditation (11), through yoga (4) and
56 through work/training (7).
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2 **Figure 1:** method of introduction to mindfulness
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9 Of the 11 participants who originally followed a structured programme either from a book or online,
10 five went on to attend a face-to-face taught course. Of the 138 participants who did not initially attend a
11 face-to-face taught course or follow a structured programme from a book or online, 24 people later
12 followed a structured course from a book, online, or by telephone, and 41 people later attended a face-
13 to-face taught course. The sample for the present study therefore comprised 115 people (52.8%) who
14 had attended a face-to-face taught course, 30 people (13.8%) who followed a course from a book or
15 online, and 73 people (33.5%) who had not attended or followed any type of structured mindfulness
16 course.
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27 **Procedure**
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29 This project included participant involvement in the design of the study. Experienced and novice
30 mindfulness meditators reviewed the study questions and changes were made based on their feedback.
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32 The study was given ethical approval by the University of Derby and participants gave informed
33 consent before participating. Two hundred and seventy-four survey responses were submitted. Data
34 were screened for duplicate IP addresses and any incomplete or duplicate responses were removed,
35 leaving 218 responses eligible for analysis. Several items of categorical data were coded for
36 quantitative analysis including the method of introduction to mindfulness, frequency and duration of
37 formal and informal mindfulness practice (coded 0=not practicing to 5=every day/1 hour). Scores for
38 the Acceptance and Action Questionnaire (AAQ-II; Bond et al. 2011) were totalled and raw scores for
39 The Short Warwick Edinburgh Mental Well-Being Scale (SWEMWBS; Stewart-Brown et al., 2009)
40 were transformed to metric scores for analysis.
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53 **Measures**
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55 The participant information sheet, consent form and questionnaires were made available via the online
56 survey software Qualtrics™. The survey was split into sections about different aspects of mindfulness
57 practice beginning with some brief demographic questions followed by a mix of open, closed and
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1 Likert scale questions about how participants first began to practice mindfulness and how they
2 currently practice, including frequency of formal and informal practice, difficulties such as falling
3 asleep during practice, and supportive factors for practice. The following options were provided for
4 frequency of formal and informal practice: not practicing, less than once a week, around once a week,
5 once or twice a week, several times a week, every day; and duration of formal practice: not practicing,
6 10 mins., 20 mins., 30 mins., 45 mins., 1 hour. Participants were not asked to record the duration of
7 informal mindfulness practice as this forms part of everyday activities and it could be difficult to
8 measure the duration accurately. The survey contained separate sections about formal and informal
9 mindfulness practice and the questions relating to current practice can be found in the supplementary
10 materials (S1). As there are no widely agreed definitions of ‘formal’ mindfulness practice and
11 ‘informal’ mindfulness practice, participants were provided with examples of types of practices to help
12 guide their responses. For example, body scan, sitting practice, and being mindful while washing the
13 dishes, while driving or eating. Informal practice was also referred to as “every day mindful moments”.
14 Free text “comments” fields were included in the survey as often as possible so that participants could
15 expand on and clarify their responses, particularly if the phrasing of a question did not fit with their
16 experience of mindfulness.
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34 Two standardised scales were also included. The Short Warwick Edinburgh Mental Well-Being Scale
35 is a 7-item scale consisting of positively phrased items that are scored 1-5 and summed to give an index
36 of mental wellbeing (Stewart-Brown et al., 2009). Higher scores indicate greater mental wellbeing
37 (score range 7-35). SWEMWBS meets the Rasch Measurement model for construct validity (Stewart-
38 Brown et al., 2009). In the current study Cronbach’s α was 0.86 for SWEMWBS. The Acceptance and
39 Action Questionnaire (AAQ-II) measures aspects of psychological flexibility, particularly acceptance
40 and experiential avoidance (Bond et al., 2011). The AAQ-II is a psychometrically evaluated scale with
41 7 items that are scored 1-7. Lower scores indicate greater acceptance and action, and higher scores
42 indicate greater experiential avoidance (score range 7-49). Although it was not designed as a diagnostic
43 tool, comparisons with other scales suggest that AAQ-II scores of 24-28 and higher indicate
44 psychological distress (Bond et al., 2011). In the current study Cronbach’s α was 0.90 for the AAQ-II.
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59 **Data Analyses**

Analyses were conducted using SPSS v22. Data were not normally distributed, so Mann-Whitney was used to test for differences in frequency of formal mindfulness practice between those who had attended a face-to-face taught mindfulness course and those who had not. Hierarchical regressions tested for relationships between mindfulness practice and wellbeing. SWEMWBS and AAQ-II scores were entered as dependent variables, frequency of formal mindfulness practice, duration of formal mindfulness practice, and frequency of informal mindfulness practice were entered on the first step and two potentially confounding variables were entered on the second step. These variables were mindfulness teacher status (yes or no) and duration in years of mindfulness practice. It was suspected that these variables may affect wellbeing and psychological flexibility. Several scores were missing from the AAQ-II and SWEMWBS responses and so 10 participants were excluded from analyses involving these measures. Three participants had one score missing, which was resolved using imputation through interpolation and extrapolation.

