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## Meditation awareness training for the treatment of workaholism: A controlled trial

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**Background and aims:** Workaholism is a form of behavioral addiction that can lead to reduced life and job satisfaction, anxiety, depression, burnout, work–family conflict, and impaired productivity. Given the number of people affected, there is a need for more targeted workaholism treatments. Findings from previous case studies successfully utilizing second-generation mindfulness-based interventions (SG-MBIs) for treating behavioral addiction suggest that SG-MBIs may be suitable for treating workaholism. This study conducted a controlled trial to investigate the effects of an SG-MBI known as meditation awareness training (MAT) on workaholism. **Methods:** Male and female adults suffering from workaholism ( $n = 73$ ) were allocated to MAT or a waiting-list control group. Assessments were performed at pre-, post-, and 3-month follow-up phases. **Results:** MAT participants demonstrated significant and sustained improvements over control-group participants in workaholism symptomatology, job satisfaction, work engagement, work duration, and psychological distress. Furthermore, compared to the control group, MAT participants demonstrated a significant reduction in hours spent working but without a decline in job performance. **Discussion and conclusions:** MAT may be a suitable intervention for treating workaholism. Further controlled intervention studies investigating the effects of SG-MBIs on workaholism are warranted.

**Keywords:** workaholism, work addiction, meditation awareness training, mindfulness, second-generation mindfulness-based interventions, job satisfaction

### INTRODUCTION

Workaholism has been defined as “being overly concerned about work, driven by an uncontrollable work motivation, and to investing so much time and effort to work that it impairs other important life areas” (Andreassen, Hetland, & Pallesen, 2014, p. 8). Prevalence rates for workaholism in Western countries are typically in the order of 8%–10% (Sussman, Lisha, & Griffiths, 2011). However, only one study (i.e., Andreassen, Griffiths, et al., 2014) has ever carried out a nationally representative survey of workaholism, and it reported that 8.3% of Norwegian adults were addicted to work. Despite this relatively high figure, there is a concern that prevalence rates could increase even further with the proliferation of technology-driven modern working styles (e.g., use of laptops, tablets, and smartphones) that blur the work–leisure boundary (Andreassen, Griffiths, Sinha, Hetland, & Pallesen, 2016; Quinones, Griffiths, & Kakabadse, 2016). Workaholism has been empirically demonstrated to be a distinct construct compared with

enthusiastic working and work engagement (Schaufeli, Taris, & van Rhenen, 2008). Indeed, whereas enthusiastic and engaged working styles are associated with increases in life satisfaction and job performance, workaholism is associated with stress and incivility (e.g., Lanzo, Aziz, & Wuensch, 2016), anxiety and depression (e.g., Andreassen et al., 2016), and reduced life and job satisfaction (e.g., Karanika-Murray, Pontes, Griffiths & Biron, 2015; Shimazu, Schaufeli, Kamiyama, & Kawakami, 2015). Workaholism can also lead to burnout, work–family conflict, and impaired productivity (Griffiths & Karanika-Murray, 2012; Sussman, 2012).

Workaholism is a form of behavioral addiction, of which other examples include addictions to gambling, video gaming, shopping, exercise, and sex (Demetrovics & Griffiths, 2012). According to Griffiths’ (2005a) components model

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of addiction, an individual is deemed to suffer from a behavioral addiction when concerning the object of their addiction, they satisfy six criteria. In relation to work, this would be: (a) *salience* (i.e., work is the single most important activity in their life), (b) *mood modification* (i.e., work is used to alleviate emotional stress and/or to engender euphoric or arousing states), (c) *tolerance* (i.e., needing to work longer hours or at greater intensity to derive the same mood-modifying effects), (d) *withdrawal* (i.e., suffering emotional and/or physical distress when not being able to work), (e) *conflict* (i.e., interpersonal conflict with family members and other individuals, conflict with non-work activities, such as socializing and exercising, and intrapsychic conflict), and (f) *relapse* (i.e., reverting to earlier patterns of excessive working following periods of being in control) (Griffiths, 2005b).

