

Mindfulness-Based Coping With University Life: A Randomized Wait-List Controlled Study

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Abstract

The benefits of mindfulness for a variety of clinical and nonclinical populations are well established and there is growing interest in the potential of mindfulness in higher education. This article reports on the results from a randomized wait-list controlled study of Mindfulness-Based Coping With University Life (MBCUL), an adaption of Mindfulness-Based Stress Reduction (MBSR) for university students. MBCUL is an 8-week program, which aims to help students bring mindful awareness to their academic work, stress management, approach to communication and relationships, and health. Participants were recruited from the general student body at the University of Northampton (United Kingdom) and were randomized into mindfulness or control groups. The mean age for students in the combined MBCUL group was $M = 25.07$, $SD = 8.25$ (18–50), and $M = 28$, $SD = 7.26$ (20–41) in the control group. A significant decrease in anxiety, $F(1, 21) = 7.82$, $p = .01$; depression, $F(1, 22) = 4.15$, $p = .05$; and perceived stress, $F(1, 22) = 9.65$, $p = .01$, was found in the MBCUL group compared with controls. Similarly, a significant increase in mindfulness was found in the MBCUL, $F(1, 20) = 16.32$, $p = .001$, compared with controls. Attrition was high, and the small numbers limit the generalizability of the data. However, the results suggest that MBCUL is an acceptable, useful mindfulness program for university students, which warrants further investigation with larger samples.

Keywords

mindfulness, meditation, students, university

Introduction

The mental health and well-being of university students is of growing concern (Macaskill, 2013; Storrie, Ahern, & Tuckett, 2010), yet is difficult to address given that many students do not seek support (Blanco et al., 2008). Building on the established benefits of mindfulness-based approaches (MBAs) for a variety of clinical and nonclinical populations (Fjorback, Arendt, Ørnbøl, Fink, & Walach, 2011; Gotink et al., 2015; Khoury et al., 2013), including children and youths (Zenner, Herrnleben-Kurz, & Walach, 2013), there is increasing evidence that mindfulness training may help university students manage stress and anxiety (Bamber & Schneider, 2016; Lynch, Gander, Kohls, Kudielka, & Walach, 2011; Regehr, Glancy, & Pitts, 2013).

As interest in the benefits of mindfulness for university students has grown, so too has interest in how to deliver mindfulness training to this population. A variety of different approaches have been employed, ranging from the well-established Mindfulness-Based Stress Reduction (MBSR) program (Shapiro, Schwartz, & Bonner, 1998) to larger mind–body programs (Hassed, de Lisle, Sullivan, & Pier, 2009; Kang, Choi, & Ryu, 2009) and adaptations based on different

traditions and approaches (Zeidan, Johnson, Gordon, & Goolkasian, 2010). Mindfulness training has been delivered to students using audio recordings (McClintock & Anderson, 2015) and online platforms (Reid, 2013).

Together with the surge of interest in mindfulness, there is a growing tension between the instrumentalization of mindfulness to achieve certain goals, and the broader spirit of mindfulness and meditation (Grossman & Van Dam, 2011). Within Buddhism, mindfulness is considered one part of a larger spiritual, ethical, and intellectual framework (Kang & Whittingham, 2010), which MBAs do not reference (Kabat-Zinn, 2003). Both approaches emphasize that mindfulness is

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cultivated through regular practice over a long period of time (Grossman & Van Dam, 2011), although MBAs are often positioned, at least superficially, as short-term interventions which may be undertaken with the goal of solving a problem or reducing a symptom (Grossman & Van Dam, 2011). Many MBAs emphasize nonattachment to particular outcomes (Kabat-Zinn, 2003). However, organizations, and among them also higher education institutions (HEIs), might consider the utility for their students of MBAs not only as a merit per se but also as aiming toward a functional endpoint such as academic performance, decreased procrastination, or better understanding of reflected citizenship, as outcomes are likely to be paramount.