Responses to open-ended questions regarding sleep during practice and support for practice were analysed using inductive content analysis (Elo & Kynga, 2008). Data were coded and categorised by the first author and the second author corroborated the coding and categories. The frequency of coded categories was then recorded.

Results

Beginning to practice mindfulness

The 145 participants who had attended a face-to-face course or followed a course from a book or online provided further information about the course and their experience. Sixteen participants (11%) attended courses delivered by the NHS: 14 face-to-face and 2 online. Sixty-eight people (46.9%) paid for their face-to-face taught course and 8 people (5.5%) paid for their online course. Most participants (90; 62.1%) attended or followed courses consisting of 8 sessions. One hundred and thirty-five participants answered the question “Why did you attend the mindfulness course?” Responses were categorised and can be found in table 2 below (some participants gave more than one reason).

Table 2: Reasons for attending the mindfulness course

Insert table 2 here

1 Falling asleep during practice was common: 62 people (42.8%) reported falling asleep during practices
2 in the course sessions, 49 of these were attendees of a face-to-face course. Of these 62 participants, 54
3 (87.1%) said they fell asleep during the body scan (42 were attendees of a face-to-face course). Ninety-
4 six people (66.2%) reported falling asleep during their home practice (77 were attendees of a face-to-
5 face course). One hundred and thirty-nine participants answered the question about home practice and
6 22 (15.8%) said they completed the home practice all of the time, 72 (51.8%) said they completed the
7 home practice most of the time and 34 (24.5%) said they completed the home practice some of the
8 time. Eighteen participants (12.9%) said they did not feel able to discuss difficulties with home practice
9 with the course teachers compared to 107 (77%) who did feel able to discuss this. Fifty-nine
10 participants (53 who attended a face-to-face taught course) were offered a reunion/top-up session, and
11 35 (32 who attended a face-to-face taught course) attended a reunion/top-up session. One hundred and
12 thirty-five people (96.4%) said they found the mindfulness course helpful, compared to five (3.6%)
13 who did not (five people did not answer this question). When asked if they thought the mindfulness
14 course made any difference to their life, 141 participants answered as follows: significant positive
15 change: 90 (63.8%), some positive change: 46 (32.6%), no change: 3 (2.1%), some negative change: 2
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32 **Current practice**

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36 Of the 218 participants, 198 reported they were currently practicing formal mindfulness, and 207
37 reported they were currently practicing informal mindfulness. In a free text comments field some
38 participants gave examples of their informal mindfulness practice. These included washing the dishes,
39 eating, driving, brushing teeth, walking the dog, drinking coffee, and watching a wild bird or flower.
40 Self-reported frequency of formal and informal mindfulness practice is illustrated in figure two below.
41 As can be seen, most participants reported practicing several times a week or every day, indicating a
42 regular practice. Twenty-four participants (12.1%) practiced formal mindfulness for 45 minutes or
43 longer at a time, 56 participants (28.3%) practiced for 30 minutes, 68 participants (34.3%) practiced for
44 20 minutes, and 50 (25.3%) practiced for 10 minutes at a time.
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57 **Figure 2:** Frequency of formal and informal mindfulness practice

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3 For the purpose of inferential statistics, frequency of practice was coded from 0 (not practicing) to 5
4 (practicing every day) and a Mann Whitney test revealed there was no significant difference in the
5 frequency of formal mindfulness practice between those who had attended a face-to-face taught course
6 (Mdn = 4) and those who had not attended a face-to-face taught course (Mdn = 4), $U = 5346.50$, $z = -$
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Mindfulness practice, wellbeing and psychological flexibility

The mean wellbeing (SWEMWBS) score for the sample of 208 participants was 23.75 (SD = 3.46, range 15.32-35) and the mean psychological flexibility (AAQ-II) score was 19.08 (SD = 7.60, range 7-42). These scores are consistent with norms of 23.7 for SWEMWBS (Ng Fat, Scholes, Boniface, Mindell and Stewart-Brown, 2016) and 18.51 for the AAQ-II (Bond et al. 2011). All three aspects of mindfulness practice significantly positively correlated with each other and wellbeing was significantly negatively correlated with psychological flexibility (see table 2). Negative values are due to lower AAQ-II scores indicating greater acceptance and higher scores indicating greater experiential avoidance.

Table 3: Correlations among study variables

Insert table 3 here

Hierarchical regression tested the relationship between mindfulness practice and wellbeing. For model 1 frequency of formal mindfulness practice ($t(204) = 2.098$, $\beta = .159$, $SE = .165$, $B = .345$, $p = .037$) and frequency of informal practice ($t(204) = 3.72$, $\beta = .254$, $SE = .154$, $B = .574$, $p < .001$) were significantly related to wellbeing, and frequency of informal mindfulness was the most important variable in this model. Duration of formal mindfulness practice ($t(204) = 1.62$, $\beta = .118$, $SE = .212$, $B = .344$, $p = .106$) was not significantly related to wellbeing. Model 2 included mindfulness teacher status and duration of mindfulness practice in years. Neither of these variables were significantly related to wellbeing (teacher status: $t(202) = 1.49$, $\beta = .110$, $SE = .598$, $B = .892$, $p = .138$; years of practice: $t(202) = .459$, $\beta = .033$, $SE = .037$, $B = .017$, $p = .647$). However including these variables affected the

