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Is mindfulness training useful for pre-service teachers? An exploratory investigation*

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ABSTRACT

In this study, we investigated the effects of mindfulness training with 23 pre-service teachers. Subjects were assigned to either a six-week mindfulness training program or a control condition. Postintervention, mindfulness participants reported greater emotional clarity and improved regulation of negative emotions. In particular, the mindfulness group was shielded from an increase in negative emotions compared to the control group. In addition, within-group differences suggested that mindfulness training helps student-teachers control impulsive behavior and respond more flexibly to stressful emotions. These findings add to a growing body of research on the benefits of mindfulness. Pre-service teachers, it seems, gain the most benefit in the realm of emotional regulation.

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Mindfulness is the ability to be present through attention and awareness (Brown, Ryan, & Creswell, 2007). Critically, this skill requires an attitude of non-judging, non-striving, and patience (Kabat-Zinn, 1990). Although originally conducted in therapeutic settings, research on mindfulness has expanded in recent years to areas such as business and education (e.g. Bluth, Roberson, & Gaylord, 2015; Broderick & Frank, 2014; Broderick & Metz, 2009; Broderick, Pinger, & Worthen, 2012; Metz et al., 2013; Reb & Atkins, 2015). Given the multitude of benefits – improvements in stress, depression, anxiety, sleep quality, physical health, and interpersonal relationship quality – associated with mindfulness, this is unsurprising (e.g. Brown et al., 2007; Glomb, Duffy, Bono, & Yang, 2011).

The present study examines the effect of a mindfulness-based training intervention program with pre-service teachers. Previous research indicates that pre-service teaching can be a taxing experience (Clement, 1999; Enz & Carlile, 1997; Pena & Almaguer, 2007). A demanding workload, rigorous teaching schedule, financial pressures, and interpersonal struggles can all contribute to the stress these students experience (Kyriacou & Kunc, 2007; Miller & Fraser, 2000; Sumsion & Thomas, 1999). Pre-service teachers often feel overwhelmed, which can sometimes lead to premature burnout (Gold & Bachelor, 2001).

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In addition to managing the stress of teaching, student-teachers also need effective emotion regulation skills. Emotion regulation can be broadly described as the ability to recognize, identify, acknowledge, and flexibly manage both the experiential and the expressive aspects of emotion (Broderick, 2013). Without the ability to successfully manage negative emotions, student-teachers may be unprepared for the challenges of the pre-service experience.

Several studies have shown that, in addition to helping individuals manage stress, mindfulness practices can enhance emotion regulation skills and cultivate emotional well-being (e.g. Campos, Frankel, & Camras, 2004; Eisenberg, Spinrad, & Eggum, 2010; Gross, 1998). For instance, cultivating present moment awareness can enhance emotion regulation skills. One simply notices the arising of an emotion without getting caught in excessive rumination (Broderick, 2013). Given the success of mindfulness practice in both organizational and clinical contexts (Bluth et al., 2015; Broderick & Frank, 2014; Broderick & Metz, 2009), mindfulness training may also be beneficial for student-teachers.

Along these lines, a growing body of research shows that mindfulness and other contemplative practices are useful in the classroom for both students and teachers (Flook, Goldberg, Pinger, Bonus, & Davidson, 2013; Gold et al., 2010; Gouda, Luong, Schmidt, & Bauer, 2016) and some scholars have suggested that mindfulness training can provide student-teachers with the tools to better manage their initial foray into the classroom (Soloway, Poulin, & Mackenzie, 2011). A few studies have attempted to investigate the benefits of mindfulness for pre-service teachers. One large-sample study examined trait mindfulness, among other measures, among this group (Kostanski, 2007). Results revealed that higher levels of mindfulness were associated with greater optimism. Conversely, participants with lower levels of mindfulness reported more tension. Although this study examined only trait mindfulness, the results suggest that mindfulness training may help pre-service teachers better manage stress.

One small, non-controlled study did, in fact, explore this area. In this study, the lived experiences of five pre-service teachers – students who learned multiple mindfulness practices – were recorded through interviews and journaling activities (Bernay, 2014). Rather than adhere to a structured program, participants were encouraged to incorporate any practice they found helpful throughout the day. Participants reported reductions in stress, increased focus, and an enhanced ability to respond, rather than react, to bad behavior in the classroom.