Although it is obvious that universities will be interested in the possible benefits of mindfulness training in terms of the mental health and well-being of their students (Regehr et al., 2013), there are a variety of other benefits which may be of interest. For example, mindfulness training has been associated with improvements in working memory as well as reductions in mind-wandering (Mrazek, Franklin, Phillips, Baird, & Schooler, 2013) and cognitive rigidity (Greenberg, Reiner, & Meiran, 2012). It has been used for performance enhancement in sports (Thompson, Kaufman, De Petrillo, Glass, & Arnkoff, 2011) and music (Lin, Chang, Zemon, & Midlarsky, 2008), and there is growing evidence that therapists who have undertaken mindfulness training may achieve better therapeutic results (Dunn, Callahan, Swift, & Ivanovic, 2013; Grepmaier et al., 2007). There are many reasons why mindfulness training may be considered beneficial for students, but to find the right fit, HEIs need to consider why they want to support mindfulness training for their students, as this may affect the type of training they choose, as well as the mode of delivery.

Mindfulness-Based Coping With University Life (MBCUL) is an adaptation of MBSR for university students, originally developed in 2006 (Lynch et al., 2011). Inspired by the original MBSR, MBCUL is an 8-week program, with a retreat day between Weeks 6 and 7. The first 3 weeks are very much focused on introducing students to mindfulness and helping them to establish a regular practice. The following 4 weeks are student-centered, while the final week provides the opportunity to review the program. The student-centered weeks aim to address four common aspects of university life: learning and academic work, personal health and well-being, communication and relationships with others, and managing stress.

Perhaps one of the major differences between MBCUL and many other MBAs is the deliberately playful attitude taken toward formal practice. Week 3 includes a specific session on mindful art and play. A strong emphasis was put on using small opportunities—such as waiting for lectures to start or buses to arrive—to practice mindfulness throughout the day and integrate it into daily life, while establishing a regular formal practice. We did not set a firm target, but suggested 20 min of daily practice was a useful starting point.

The first study was a nonrandomized wait-list controlled pilot (MBCUL $n = 10$; control $n = 6$; Lynch et al., 2011). No significant intergroup differences were observed on any of the measures at either time point, although significant reductions were observed in the MBCUL group on measures of perceived stress ($d = 1.06$; $z = -2.25$, $p = .03$), anxiety ($d = 1.04$; $z = -2.14$, $p = .03$), and depression ($d = .52$; $z = -0.69$, $p = .5$), alongside an increase in mindfulness ($d = 1.06$, $z = -1.89$, $p = .06$).

Although the program was well-received, and appeared to be beneficial, some changes were made after the first pilot study. The communication and relationships sessions were integrated, as students felt that the material was a natural fit. Although we had initially envisioned that learning to cope with stress would be woven into every session, participants felt that it would have been useful to have stress addressed explicitly; hence, an extra session was added. Students also reported that they would have benefited from more signposting as to how mindfulness may help them in each of the student-centered sessions, which was addressed by building in more concrete examples into each session.

This study serves as a second pilot study, evaluating the refined MBCUL program. We wanted to explore any potential changes on measures of anxiety, depression, and stress. We report the results below.

Method

Participants and Design

Participants were recruited from the student body at the University of Northampton (UoN). A randomized wait-list controlled design was employed with students randomized into one of three groups: MBCUL 1 ($n = 14$), MBCUL 2 ($n = 14$), and a control group ($n = 10$). The mean age for the first meditation group was 25.50 ($SD = 6.15$) with an age range of 19 to 41 years. The mean age for the second meditation group was 26.64 ($SD = 10.14$) with an age range of 18 to 50 years, while the mean age for the control group was 28.10 ($SD = 7.14$) with an age range of 21 to 41 years. As in the pilot study, attendance was free and participants who completed the questionnaires were reimbursed £10 for their time. Participants completed the Time 1 (T1) measures in the week prior to MBCUL and repeated them at Time 2 (T2), in the week after MBCUL had finished.

Measures

The *Hospital Anxiety and Depression Scale* (HADS; Zigmond & Snaith, 1983) is a 14-item questionnaire examining anxiety and depression. Participants are asked to circle a number from 0 to 3 indicating how much they do or do not identify with the description in the statement, such as “Worrying thoughts go through my head.” A score higher than 8 suggests the presence of *mild to moderate* anxiety or

depression and scores higher than 16 on either subscale indicate *severe* anxiety or depression (Snaith, 2003). It has been found to be a valid and reliable measure (Bjelland, Dahl, Haug, & Neckelmann, 2002; Herrmann, 1997) and appears to be useful for young adults (Jörngården, Wettergen, & von Essen, 2006). The Cronbach's alpha for this study is $\alpha = .78$ (pre) and $\alpha = .87$ (post).