relationships between wellbeing and frequency of formal mindfulness practice ($t(202) = 1.96, \beta = .149, SE = .166, B = .324, p = .052$) and wellbeing and duration of formal mindfulness practice ($t(202) = 1.25, \beta = .093, SE = .217, B = .272, p = .212$) resulting in there no longer being a significant relationship between wellbeing and frequency of formal mindfulness practice. In model 2 frequency of informal mindfulness practice was the only variable significantly related to wellbeing ($t(202) = 3.18, \beta = .222, SE = .158, B = .503, p = .002$). The combined influence of mindfulness practice (model 1) accounted for 15.9% of the variation in wellbeing ($R^2 = .159, \text{adjusted } R^2 = .147$). This increased slightly to 17.3% ($R^2 = .173, \text{adjusted } R^2 = .153$) when the other variables were added (model 2). Although ANOVA results indicated both models were significant predictors of wellbeing ($p = .000$), model 1 ($F = 12.890$) was a better predictor than model 2 ($F = 8.477$). Both models showed small effect sizes (model 1: .198; model 2: .209).

Hierarchical regression also tested the relationship between mindfulness practice and psychological flexibility. For model 1 frequency of informal mindfulness practice ($t(204) = -3.395, \beta = -.241, SE = .352, B = -1.197, p = .001$) was significantly related to psychological flexibility. Frequency of formal practice ($t(204) = -.446, \beta = -.035, SE = .376, B = -.168, p = .656$) and duration of formal mindfulness practice ($t(204) = -1.296, \beta = -.098, SE = .484, B = -.627, p = .197$) were not significantly related to psychological flexibility. Again for model 2 neither mindfulness teacher status ($t(202) = -1.161, \beta = -.089, SE = 1.36, B = -1.580, p = .247$) nor years of mindfulness practice ($t(202) = -1.478, \beta = -.111, SE = .084, B = -.124, p = .141$) were significantly related to psychological flexibility. Adding these variables to the model did not significantly affect the sizes of the relationships between psychological flexibility and the three aspects of mindfulness practice. Again, frequency of informal mindfulness practice was the only practice variable significantly related to psychological flexibility ($t(202) = -2.763, \beta = -.201, SE = .360, B = -.995, p = .006$). The combined influence of mindfulness practice (model 1) accounted for 8.7% of the variation in psychological flexibility ($R^2 = .087, \text{adjusted } R^2 = .074$). This increased to 11.2% ($R^2 = .112, \text{adjusted } R^2 = .090$) when the other variables were added. Although ANOVA results indicated both models were significant predictors of psychological flexibility model 1 ($F = 6.494, p < .001$) was a better predictor than model 2 ($F = 5.094, p < .001$). However, the models only explained a small amount of the variance and effect sizes were small (model 1: .095; model 2: .126).

Challenges and support for mindfulness practice

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2 The 198 participants practicing formal mindfulness were asked which practices from those listed they
3 completed regularly. The number of participants that selected each practice is as follows: body scan
4 (89, 44.9%), sitting practice (125, 63.1%), breathing space (112, 56.6%), mindful movement (52,
5 26.3%), all of the above (31, 15.7%), and other (34, 17.2%). In the free-text option for “Other”,
6 participants stated a variety of additional practices including mindfulness of sound and loving-kindness
7 meditation. Seventy-six participants (38.4%) said there were some practices they disliked or found
8 difficult and so did not do. The most common of those listed by participants were the body scan (27,
9 35.5%) and mindful movement or walking (18, 23.7%). Participants were then asked to select the
10 options that best described their experiences of mindfulness practice and responses were as follows:
11 easy (57, 28.8%), interesting (97, 49%), practice reluctantly (40, 20.2%), irritating (31, 15.7%),
12 practice willingly (123, 62.1%), difficult (72, 36.4%), enjoyable (100, 50.5%), boring (27, 13.6%),
13 relaxing (127, 64.1%), ok (45, 22.7%), it is what it is (90, 45.5%), blissful (33, 16.7%). There were a
14 number of free-text comments about practice varying from day to day. Other comments touched on the
15 usefulness of practice as well as difficulties with practice including perceptions of how practice
16 “should be”, such as: “can occasionally be hard to stay sitting if the mind is pre-occupied - useful still
17 to sit and be with boredom or irritation and come back to focusing anchor.” “Can sometimes make me
18 aware of things I hadn't known I was feeling, which can annoy me when I don't feel ready to deal with
19 them emotionally.” “Sometimes guilt-inducing because I think I'm not doing them right and I should be
20 better by now.” “Each meditation is different. Sometimes being with the uncomfortable is challenging.
21 Whatever the moment brings...can be blissful and easy one day then difficult and uncomfortable the
22 next.”