Despite the significant health and economic burden imposed by workaholism, there are very few peer-reviewed studies examining its treatment (Shonin, Van Gordon, & Griffiths, 2014c). Consequently, guidelines for treating workaholism are largely based on theoretical proposals and/or anecdotal clinical reports that are unsupported by empirical evidence. Consistent with the need for more targeted treatments, there has been growing interest in the use of mindfulness-based interventions (MBIs) for treating behavioral addiction, including workaholism (Shonin, Van Gordon, & Griffiths, 2014b). Mindfulness is a form of meditation that derives from Buddhist practice and can be defined as “*the process of engaging a full, direct, and active awareness of experienced phenomena that is (i) spiritual in aspect and, (ii) maintained from one moment to the next*” (Van Gordon, Shonin, & Griffiths, 2015, p. 592). A handful of intervention studies have been conducted indicating that mindfulness has applications for treating gambling addiction (see reviews by Griffiths, Shonin, & Van Gordon, 2016; Maynard, Wilson, Labuzinski, & Whiting, 2015; Shonin, Van Gordon, & Griffiths, 2013, 2014a). In addition, two separate clinical case studies (each incorporating a quantitative data-assessment component) have demonstrated that mindfulness can lead to clinically significant positive change (maintained through 6-month follow-up) in sex addiction (Van Gordon, Shonin, & Griffiths, 2016c) and workaholism (Shonin et al., 2014c).

The latter case study involved a director of a blue-chip company working more than 65 hr a week and who presented with complaints of (a) work-related sensation-seeking (e.g., obsessing over winning high-value contracts), (b) non-restorative sleep, (c) frequent migraines, (d) irritability and incivility when not working, (e) exhaustion, (f) dysphoric mood episodes, (g) work–family conflict, and (h) impaired concentration (Shonin et al., 2014c). The participant received an MBI known as meditation awareness training (MAT) (the same intervention was also administered in the aforementioned sex-addiction case study and in one of the aforementioned studies on the treatment of gambling addiction). MAT belongs to what have been termed the “second-generation” of MBIs because although mindfulness is a central feature of the program, compared with first-generation MBIs (FG-MBIs; such as mindfulness-based stress reduction and mindfulness-based cognitive therapy), MAT incorporates a greater range of meditative practices, ethics as a key component of the

taught program, and an instructor training program that requires instructors to have undergone a minimum of 3 years supervised training (i.e., as opposed to a training period of just 1 year completed by some instructors of FG-MBIs) (Van Gordon et al., 2015).

As with many FG-MBIs, MAT introduces mindfulness techniques aimed at increasing perceptual distance from mental urges. However, MAT is deemed to be particularly suited to treating behavioral addictions because the additional meditation techniques that it incorporates are believed to invoke the following mechanisms of action: (a) reducing relapse and withdrawal symptoms by substituting maladaptive addictive behaviors with a “positive addiction” to the blissful and tranquil states associated with specific forms of meditation (Glasser, 1976) (i.e., while acknowledging that an addiction to meditation could potentially become maladaptive over the long term; Van Gordon et al., 2016c); (b) regulating dysphoric mood states and addiction-related shameful and self-disparaging schemas through the cultivation of compassion and self-compassion; (c) reducing myopic focus on reward by undermining the intrinsic value that individuals assign to the object of addiction (a central view in Buddhism is that phenomena are in fact “empty” of inherent existence; Van Gordon, Shonin, & Griffiths, 2016a); (d) reducing salience by fostering a better understanding of the “impermanent” nature of existence (e.g., a senior/lucrative occupational role must 1 day be relinquished, etc.); (e) growth in spiritual awareness that broadens perspective and prompts a reevaluation of life priorities; and (f) increased capacity to defer gratitude due to improved patience (Shonin et al., 2014b).

Building upon preliminary (but promising) findings observed during the use of MAT in the aforementioned workaholism clinical case study (and also during studies of MAT involving other forms of behavioral addiction), the purpose of this study was to conduct a controlled trial to investigate whether the salutary effects of MAT are observed in a larger sample of individuals suffering from workaholism. The primary study outcome was reduction in workaholism, and the secondary study outcomes were improved job satisfaction, improved job performance, decreased psychological distress, decreased work duration, and decreased work involvement.

## METHODS

### *Participants*

Participants were male and female English-speaking adults working in full-time employment. Participation was on a voluntary basis, and participants were recruited through (a) posters and flyers strategically located across city and out-of-city work locations (e.g., business parks, factories, etc.) in the East Midlands region of the UK, (b) the client database of a local meditation center (limited to individuals who had expressed an interest in receiving meditation training but had not yet done so), and (c) presentations by the first two authors to personnel of key local employers. Furthermore, some East Midlands occupational physicians and occupational health nurse advisors were made aware of

the study and were invited to informally raise awareness among relevant employees by suggesting that they could contact the research team for further information.