The *Perceived Stress Scale* (PSS; Cohen, Kamarck, & Mermelstein, 1983) is a 10-item measure of perceived stress. An example question is, "In the last two weeks, how often have you been upset because of something that happened unexpectedly?" Participants answer on a scale of 0 to 4, with 0 meaning *never* and 4 meaning *very often*. The PSS has been found to be a valid and reliable measure of perceived stress in both college and general populations (Cohen et al., 1983). Reliability for this study is $\alpha = .82$ (pre) and $\alpha = .92$ (post).

The *Freiburg Mindfulness Inventory–Short Version* (FMI; Walach, Buchheld, Buttenmüller, Kleinknecht, & Schmidt, 2006) consists of a set of 14 statements with participants asked to rate how often they identify with each of the statements (*rarely, occasionally, fairly often, or almost always*). The FMI has been found to be a reliable, valid measure of mindfulness in both experienced meditators and meditation-naïve persons (Walach et al., 2006) and has been used with university undergraduates (Leigh, Bowen, & Marlatt, 2005). The Cronbach's alpha for this study is $\alpha = .82$ (pre) and $\alpha = .86$ (post).

MBCUL: Program Outline

The revised MBCUL program is detailed in Table 1.

Procedure

Advertising consisted of posters, adverts placed on university computer screensavers, and a selection of short talks given prior to lectures. Those who expressed an interest in attending MBCUL discussed the program and the associated research with the researchers in a personal interview. Here, personal motivation and whether MBCUL was right for them were discussed. The importance of personal practice was also emphasized.

Participants were given a detailed information sheet and signed a consent form before being included in the research. On the information sheet, students were asked to disclose any physical or mental illnesses, although none did. Had any student disclosed an illness, they would have been directed to their GP and the university student support center for additional support. All participants were randomized into one of two MBCUL groups or a wait-list control group using a random number table, generated in excel.

MBCUL ran for 8 consecutive weeks, one evening per week for 1.5 hr, in the UoN. Both MBCUL groups ran during the same period but on different evenings. In the week following completion of MBCUL, all participants completed the T2 measures and a postgraduate student conducted

Table 1. Revised MBCUL Program.

Week	Outline
1	Set ground rules (privacy/confidentiality) group introductions Introduction to mindfulness Breathing exercise Body scan (outline, practice, and discussion)
2	Breathing space, check-in, and homework review Raisin exercise Exploration: Automatic pilot and informal mindfulness Sitting meditation (outline, practice, and discussion)
3	Breathing space, check-in, and homework review Walking meditation (outline, practice, and discussion) Exploration: Mindfulness practice in everyday life (art, music, poetry) Breathing space (outline, practice, and discussion)
4	Breathing space, check-in, and homework review Exploration: Mindful learning (attention, change of perspective, creativity, time management) Learning meditation (outline, practice, and discussion)
5	Breathing space, check-in, and homework review Exploration: Stress and mindfulness Stress meditation (outline, practice, discussion)
6	Breathing space, check-in, and homework review Yoga (outline, practice, and discussion) Exploration: Health and mindfulness Health meditation (outline, practice, and discussion)
Mini-retreat	A silent day of meditation (approximately 4 hr) of different forms of meditation
7	Breathing space, check-in, and homework review Exploration: Communication and relationships (changing, family, peers, intimate, mindful listening, managing confrontation, articulating needs) Communication meditation (outline, practice, discussion) Kindness/compassion meditation
8	Breathing space, check-in, and homework review Body scan Exploration: Review of meditations, experience of MBCUL, and next steps Kindness/compassion meditation Closing: Sharing and breathing space

Note. MBCUL = Mindfulness-Based Coping With University Life.

interviews with the MBCUL group. The data from the interviews will be presented elsewhere.

Ethical Considerations

The study was given ethical clearance by the Ethics Committee of the UoN and all potential participants were

Table 2. Sample Characteristics.