Falling asleep during mindfulness practice

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47 Of the 198 participants currently practicing formal mindfulness 112 (56.6%) reported falling asleep
48 during practice. Seventy of these (62.5%) said they did not fall asleep regularly and 11 (9.8%) said they
49 had a medical condition that they thought made them more likely to fall asleep during practice.
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51 Participants reported falling asleep most frequently during the body scan (67, 57.8%) and
52 breathing/sitting practice (23, 19.8%). One-hundred and five participants answered the open question
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1 and categorised as follows: intended to/find it helpful for getting to sleep (6, 5.7%), positive response
2 (6, 5.7%), accepting response (71, 67.6%), negative response (15, 14.3%), combination of acceptance
3 and negative response (7, 6.7%). Some participants whose responses fit within the 'positive' or
4 'accepting' categories commented on the beneficial effects of falling asleep, e.g. "Fine, it has helped
5 me to learn to fall asleep during bouts of insomnia!" and "Love it. I always wake rested even more than
6 if I lay down for a rest". When responses to questions about sleep were broken down according to how
7 people first began to practice mindfulness, the types of response given appeared to be proportionate
8 across the groups. A breakdown can be found in supplementary material (S2).
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18 **Factors that support participants to practice mindfulness**

19 Participants were asked to select all that applied from a range of options to describe how their current
20 practice is supported. One-hundred and ninety-six participants responded as follows: CD (72, 36.7%),
21 app (69, 35.2%), self-guided (143, 73%), guided by others (21, 10.7%), practice in a group with
22 guidance (35, 17.9%), practice in a group without guidance (13, 6.6%). Responses to the open question
23 of what is or would be supportive were analysed in line with Elo and Kynga (2008); four main
24 categories of response were identified. Some responses fit within more than one category. The
25 categories were "practical resources" (97), "time/routine" (36), "support from others" (85), and
26 "attitudes and beliefs" (29).
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38 **Practical resources**

39 Participants stated tools such as apps, CDs, and emails from websites helped to support practice.
40 Evidence and reminders that mindfulness can be helpful were seen as supportive. Some participants
41 created their own practice reminders in the home or using cues from their environment. For example:
42 "a reminder bracelet, pic on my desk, the school bell is when I breathe etc." "Following mindful
43 accounts on twitter & newsletters." "An understanding of the basis for mindfulness and examples of
44 success in using mindfulness more than "it made me feel better". "CDs, downloads and apps are great,
45 a nice voice is important either male or female, good books with website/links are very useful."
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56 **Time/routine**

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2 Participants highlighted the importance of finding time to practice and stated this wasn't always easy.
3 Being able to incorporate practice into a daily routine or form a routine for practice was also important.
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5 6 Support from others

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8 Being part of a mindfulness community was highly valued. Fourteen participants explicitly stated they
9 attend regular group practice sessions, or course refresher/reunion sessions in order to support their
10 practice. Contact with mindfulness teachers, attending workshops, group practice sessions, and talking
11 to others who practice all helped to support ongoing mindfulness practice. Support from friends, family
12 and the workplace was also seen as important. For example: "I buddy up with a friend and we text each
13 other when we have completed a formal practice. I taught her mindfulness and now offer informal
14 supervision. This monthly connection keeps me on track..." "Regular opportunities to formally
15 practice with others and share ideas or experiences about practice. It inspires and reinvigorates."
16 "Mindfulness at workplace, in a work culture where mindfulness is valued." "More connection with
17 community of other practitioners."
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30 Attitudes and beliefs

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32 Some participants stated their own beliefs and experience supported them to continue to practice;
33 feelings during and following practice and feeling a benefit. Attitudes of acceptance and kindness were
34 also important, particularly if practice had lapsed. For example: "the experience of life being easier,
35 more fulfilling, having resources to cope with difficulty when I practice." "Knowing the benefits I gain
36 from doing. Knowing that if I stop it's like a muscle and weakens. Knowing that I can always begin
37 again, which is very kindly and forgiving." "Knowing that you can do anything mindfully and you can't
38 get it wrong." "The encouragement to trust that every moment can be mindful without having to use a
39 formal approach".
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53 Discussion

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55 The current study explored how participants first began to practice mindfulness and how they
56 continued, difficulties they experienced and how they supported their ongoing practice. The study also
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1 investigated associations between formal and informal practice and wellbeing and psychological
2 flexibility.

3 4 5 6 **Beginning to practice mindfulness**

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8 The participants in this study first began to practice mindfulness in a wide variety of ways, which
9
10 reflects the range in methods of delivery of mindfulness outside health services. Remarkably, almost
11
12 half the sample had not attended a face-to-face taught course.

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16 In line with previous research (Hindman et al., 2015; Martinez et al., 2015; Moore & Martin, 2015;
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18 Morgan, Simpson & Smith, 2015) many participants in the present study who took part in a
19
20 mindfulness course experienced difficulties with home practice such as staying awake or being unable
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22 to complete all of the recommended home practice. Although only a small number of people in this
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24 study said they did not feel able to discuss home practice difficulties with the course teacher, this is a
25
26 concern. According to Allen et al. (2009), MBCT therapists are likely to be more effective if they have
27
28 an awareness of what creates struggle, and this is equally true for professionals delivering other types
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30 of mindfulness-based interventions besides MBCT. The ability to model compassion and acceptance as
31
32 well as drawing on the teachers own experience of practice could help to encourage those learning
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34 mindfulness skills to talk about any difficulties they experience and ensure these are not perceived as
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36 “failures”.