**Eligibility criteria.** The presence of workaholism was confirmed using the Bergen Work Addiction Scale (BWAS; [Andreassen, Griffiths, Hetland, & Pallesen, 2012](#)). To be considered eligible for the study, participants were required to score 4 or more on at least four of the scale's seven items (see below for a fuller description of the BWAS). Other eligibility criteria for participation in the study were (a) aged between 18 and 65 years, (b) not currently absent from work (e.g., due to leave of absence, maternity leave, sickness, etc.), (c) no periods of annual leave planned for the duration of the 8-week intervention, (d) not currently undergoing formal psychotherapy, (e) not currently practicing meditation, and (f) no changes in psychopharmacology type or dosage 1 month prior to intervention (although stable prescription medication was permitted). Furthermore, participants had to be working a minimum of 32 paid hours per week. Rather than an indication of workaholism (that is not necessarily a function of hours worked per week), the purpose of this latter inclusion criteria was to ensure that all participants were engaged in full-time employment and thus maximize homogeneity in terms of participant's work characteristics.

### Procedure

**Allocation procedure.** Randomization was not employed because some participants who met the eligibility criteria indicated that they would be unavailable to attend the requisite number of MAT sessions due to pre-planned work or family engagements scheduled to occur on the same day as delivery of the MAT intervention. These pre-planned engagements included training days, attending conferences/workshops, medical appointments, family engagements, and weekly team meetings, etc. Therefore, allocation to MAT or a waiting-list control group occurred first by assigning all participants reporting availability issues to the waiting-list control group, and then subsequently visually inspecting demographic data to match MAT and control-group participants as closely as possible on sex, age, education level, salary, and employment type (i.e., white-collar or blue-collar workers).

**Program description.** MAT is an 8-week second-generation mindfulness-based intervention (SG-MBI) in which mindfulness is an integral component, but is not the exclusive focus ([Van Gordon, Shonin, Sumich, Sundin, & Griffiths, 2014](#)). In addition to mindfulness, MAT incorporates a range of meditation techniques including *shamatha* meditation (concentrative meditation), *vipassanā* meditation (analytical meditation), loving-kindness meditation, and compassion meditation. During the weekly sessions, participants engage in guided sitting meditation, walking meditation, and working meditation (i.e., maintaining meditative awareness while engaged in individual and group problem-solving or work-based tasks). The various meditative techniques employed are intended to engender (a) citizenship, (b) perceptive clarity, (c) ethical and compassionate awareness, (d) meditative insight (e.g., into subtle concepts, such as non-self and impermanence), (e) patience, (f) generosity (e.g., of one's time and energy), and (g) life perspective. The ethical component of

MAT was taught by participants engaging in guided group exercises that involved contemplating how their thoughts, words, and actions can influence both themselves and others, as well as society and the world more generally.

The intervention is delivered by instructors who have undergone a 3-year supervised MAT program. Participants attend eight weekly workshops (each lasting 2 hr) and receive a CD of guided meditations to facilitate daily self-practice. The weekly sessions comprise three distinct phases: (a) a taught/presentation component (approximately 45 min), (b) a facilitated group-discussion component (approximately 35 min), and (c) guided meditation and/or mindfulness exercises (approximately 30 min). A 10-min break is scheduled prior to commencing the guided meditation exercises. In the third and eighth week of the program, participants attend one-to-one support sessions (each of 50-min duration) with the program instructor. For comprehensive information regarding the intervention protocol, see [Van Gordon et al. \(2014\)](#).

In this study, MAT was delivered by the second author (30 years of meditation teaching experience) and the first author provided supervision to identify any deviations from the standard intervention delivery format. Supervision was implemented by the first author (a) silently observing at least 15 min of each weekly session (not always following the same amount of elapsed time into the 2-hr session) and (b) engaging in discussion with the program facilitator on a weekly basis. No unplanned deviations from the standard intervention protocol were identified. The intervention was delivered using group sizes of approximately 18 participants. Attending a minimum of seven of the eight weekly MAT sessions was a prerequisite for course completion. Participants who did not attend the requisite number of sessions were classed as having dropped out and were excluded from (or where unavailable to attend) future assessment phases.