	Group	
	MBCUL	Control
<i>n</i>	28	10
<i>M</i> age in years (<i>SD</i>)	25.07 (8.24)	28 (7.26)
Gender		
Male	2 (7%)	4 (40%)
Female	26 (93%)	6 (60%)
Award		
Bachelor's	23 (82%)	5 (50%)
Master's	2 (7%)	1 (10%)
Doctorate		1 (10%)
Other		1 (10%)
Unknown	3 (11%)	2 (20%)
Year of study		
First	10 (36%)	3 (30%)
Second	7 (25%)	3 (30%)
Third	11 (39%)	3 (30%)
Unknown		1 (10%)

Note. MBCUL = Mindfulness-Based Coping With University Life.

treated in accordance with the code of ethics and conduct of the British Psychological Society (2009).

Analysis

As this was a pilot study, we decided not to interpolate missing data and opted for a per-protocol analysis. We opted for a per-protocol analysis as it would give us effect size estimates in a larger study, and the qualitative data would provide information on reasons for dropping out or not returning data. As baseline differences were to be expected in a small sample like this, we opted for an ANCOVA with baseline scores as covariates. In addition, and as a sensitivity analysis or in case assumptions would be violated, we calculated change scores and analyzed those change scores using non-parametric Mann–Whitney tests. The data were analyzed using SPSS software.

Results

Sample Characteristics and Demographics

The demographics for both groups are described in Table 2. Participants in both groups were predominantly undergraduates, female, and in their mid- to late 20s. The ages of participants in the MBCUL group ranged from 18 to 50 years, and from 20 to 41 years in the control group. When considering the year of study, the spread appears fairly even.

Attrition was high, with two dropping out of the control group, four dropping out of the first MBCUL group, and seven dropping out of the second MBCUL group. The T2 measures were completed by all those who completed MBCUL.

Psychological Questionnaires

Table 3 shows the unadjusted means and standard deviations for each of the measures at both time points. At T1, the MBCUL group had slightly lower scores on the HADS Anxiety (HADS-A) subscale and the PSS. They also had higher scores on the HADS Depression (HADS-D) subscale and lower scores on the FMI. However, although scores on measures of anxiety, depression, and stress all drop for the MBCUL group at T2, they increase for the control group. The inverse can be seen for the measure of mindfulness.

A one-way ANCOVA was conducted to explore any statistically significant differences between the MBCUL and control groups on the measures at T2, using the T1 measures as a covariate. The results suggest that attending MBCUL resulted in significant decreases in scores on the HADS-A subscale, $F(1, 21) = 7.82, p = .01$; the HADS-D subscale, $F(1, 22) = 4.15, p = .05$; the HADS Total score, $F(1, 21) = 8.21, p = .01$; the PSS, $F(1, 22) = 9.65, p = .01$; and increases on the FMI, $F(1, 20) = 16.32, p = .001$, compared with controls. Between group, effect sizes are presented in Table 3.

Discussion

We report here on the second pilot study, and the first randomized wait-list controlled pilot study, of MBCUL, a mindfulness program for university students. The program was refined, following student feedback from the first pilot evaluation (Lynch et al., 2011). The results of the present study suggest that the program was effective and changes in the MBCUL group are favorable and significant compared with the control group for all measures. Although scores on measures of anxiety, depression, and stress went down for those in the MBCUL group between pre- and posttesting, they rose for those in the control group during the same period. The inverse was found for mindfulness. The result of the ANCOVA, with baseline scores as covariates, was supported by a nonparametric analysis of the change scores across groups, which we used as a sensitivity analysis. Hence, we are confident that our results are robust.

The effect sizes of the change that student reported after MBCUL are in the range between $d = 0.77$ (HADS-D), $d = 1.37$ (HADS-A), $d = 1.48$ (PSS), and $d = 1.20$ (FMI). All effect sizes are in a range comparable with the first pilot study (Lynch et al., 2011), and thus replicate our first finding. Effect sizes of the change scores between groups are in the medium to large range and thus warrant further scrutiny and application in more representative samples, possibly in other student groups and with larger samples, as well as with stronger controls, such as relaxation or coping strategy trainings.

The strengths of the study lie in the fact that it was randomized and comparison was with a concomitant control group. This design buffered the otherwise very strong fluctuation effects that students experience during a typical academic year with stress at the end of term as deadlines for essays and

Table 3. Change Over Time.