37 38 39 40 **Mindfulness practice, wellbeing and psychological flexibility**

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42 Most of the participants in this study were continuing to practice mindfulness, and more participants
43
44 were practicing informal mindfulness on a daily basis than formal mindfulness. The results of the
45
46 multiple regression suggest that frequency of informal mindfulness is more important for wellbeing and
47
48 psychological flexibility than frequency or duration of formal mindfulness practice. Being a
49
50 mindfulness teacher and the number of years of mindfulness practice mediated the relationship between
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52 frequency of formal mindfulness practice and wellbeing, however frequency of informal mindfulness
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54 remained significantly related. Furthermore, status as a mindfulness teacher was not significantly
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56 related to wellbeing or psychological flexibility, suggesting little difference between the teachers and
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58 non-teachers who participated in this study. This could suggest there is simply little difference in the
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1 levels of wellbeing and psychological flexibility between the teachers and non-teachers, or there could
2 be complex confounding factors. For example, baseline levels of wellbeing and psychological
3 flexibility of participants from when they first began practicing mindfulness or teaching mindfulness
4 are not known and this could be a factor in the current wellbeing of participants. Additionally, those
5 with higher levels of trait or dispositional mindfulness may be more aware of a lack of wellbeing and
6 those with lower levels of mindfulness may not notice a lack of wellbeing. Dispositional mindfulness is
7 discussed in more detail below.
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16 The significance of informal mindfulness found in this study may be explained in part by the recent
17 findings from Cebolla et al. (2017), where frequency of informal mindfulness practice predicted the
18 “observing” facet of mindfulness. This ability to pay attention to experience is a key mindfulness skill
19 and as mentioned earlier, overlaps with psychological flexibility. However, the statistical models in this
20 study only explained a small amount of the variance and effect sizes were small so other factors may
21 have influenced the results. Nevertheless, the findings point to the importance of informal mindfulness
22 and are consistent with previous research about the beneficial effects of informal mindfulness practice
23 (Hanley, Warner, Dehili, Canto & Garland, 2015; Hindman, Glass, Arnkoff & Maron, 2015). Further
24 research regarding the role of informal mindfulness is encouraged.
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36 Levels of dispositional mindfulness and the individual differences of participants could have affected
37 the findings. Dispositional mindfulness has been defined as “the tendency to express mindful attitudes
38 and behaviours in everyday life” (Hanley, Mehling & Garland, 2017). Dispositional mindfulness can
39 increase as a result of mindfulness practice and can in turn improve wellbeing (Carmody & Baer,
40 2008). However, there can be individual differences in levels of dispositional mindfulness, and
41 individuals who do not practice mindfulness may be mindful in their everyday life (Hanley, Mehling &
42 Garland, 2017). Additionally, individual differences in personality may be a factor in who begins and
43 continues to practice mindfulness, as well as in the resultant effects of practice. Dispositional
44 mindfulness and personality factors were not measured as part of the current study and the inclusion of
45 a measure such as the Five Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer &
46 Toney, 2006) or the Big Five Inventory (John, Donahue & Kentle, 1991) could have been beneficial in
47 further understanding the findings.
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2 Furthermore, the relationship between mindfulness practice and outcome is complex and Crane et al.
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4 (2014) highlighted a lack of evidence regarding the confounding factors affecting home practice and
5
6 outcome, suggesting perceptions of treatment plausibility could be a factor. This was reflected in the
7
8 qualitative data from the current study regarding support for practice. Participants reported that
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10 knowledge of the benefits of mindfulness practice (either from books or research evidence, or from
11
12 their own experience of feeling positive effects) supported them to continue practicing. Moore and
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14 Martin (2015) also found beliefs about the benefits of practice to be a motivator to practice. The
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16 perception of benefit as well as other factors identified from the qualitative data (discussed below) in
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18 this study could therefore not only have supported people to practice but could also potentially have
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20 contributed to the wellbeing of participants.
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24 **Challenges and support for mindfulness practice**