### Measures

The study outcomes were assessed using the following well-established psychometric scales:

**BWAS** ([Andreassen et al., 2012](#); [Orosz et al., 2016](#)): The BWAS is embedded within general addiction theory and contains seven items reflecting core characteristics of addiction (i.e., salience, conflict, mood modification, withdrawal, tolerance, problems, and relapse). Questions are answered on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). Examples of BWAS items are "How often during the last year have you worked so much that it has negatively influenced your health?" and "How often during the last year have you experienced that others have told you to cut down on work without listening to them?" High scores indicate greater levels of workaholism and scoring 4 or more on at least four of the scale's seven items indicates that the individual is suffering from workaholism ([Andreassen et al., 2012](#)).

**Abridged Job in General Scale** (AJIGS; [Russel et al., 2004](#)): The AJIGS is a measure of job satisfaction and includes the following eight adjectives or short phrases: "makes me content," "better than most," "good," "disagreeable," "excellent," "enjoyable," "poor," and "undesirable." For each item, respondents are asked if they agree, are unsure, or disagree. A score of 3 is assigned for agree, 1 for unsure,

and 0 for disagree. Individual items are summed to give a global score and negatively worded items are reverse-scored. Higher scores indicate greater levels of job satisfaction.

**Role-Based Performance Scale (RBPS;** Welbourne, Johnson, & Erez, 1998): The 20-item RBPS is a measure of general work performance. The RBPS assesses performance across five different aspects of an individual's roles: (a) job (e.g., quantity and quality of work output and standard of internal and external customer services), (b) career (e.g., skill development and personal career goal attainment), (c) innovator (e.g., improving processes and routines, and generating and implementing new ideas), (d) team member (e.g., responding to others' needs in his/her work group and ensuring his/her work group succeeds), and (e) organizational citizen (e.g., working for the overall benefit of the company). Scoring is on a 5-point Likert scale (ranging from "1 = needs much improvement" to "5 = excellent") and each role typology contains four items. When summed together, scores for each role typology provide an overall indication of job performance. The RBPS is completed by participants' direct line manager and thus provides a more objective measure of work performance. The RBPS was submitted directly to the research team by participants' line managers.

**Depression, Anxiety, and Stress Scale (DASS;** Lovibond & Lovibond, 1995): The 21-item DASS assesses psychological distress and comprises three subscales that focus on depression, anxiety, and stress. The scale is scored on a 4-point Likert scale (ranging from "0 = did not apply to me at all" to "3 = applied to me very much, or most of the time") and includes items, such as "I found it hard to wind down" and "I felt that life was meaningless." Scores from the three subscales can be summed together to provide an overall indication of psychological distress. The DASS is completed in respect of the foregoing 7-day period. According to the DASS manual (Lovibond & Lovibond, 1995), the percentile cut-offs and corresponding mean scores for symptom severity are as follows: 0–78 ( $M \leq 13$ ) = normal, 78–87 ( $M = 14$ –18) = mild, 87–95 ( $M = 19$ –28) = moderate, and  $>95$  ( $M \geq 28$ ) = severe.

**Work Duration and Work Involvement:** Participants were asked to keep a diary and record (a) the total number of hours worked each week and (b) how many of these hours were accumulated while working during non-work hours (e.g., evenings and weekends).

### Statistical analysis

A significance level of  $p < .05$  and two-tailed tests were employed throughout. Independent sample  $t$ -tests (for continuous variables) and chi-square ( $\chi^2$ ) tests with Yates's correction (for categorical variables) were used to identify any significant differences between groups in demographic characteristics or baseline-dependent variable mean scores. Mixed effects models (also known as multilevel models, random effects model, and hierarchical models) were used to examine the effect of intervention (MAT) and control on all six outcome measures (i.e., BWAS, AJIGS, DASS, RBPS, Work Engagement, and Work Involvement). Mixed effects modeling accounts for shared variance within-participants while modeling between-participant differences

(Baguley, 2012b). The benefits of mixed effects models include fewer assumptions (i.e., homoscedasticity, sphericity, and compound symmetry) and greater statistical power over traditional approaches (Baguley, 2012a; Gelman & Hill, 2007; Quené & van der Bergh, 2004; Snijders & Bosker, 1999). Furthermore, mixed effects models account for baseline differences in outcome scores by modeling (per participant) the *change* in outcome score relative to baseline across all measurement phases (i.e., pre-, post-, and 3-month follow-up) (Van Gordon, Shonin, Dunn, Garcia-Campayo, & Griffiths, 2017). Prior to model estimation, distributions of all outcome variables and random effects residuals were inspected and deemed to be close approximations of normality. Using the absolute median deviation method to detect outliers (Leys, Ley, Klein, Bernard, & Licata, 2013), no data points were deemed to be extreme in this data set. The trial was conducted on an "intent-to-treat" basis with missing data at end point substituted on a last observation-carried-forward basis.