Although these two studies suggest that mindfulness may be beneficial for pre-service teachers, neither study incorporated a control group. The present study investigated the effects of mindfulness training on 23 pre-service teachers in the areas of self-compassion, perceived stress, and emotion regulation while including a group of pre-service teachers who did not receive mindfulness training, as a comparison group. The training program used *Learning to BREATHE: Gaining the Inner Edge* (L2B; Broderick, 2013; Broderick & Frank, 2014), a six-week mindfulness curriculum modeled on the Kabat-Zinn Mindfulness-Based Stress Reduction Program (MBSR; Kabat-Zinn, 1990). It was predicted that, compared to the control group, the L2B group would report less stress, greater self-compassion and show enhanced emotion regulation skills.

Method

Participants

Participants were undergraduate students majoring in education at West Chester University of Pennsylvania (WCU). The total sample consisted of 23 student-teachers: 10 in the Learning to Breathe (L2B) mindfulness training group and 13 in the control group. Most participants ($n = 21$) were women. The average age in both the L2B and control groups was 22.3 years (range 21–23 years). Subjects had completed about 4 years in a rigorous teacher preparation program in one of two areas: Pre-K through grade 4 or grades 4 through 8. All participants had spent at least 194 h in classrooms prior to this study. During the mindfulness intervention, subjects were completing semester-long teaching placements in public schools and taking required on-campus seminars.

Materials and procedures

Materials

Learning to BREATHE (L2B) is a mindfulness-based curriculum developed for a classroom or group setting (Broderick, 2013). The program is designed to teach mindfulness, enhance emotional regulation, expand options for managing stress, and cultivate positive emotions. L2B provides a session-by-session curriculum and each lesson includes discussion, activities, and opportunities to practice mindfulness skills in the group. Since the development of the program in 2003, *L2B* has been used in a variety of settings including private and public schools, clinical settings, and after-school programs (Bluth et al., 2015; Broderick & Frank, 2014; Broderick & Metz, 2009; Broderick et al., 2012; Metz et al., 2013). Given its educational design, L2B was easily integrated into the weekly student-teacher seminar. Moreover, although originally created for adolescents, L2B has been used successfully in college settings (Dvorakova et al., 2015) and may be more appropriate for college age students than MBSR because this age group is in a transitional developmental stage between adolescence and adulthood (Arnett, 2000).

Procedure

Recruitment

Students were recruited via university email from the pool of students scheduled to begin student teaching in the fall semester. No compensation or incentives were provided to participants in either group.

Data collection

Both pretest and posttest questionnaires were made available to the students electronically using Qualtrics, an online survey platform. Students received links to the survey questionnaires via university email.

L2B program implementation

The L2B sessions were embedded within the required student teaching weekly seminars. Lessons were 45 min long and focused on 6 core themes: (1) body awareness; (2) understanding and working with thoughts; (3) understanding and working with feelings;

(4) integrating awareness of thoughts, feelings, and bodily sensations; (5) reducing harmful self-judgments and practicing compassion; and (6) integrating mindful awareness into daily life. Each weekly session included a presentation of the weekly topic, group activities that illustrated the lesson theme, guided discussion, and mindfulness practice. Students were provided with L2B workbooks and CDs with guided recordings for voluntary practice at home. Students were also sent weekly reminders – such as, 'remember to breathe' – via email.

L2B teacher

Dr. Lucas participated in two L2B training workshops led by the program's developer (Broderick, 2013) and has attended numerous retreats for education professionals.

Measures

All measures were administered at two points in time – pretest and posttest – for both the L2B and control groups.

Perceived stress scale

The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) is a 14-item instrument measuring the extent to which individuals perceive events as stressful. The items are rated on a five-point Likert scale and higher scores reflect greater psychological distress (Cohen et al., 1983). Cronbach's alphas have been reported at .84 and above for this instrument (Cohen & Williamson, 1988).