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26 Participants' descriptions of the experience of mindfulness practice were wide-ranging, from difficult
27
28 to blissful, and many participants said their practice varied from day to day. In line with previous
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30 research (Allen, Bromley, Kuyken, & Sonnentag, 2009) some participants commented on "getting it
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32 right" which implied a sense of there being something to achieve as well as wanting things to be other
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34 than they are. These findings highlight one of the difficulties regarding the intention of mindfulness
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36 practice in that there is no ultimate goal or state to achieve other than to be aware of things as they are,
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38 and the experience of practice is ever changing. This again points to the skills required by a
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40 mindfulness teacher, as well as the teacher's own experience of mindfulness practice, to support
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42 participants to manage such challenges.
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47 More than half of the participants who were practicing formal mindfulness had experienced falling
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49 asleep during practice, which suggests this is not unusual or uncommon. Although content analysis
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51 revealed most participants responded to this experience with acceptance, some participants had a
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53 negative response. Knowing that falling asleep is a common occurrence should help to open up
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55 discussions about adjustments that can be made to support people to stay awake during practice, while
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57 also cultivating an attitude of acceptance that sometimes the body simply needs to sleep. Indeed, six of
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59 the 112 participants who reported falling asleep during practice said it was their intention to fall asleep,
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1 and other participants commented on the beneficial effects of falling asleep such as helping with
2 insomnia and feeling more rested (more so than if they take a nap). This suggests that increased sleep
3 was sometimes viewed as a positive outcome. The acceptance of sleep by participants in this study
4 could be indicative of a general attitude of acceptance which could be a contributory factor to the
5 AAQ-II scores, discussed further below.
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10 Practical resources, time/routine, support from others, and attitudes and beliefs were identified as
11 common themes that supported home practice. Technology (e.g. apps, email reminders) and cues in the
12 environment helped participants to remember to practice as well as form a routine. These findings are
13 in line with suggestions for practice support made by Hindman, Glass, Arnkoff and Maron (2015) in
14 response to the home practice difficulties experienced by participants in their study.
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24 Support from friends, family, and others practicing mindfulness was an important factor in continuing
25 to practice and some participants attended regular group practice sessions or course refresher/reunion
26 sessions. This support and being part of a “mindfulness community” could also have been a
27 confounding factor that contributed to wellbeing. For example, one participant stated: “I really enjoyed
28 the class mostly because of the interactions with other people. I'd like to be a part of a regular formal
29 practice community.” For this participant the social aspect of attending a course appears to be more
30 important than the practice itself. Continuing to be part of a community, in contact with others who
31 practice, could therefore impact on wellbeing.
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42 Knowledge and beliefs about practice were also identified as supportive factors. Embedded in these
43 qualitative responses were attitudes of trust, beginner’s mind and acceptance. These attitudes were both
44 implied and explicit in the language, for example: “Knowing that I can always begin again, which is
45 very kindly and forgiving”, “The encouragement to trust that every moment can be mindful”. Kabat-
46 Zinn (2004b) described seven attitudes that underpin mindfulness practice: non-judging, patience, a
47 beginner’s mind, trust, non-striving, acceptance, and letting go. These attitudes are interconnected and
48 form the foundation of mindfulness practice, helping to determine its long-term value to individuals
49 (Kabat-Zinn, 2004b). So, as well as just “doing” mindfulness practice, these attitudinal factors are
50 important. This could provide a partial explanation for the AAQ-II results. The AAQ-II measures
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1 psychological flexibility with a particular emphasis on experiential avoidance and acceptance. Thus,
2 while mindfulness practice in itself is important, the cultivation of these attitudinal foundations of
3 mindfulness could have had particular bearing on AAQ-II scores.
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10 **Limitations and future research**

11 The majority of participants in this study were female, however a larger proportion of female
12 participants is not uncommon in mindfulness research conducted online (for example Wahbeh, Svalina
13 & Oken, 2014). Participants were also highly educated, however the level of education of participants
14 is consistent with a recent study from Cebolla et al. (2017), which had a sample of 365 participants,
15 89.8% of whom were university graduates. Methods of increasing access to mindfulness-based
16 interventions and mindfulness research to more diverse populations are therefore to be encouraged.
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18 Additionally, it was not possible to ascertain the proportion of participants recruited to the study via
19 social media, and there could be differences amongst participants according to the method of
20 recruitment.
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31 The study is limited by the lack of exploration of the processes of focused attention and open
32 monitoring during mindfulness practice. Due to the complexities of mindfulness practice the study
33 questionnaire could also have benefited from the inclusion of a measure of dispositional mindfulness
34 such as the Five Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer & Toney, 2006)
35 or a measure of personality factors such as the Big Five Inventory (John, Donahue & Kentle, 1991).
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44 Although sleep during practice was explored as part of the present study, the questionnaire did not
45 include items about sleep patterns of the participants. Including items about sleep patterns of
46 participants could have helped with the exploration of attitudes to falling asleep during practice.
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50 Additionally, the study is limited by the collection of data at a single time point and it would have been
51 valuable to look at experiences of falling asleep and factors such as wellbeing, psychological
52 flexibility, and dispositional mindfulness over time and whether these change in relation to changes in
53 patterns of mindfulness practice. This would be particularly valuable in relation to the role of informal
54 mindfulness practice, which is yet to be fully understood and requires further study.
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1 Experiences of mindfulness were wide-ranging and it was not possible to capture the intricacies of such
2 experiences in this survey. There may be inaccuracies with the amount of practice that was reported,
3 particularly informal mindfulness, which other researchers have stated is difficult to capture (Crane et
4 al. 2014). Informal mindfulness practice, while undoubtedly important, is also complex. Participants
5 may have had different interpretations of informal mindfulness practice and this study did not explore
6 the relationship between formal and informal practice and how individuals may begin to weave
7 mindfulness into their lives more effortlessly as a result of regular formal practice. Future research
8 should consider the effects of informal mindfulness on study outcomes, particularly across a number of
9 timepoints, as well as exploring the relationship between formal and informal mindfulness practice.
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Ethical standards

This study was given approval by the University of Derby ethics committee and has therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments. All participants gave their informed consent via an online consent form prior to taking part in the study.