### Ethics

The study procedures were carried out in accordance with the Declaration of Helsinki. The Institutional Review Board of Nottingham Trent University (UK) approved the study. All participants were informed about the study and all provided informed consent. For ethical and transparency reasons, participants were required to acknowledge (i.e., as part of the informed consent procedure) that they understood that MAT (a) is deemed by its founders to be both a psychological and spiritual intervention, (b) is not intended to be a course on Buddhism (i.e., it is secular in context) but makes use of Buddhist meditative techniques and principles. This step was implemented because there are reports that some FG-MBIs have inappropriately emphasized or concealed their affiliation with Buddhism and/or spiritual practice to suit their needs (Van Gordon et al., 2017).

## RESULTS

### Recruitment and allocation

Participants' demographic characteristics are summarized in Table 1. A total of 108 individuals completed the screening questionnaire and 35 of them were excluded on the grounds of ineligibility. The main reasons for exclusion were: (a) did not meet the BWAS criteria for workaholism (15 individuals), (b) not in full-time paid employment (six individuals), (c) currently absent from work (five individuals), (d) currently receiving structured psychotherapy (four individuals), (e) recent change in psychopharmacology type or dosage (three individuals), and (f) already attending meditation or mindfulness classes (two individuals). Of the 73 remaining participants, 37 were allocated to the intervention group and the remainder to the waiting-list control group (see Figure 1).

### Non-completion

A total of five MAT and nine control-group participants dropped out of the study prior to the post-intervention

Table 1. Baseline demographic characteristics for each allocation condition

Characteristic	MAT (n = 37)	Control (n = 36)
Age, mean (SD)	38.60 (7.80)	38.83 (8.98)
Male (%)	59.50	58.33
Employment type (%)		
Blue collar	32.43	36.11
White collar	67.57	63.89
Salary range (£1000s/year; %)		
<20	2.70	5.56
20–40	54.05	58.33
40–60	35.14	27.78
60–80	5.41	2.78
>80	2.70	5.56
Education (%)		
School leaver	21.62	22.22
Vocational	29.73	33.33
University	48.65	44.44
Marital status (%)		
Married	62.16	66.67
Single	13.51	11.11
Divorced	21.62	19.44
Widow	2.70	2.78
Ethnicity (%)		
White (British)	48.65	50.00
White (non-British)	18.92	27.78
Asian	16.22	8.33
Black (Caribbean)	16.22	13.89

assessment phase. Using a  $\chi^2$  test of independence, differences in frequencies of drop-out and completion were not statistically significant [ $\chi^2(1) = 1.71; p = .19$ ]. The reasons provided for non-completion were changed job (six individuals), sickness (five individuals), and became too busy due to work demands (three individuals). Of those participants who attended the post-intervention assessment phase, a further three MAT and five control-group participants were lost to follow-up. The response rate by participants' line-managers on the RBPS was approximately 80%. All MAT participants who completed post-intervention assessments attended at least seven of the eight weekly group sessions. MAT participants practiced meditation for an average of 40.08 min per day ( $SD = 15.91$ ).

Demographic and baseline characteristics

$\chi^2$  tests showed no significant difference between allocation conditions in terms of sex [ $\chi^2(1) < 0.01; p = .91$ ], education [ $\chi^2(3) = 0.69; p = .87$ ], employment type [ $\chi^2(1) < 0.01; p = .93$ ], salary range [ $\chi^2(4) = 1.40; p = .84$ ], family status [ $\chi^2(4) = 2.1858; p = .70$ ], and ethnicity [ $\chi^2(3) = 1.61; p = .65$ ]. Results also showed no significant difference between mean age of the control ( $M = 38.83; SD = 8.97$ ) and intervention ( $M = 38.59; SD = 7.79$ ) groups [ $t(70) = 0.121; p = .90$ ] or contracted hours of the control ( $M = 39.50; SD = 3.63$ ) and intervention ( $M = 39.94; SD = 4.88$ ) groups [ $t(70) = -0.44; p = .66$ ].