Variables	<i>n</i>	Pre (<i>SD</i>)	<i>D_n</i>	Post (<i>SD</i>)	<i>n</i>	Change scores (<i>SD</i>) ^a	<i>d</i> ^b	<i>p</i> ^c
HADS-A								
MBCUL	27	9.96 (3.61)	17	7.88 (3.60)	17	-2.44 (3.29)	1.37	.01
Control	10	8.10 (3.03)	8	10.75 (3.92)	8	1.50 (2.45)		
HADS-D								
MBCUL	28	3.93 (2.39)	17	3.24 (2.75)	17	-1.06 (2.01)	0.77	.05
Control	10	4.70 (2.50)	8	5.38 (2.72)	8	0.88 (3.04)		
HADS-T								
MBCUL	27	13.93 (5.46)	17	11.12 (5.54)	17	-3.63 (4.41)	1.24	.01
Control	10	12.80 (3.88)	8	16.13 (6.15)	8	2.38 (5.24)		
PSS								
MBCUL	27	21.85 (5.82)	17	14.89 (7.75)	17	-6.35 (6.18)	1.48	.01
Control	10	18.60 (5.46)	8	21.50 (7.37)	8	2.63 (5.93)		
FMI								
MBCUL	28	30.50 (6.19)	16	39.19 (6.23)	16	9.13 (6.00)	1.20	.001
Control	10	34.40 (8.21)	7	31.14 (6.30)	7	-1.43 (4.83)		

Note. HADS = Hospital Anxiety and Depression Scale; HADS-A = Hospital Anxiety and Depression Scale–Anxiety; MBCUL = mindfulness-based coping with university life; HADS-D = Hospital Anxiety and Depression Scale–Depression; HADS-T = Hospital Anxiety and Depression Scale–Total score; PSS = Perceived Stress Scale; FMI = Freiburg Mindfulness Inventory; T1 = Time 1; T2 = Time 2.

^aT1 mean–T2 mean. Negative numbers demonstrate that scores decreased at T2, whereas positive numbers show that scores increased at T2; decrease of scores indicates improvements for HADS and PSS; positive scores indicate improvement for FMI.

^bCohen's *d*, between-group effect sizes.

^cResults from one-way ANCOVA.

exams draw close. This could be seen in the deterioration of scores in the control group; hence, we are confident that we are not reporting an artifact of temporal fluctuation.

The obvious limitation of our study is that several students were lost to follow-up. As in the pilot study, attrition was high. Although it is not clear why students dropped out, the facilitators did notice that students often attended, and left, in friend groups. For example, in the second MBCUL group, three friends came together and all dropped out at the same time, early in the program. We managed to have informal conversations with some of those who dropped out. Most of these students told us that they had been curious and wanted to try mindfulness, but felt it was not for them.

Another limitation is the comparatively small number of participants. Although it was enough to demonstrate effects of the size we found, it is certainly not representative of a larger student body. It might also be desirable to see whether similar effects can be found in other institutions. In the first pilot study, we attempted to strengthen our results with the use of cortisol stress tests, although this was not successful (Lynch et al., 2011). Objective physiological methods with more sensitivity such as heart rate variability monitoring might be more useful for this group. In addition, objective performance measures such as cognitive testing or measures of academic performance would be beneficial. Unfortunately, we did not have access to these data. Also, we have no data on regular practice, such as practice diaries, and therefore do not know whether improvements were in any way related to practice.

Keeping in mind these limitations, we tentatively conclude that MBCUL seems to be an effective intervention to help students cope with the stress and anxieties associated with university life. It certainly deserves further study, ideally in larger samples, with active controls and using objective measures.

Authors' Note

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Author Contributions

S.L., H.W., and M.L.G. were the group leaders of the Mindfulness-Based Coping With University Life (MBCUL) groups. S.L. and H.W. wrote the manuscript, and N.K., M.L.G., and A.N. participated in writing and contributed expertise. S.L. and M.L.G. collected the data. S.L. and H.W. analyzed the data. All authors interpreted the data.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: S.L. provides private consulting services around mindfulness. N.K., A. N., H.W., and M.L.G. have no conflict of interest.

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