Conflict of interest

The authors declare that they have no conflict of interest.

Author contributions

KB: designed and executed the study, analysed the data and wrote the paper. KW: assisted with the data analyses and collaborated in the writing and editing of the final manuscript. HvM: assisted with the data analyses and collaborated in the writing and editing of the final manuscript. CJA: assisted with the data analyses and collaborated in the writing and editing of the final manuscript. DS: collaborated with the design and writing of the study.

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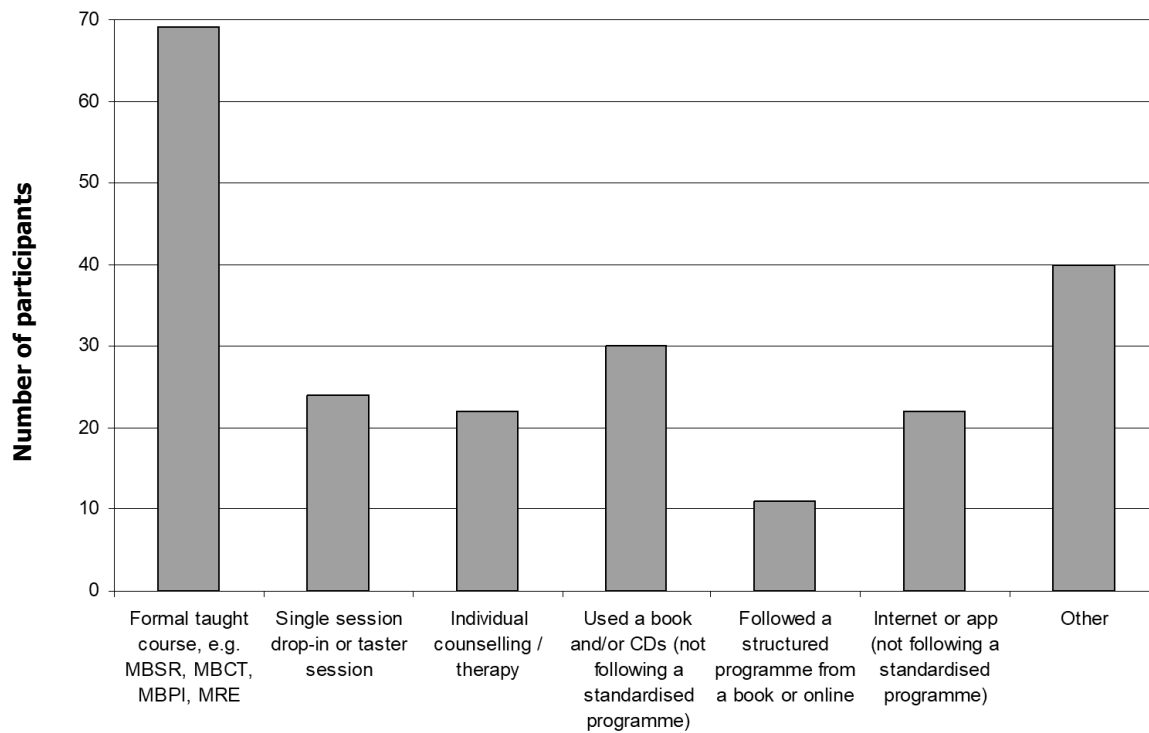
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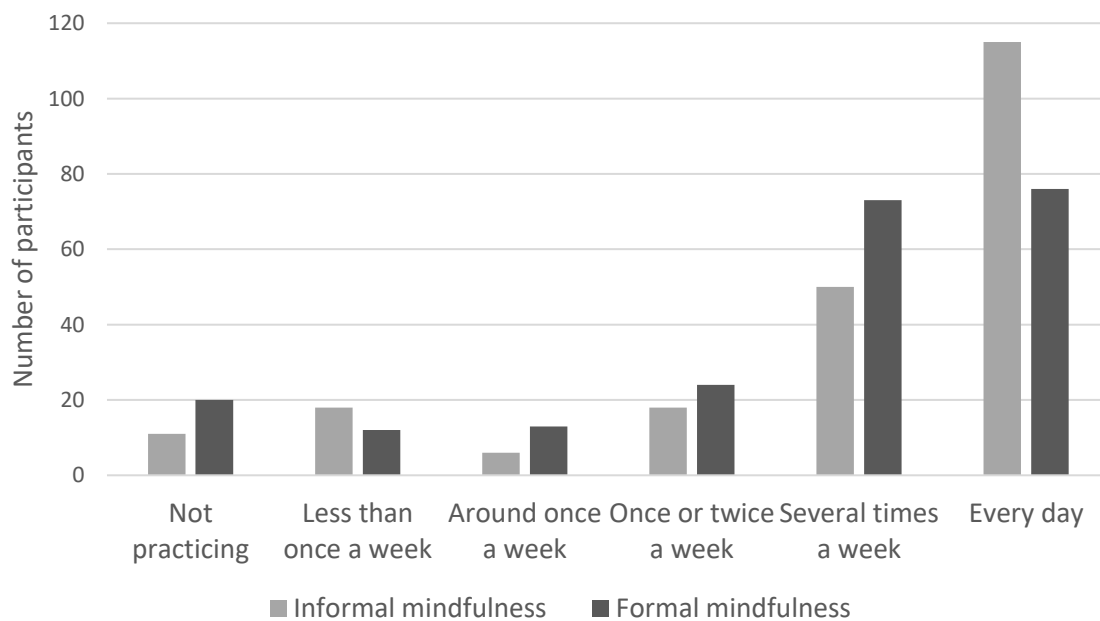
Figures