Independent sample *t*-tests were carried out to assess differences at baseline between allocated conditions across

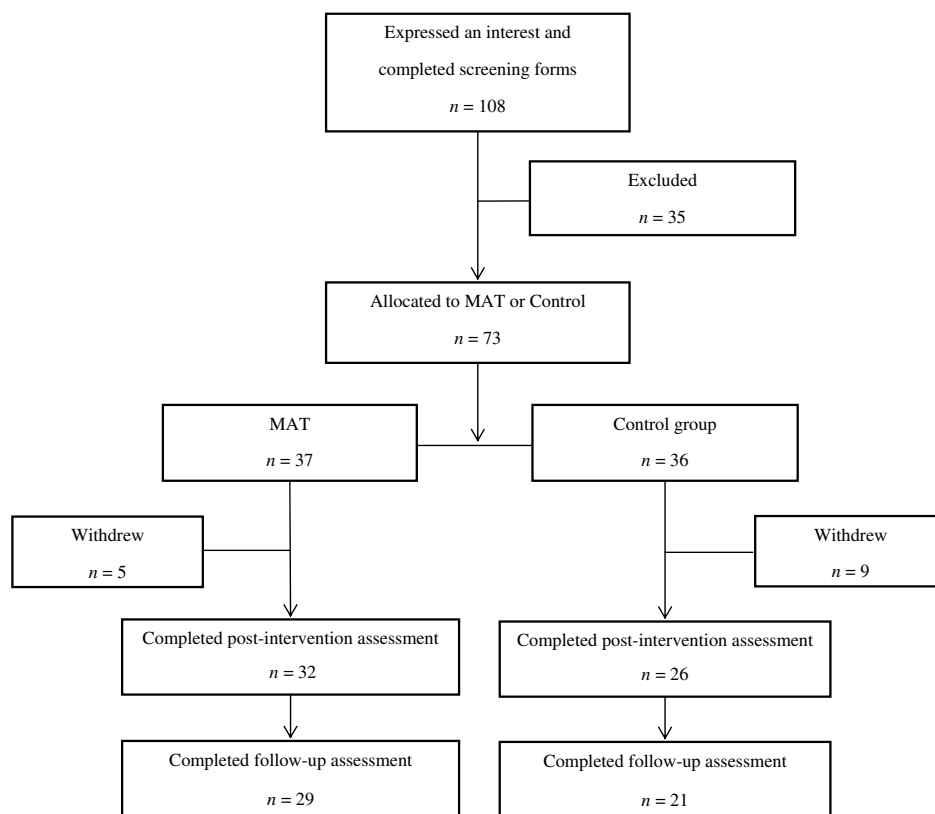


Figure 1. Flow of participants through recruitment and assessment phases

Table 2. Means and standard deviations of outcome variable scores for control and intervention groups at all time periods

Group	BWAS		AJIGS		DASS		RBPS		Work Engagement		Work Involvement		
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
Pre	Intervention	29.30	3.04	9.46	2.94	28.03	3.78	73.56	6.11	53.49	5.25	13.54	5.18
	Control	29.44	2.61	9.17	2.83	28.44	3.23	74.86	6.51	52.97	5.54	13.47	5.16
Post	Intervention	21.65	5.39	13.70	3.16	19.19	4.95	70.53	23.34	49.68	4.99	9.73	5.65
	Control	29.27	3.15	9.17	2.71	28.22	3.08	65.67	22.56	53.03	5.62	13.53	4.92
Follow-up	Intervention	21.32	5.57	14.27	3.67	18.16	5.64	70.58	24.01	49.27	5.32	9.32	5.77
	Control	29.06	3.97	9.19	2.86	27.97	3.45	65.74	22.40	53.00	5.56	13.50	4.85

all outcome measures. Results showed no significant difference in baseline scores between control and intervention groups for BWAS [ $t(70) = 0.22$ ;  $p = .82$ ], AJIGS [ $t(70) = -0.43$ ;  $p = .67$ ], DASS [ $t(70) = 0.51$ ;  $p = .61$ ], RBPS [ $t(56) = 0.79$ ;  $p = .43$ ], Work Engagement [ $t(70) = -0.41$ ;  $p = .69$ ], and Work Involvement [ $t(70) = -0.06$ ;  $p = .96$ ] (see Table 2 for means and SDs).