Figure 1: method of introduction to mindfulness



Note: MBPI = Mindfulness Based Approaches to Pain and Illness; MRE = Mindful Resilience Enhancement.

Figure 2: Frequency of formal and informal mindfulness practice



Tables

Table 1: Participant characteristics

Level of Education	High school = 8 (3.6%) College/Further Education = 26 (11.7%) University (undergrad) = 57 (26%) University (postgrad) = 127 (57.7%)
Employment status	Working = 164 (75.2%) Not working = 11 (5%) Retired = 14 (6.4%) Student = 21 (9.6%) Working and studying = 8 (3.7%)
Experience of mindfulness practice in years	Less than two years = 70 (32.1%) 2-4 years = 78 (35.8%) 5 years or more = 70 (32.1%)

Table 2: Reasons for attending the mindfulness course

	Attended a face-to-face taught course (114 respondents)	Followed a course from a book or online (21 respondents)
Curiosity / personal interest	30	5
Personal development	16	6
Health reasons	46	7
Work/CPD	24	2
To train to teach	13	1

Table 3: Correlations among study variables

	1	2	3	4	5
1. SWEMWBS	-	-	-	-	-
2. AAQ-II	-.607**	-	-	-	-
3. Frequency of formal mindfulness practice	.298**	-.161*	-	-	-
4. Duration of formal mindfulness practice	.242**	-.162*	.467**	-	-
5. Frequency of informal mindfulness practice	.330**	-.272**	.333**	.196*	-

* $p < .05$; ** $p < .001$

How do people practice mindfulness: survey questions

Current formal mindfulness practice:

Do you currently practice formal mindfulness? (e.g. body scan, sitting practice, breathing space, mindful movement) Yes / No

Comments: _____

If 'No' is selected:

1. Why are you no longer practicing? Select all that apply:

Lack of time	Hadn't formed a habit	Got out of the habit
I didn't find it helpful	I decided it wasn't for me	Other stressors
I felt worse during or after practice	Loss of teacher support	
Loss of support of the group setting		

Other: _____

2. Is there anything you can think of that would have supported you to continue with formal mindfulness practice? _____

If 'Yes' is selected:

1. How often do you practice? Every day / several times a week / once or twice a week / around once a week / less than once a week

2. How long **on average** does your practice session last? 1 hour / 45 minutes / 30 minutes / 10 minutes

Comments: _____

3. How is your practice supported (select all that apply): CD / app / self-guided / guided by others / practice in a group with guidance / practice in a group without guidance

Comments: _____

4. If you aren't practicing as regularly as you used to, or as you would like, is there anything you can think of that would support you to practice more regularly?

5. Which practices do you do most regularly?

body scan	sitting practice	breathing space	mindful movement
all of the above	other		

Comments: _____

6. How would you describe your experience of these practices? We understand that your experience of practice may change from day to day so please select **all** that apply:

Easy	difficult	enjoyable	boring	practice reluctantly	interesting
irritating	relaxing	it is what it is	blissful	practice willingly	ok

Comments: _____

7. Are there any practices you dislike or find difficult, and so do not do? Yes / No

8. If yes, which practices? _____

Informal mindfulness:

1. Do you engage in everyday mindful moments? For example being mindful while washing the dishes, while driving, or eating. Yes / No

2. If yes, how often? Every day / several times a week / once or twice a week / around once a week

Comments: _____

How do people practice mindfulness: sleep data, current practice

Group 1: attended a face-to-face taught course (N=115)

Group 2: followed a course from a book or online (N=30)

Group 3: did not attend or follow a structured course (N=73)

Of the 198 participants currently practicing formal mindfulness 112 (56.6%) reported falling asleep during practice:

Group 1: 63

Group 2: 20

Group 3: 29

Do you fall asleep regularly? No:

Group 1: 39

Group 2: 10

Group 3: 21

Which practices do you fall asleep during?

Body scan:

Group 1: 43

Group 2: 12

Group 3: 12

Breathing/sitting practice:

Group 1: 10

Group 2: 3

Group 3: 10

How do you feel about falling asleep?

	Grp 1	Grp 2	Grp 3
Intended to/find it helpful for getting to sleep	2	1	3
Positive response	1	1	3
Accepting response	39	12	19
Negative response	13	1	3
Combination of acceptance and negative response	5	1	1