Analysis of outcome measures

A separate mixed effects model was estimated for each outcome measure. Each model included group (control and intervention) and measurement interval (pre-, post-, and follow-up) as fixed effects [i.e., in the form of an interaction predictor (Group  $\times$  Interval)] and participant (within measurement interval) as a random effect. This allowed a unique regression model (i.e., intercept and slope) to be specified for every participant across measurement intervals (see Figure 2 for an exemplar modeling BWAS scores across measurement intervals). Results from the six estimated mixed effects models show an overall strong effect of intervention compared with control for all outcome measures, with the exception of RBPS (see Table 3 for summaries of each model).

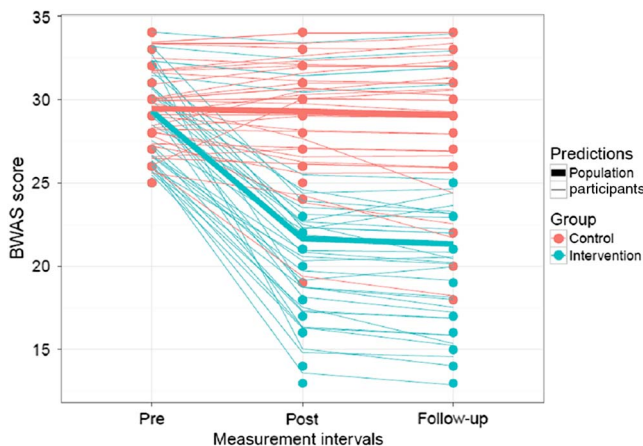


Figure 2. Mixed effects model for BWAS. Note: The plot shows each participant's BWAS score trajectory across measurement intervals (pre-, post-, and follow-up). Narrow lines illustrate trajectories at the subject-level, whereas two fuller lines illustrate the predicted population estimates by group (control vs. intervention)

Table 3. Fixed effects estimates (at post- and follow-up assessment phases) with 95% CIs for all six outcome measures

	Value	CI	t-value	p-value
<b>BWAS</b>				
(Intercept)	29.44			
Post	-7.48	-9.11 to -5.86	-9.09	<.001
Follow-up	-7.58	-9.41 to -5.76	-8.22	<.001
<b>AJIGS</b>				
(Intercept)	9.17			
Post	4.24	3.18 to 5.31	7.87	<.001
Follow-up	4.78	3.54 to 6.03	7.59	<.001
<b>DASS</b>				
(Intercept)	28.44			
Post	-8.62	-10.46 to -6.77	-9.24	<.001
Follow-up	-9.39	-11.41 to -7.37	-9.20	<.001
<b>RBPS</b>				
(Intercept)	74.88			
Post	5.90	-	0.97	.34
Follow-up	6.21	-	1.01	.31
<b>Work engagement</b>				
(Intercept)	52.97			
Post	-3.87	-5.21 to -2.52	-5.69	<.001
Follow-up	-4.24	-5.66 to -2.82	-5.90	<.001
<b>Work involvement</b>				
(Intercept)	13.47			
Post	-3.87	-5.21 to -2.52	-5.69	<.001
Follow-up	-4.24	-5.66 to -2.82	-5.90	<.001

Note. The reference category in all cases is the control group. This means a post-BWAS score of -7.48 can be interpreted as a -7.48 change in BWAS score in comparison with the control condition relative to baseline (i.e., pre-BWAS score).

DISCUSSION

A non-randomized controlled trial compared MAT (an SG-MBI) with a waiting-list control group in full-time employed adults suffering from workaholism. MAT participants demonstrated significant improvements over control-group participants in levels of workaholism, job satisfaction, psychological distress, work duration, and work engagement. Furthermore, compared with the control

group, MAT participants demonstrated a significant reduction in hours spent working but without a decline in job performance. Therapeutic gains were maintained through 3-month follow-up.

This study is the first controlled study to investigate the utility of mindfulness for treating workaholism. Findings were consistent with a previous single-participant case study, which showed that MAT led to clinically significant change in workaholism symptomatology (Shonin et al., 2014c). However, unlike the case study that involved a senior manager working in a large corporation, this study involved participants of wide ranging education levels (i.e., school leaver, vocational qualification, university education, etc.), salary profiles (salary range: less than £20,000 per year to more than £80,000 per year), and occupational backgrounds (i.e., blue-collar and white-collar workers). Therefore, findings from this study expand the range of worker profiles for which MAT is likely to be beneficial.

Compared with FG-MBIs, SG-MBIs such as MAT integrate a greater spirituality component that has been shown to increase life purpose and prompt a reevaluation of life priorities (Van Gordon, Shonin, & Griffiths, 2016b). It has been proposed that the growth in spiritual awareness associated with meditation can reduce the salience that individuals assign to work or another given behavior (Shonin et al., 2013, 2014b). Participation in MAT is also associated with reduced attachment to self and environment (Van Gordon et al., 2016b). According to Buddhist theory, being less attached to the self means that an individual also becomes less attached to desirous objects in their environment (i.e., on the basis that it is the selfhood of an individual that assigns value to an object, substance, or behavior rather than the object or behavior possessing intrinsic value per se) (Van Gordon et al., 2016a). Thus, reduced self-attachment associated with participation in MAT may help to reduce myopic focus on reward, including urges for feelings of elation or escape elicited by problematic working.

The observed improvements in secondary study outcomes support the consensual scientific opinion that workaholism contraindicates job satisfaction and psychological well-being more generally (Shimazu et al., 2015). Mindfulness requires participants to be less future- or goal-orientated and to focus attentional resources on the task at hand (i.e., the present moment). For individuals suffering from workaholism, it is conceivable that goal-based working could reinforce an addiction feedback loop due to the mood modification and reward effects experienced at the point of goal attainment. Therefore, being less goal-orientated as part of a mindful approach to working may reduce sensation-seeking along with its associated negative consequences.

The fact that this study did not find significant improvements for MAT versus control in job performance is not consistent with findings from (a) the aforementioned MAT workaholism case study (Shonin et al., 2014c) and (b) a randomized controlled trial that administered MAT to middle managers of healthy clinical status (Shonin, Van Gordon, Dunn, Singh, & Griffiths, 2014). A plausible explanation for this finding is that missing data for the

RBPS (i.e., due to drop-out and the fact that 20% of participants' line managers did not complete and return the scale) is likely to have increased the standard error. Indeed, the fact that there was no significant change in job performance between allocation conditions could reflect a more efficient use of time by MAT participants, particularly given that work involvement and work engagement decreased for MAT versus control (i.e., MAT led to a reduction in hours spent working without causing job performance to decline). Nevertheless, it remains unclear at present as to whether the reduced focus on accomplishing goals embodied by mindfulness can paradoxically facilitate goal attainment and improved job performance more generally.

Although there appears to be a role for MAT in the treatment of workaholism, several factors limit the generalizability of these findings. In particular, selection bias may have been introduced due to a lack of randomization, and the use of a waiting list rather than active control condition means that non-specific factors (e.g., group interaction, psycho-education, therapeutic alliance, intrinsic motivation, etc.) may have influenced outcomes (i.e., rather than meditation per se). The provision of relaxation training (i.e., without the use of meditation) as a control condition could be used to address this limitation in any follow-up studies. Other factors that may limit the findings are the fact that (a) the follow-up assessment occurred after only 3 months had expired following intervention completion (i.e., a follow-up assessment at 6 or 9 months would have provided a better indication of maintenance effects), (b) self-employed workers were not represented in this study, (c) the sample size was reduced due to the number of control-group participants dropping out of the study prior to the post-intervention assessment phase (pre-post drop-out rate of 27.8% for control vs. 13.5% for MAT), and (d) interested participants were required to contact the research team directly to be considered for recruitment (i.e., participants were "self-referring" and it is thus difficult to gauge whether outcomes would be as favorable for individuals directly referred by their employer or by an occupational health professional).

A primary focus of interventions, such as MAT, is to encourage participants to integrate mindfulness into all aspects of work and family life. Therefore, MAT may be a practical and cost-effective workaholism intervention compared with treatments that require a reduction of work responsibilities or segregation from the work environment (Shonin et al., 2014c). Furthermore, findings from this study support outcomes of other studies indicating that MAT may be a cost-effective and feasible intervention for improving work-related well-being and work effectiveness more generally (including in individuals of healthy clinical status demonstrating adaptive levels of work enthusiasm and/or work engagement). Further research addressing the aforementioned study limitations is required to augment the evidence-base in terms of MAT's effectiveness as a workaholism treatment. However, the present controlled trial adds further empirical support for the applications of SG-MBIs for treating workaholism and other forms of behavioral addiction.



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