Difficulties in emotion regulation scale

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS is a 36-item self-report measure designed to assess clinically relevant aspects of emotional dysregulation. The DERS total score represents the degree to which an individual's emotions are upsetting at the present time. The DERS also includes six subscales derived through factor analysis (Gratz & Roemer, 2004): (1) non-acceptance of emotional responses, (2) difficulties engaging in goal-related behavior, (3) impulse control difficulties, (4) lack of emotional awareness, (5) limited access to emotion regulations strategies, and (6) lack of clarity. Higher scores indicate more emotion dysregulation. Cronbach's alpha for the DERS total scale has been reported at .93. For the DERS subscales, the alphas were all above .80 (Gratz & Roemer, 2004).

Positive and negative affect scale

The PANAS is a 20-item scale measuring the two dominant dimensions of emotional experience: positive and negative affect (Watson, Clark, & Tellegen, 1988). The PANAS yields a separate score for positive and negative affect. Positive affect represents the extent to which subjects report feeling enthusiastic, active, and alert. Positively toned words include: *interested*, *excited*, and *enthusiastic*. High negative affect scores indicate the presence of subjective distress such as shame, hostility, irritability, and guilt. Examples of negatively toned words include: *scared*, *hostile*, and *jittery*. Cronbach's alphas were reported to be high for both positive and negative affect (.84 and above) and the two scales are largely uncorrelated (Watson et al., 1988).

Kentucky inventory of mindfulness scale

The KIMS is a self-report measure designed to assess the tendency to be mindful in everyday situations, even if the individual has not engaged in formal meditation practice (Baer, Smith, & Allen, 2004). Each item is scored on a five-point scale from 1 to 5. It measures four components of mindfulness: observing, describing, acting with awareness, and accepting without judgment. In the literature, Cronbach's alphas have ranged from .76 to .91 in two samples (Baer et al., 2004).

Self-compassion scale-long form (SCS-LF)

The SCS-LF is a 26-item scale designed to measure the extent to which individuals react to perceived personal inadequacies in a compassionate, non-judgmental way (Neff, 2003). The notion of self-compassion is grounded in Buddhist psychology (Salzberg, 1997), and is a component in some MBSR, including L2B. The SCS has six subscales: (1) Self-Kindness, (2) Self-Judgment, (3) Common Humanity, (4) Isolation, (5) Mindfulness, and (6) Over-identified. Cronbach's alpha for the overall SCS has been reported at .92 (Raes, Pommier, Neff, & Gucht, 2011).

Results

Scale characteristics

Cronbach's alphas for all scales ranged from $\alpha = .71$ to $\alpha = .91$ at pretest, and $\alpha = .84$ to $\alpha = .94$ for posttest administration.

Between-group differences on outcome measures

There were 7 participants in the L2B group and either 7 or 8 participants in the Control group with complete data. The sample size varied in the control group because we used pairwise rather than listwise deletion in our analyses. We included a participant's data for a specific analysis even if that participant failed to complete all of the questionnaires at posttest.

For data analysis, we adapted a procedure used in a prior study for small samples (Van Dam, Hobkirk, Sheppard, Aviles-Andrews, & Earleywine, 2013). This method involves regressing posttest values on pretest values and subtracting the predicted posttest scores from the actual posttest scores (Cohen, Cohen, West, & Aiken, 2003). After this procedure, independent sample *t*-tests were conducted with 5000 bootstrap-based re-samplings. Bootstrapping increases the likelihood that observed mean differences are true differences because it generates many random samples with replacement. Thus, for small samples, bootstrap-based statistics provide more reliable estimates of effects and confidence intervals (Efron & Tibshirani, 1986). The means, standard deviations, bias corrected .90 confidence intervals, effect size estimates (Cohen's *d*; Rosenthal, 1994), and *p* values based on the bootstrapped *t*-tests for all variables in the between-group analyses are presented in Table 1.

Given the exploratory nature of our study and the small sample size, we regarded results as significant when *p* values were .15 or less for *t* tests on the residualized change scores. Also, results were excluded in which the .90 confidence intervals included 0, which suggests there is no difference between groups. These dual criteria comprised our strategy to evaluate significance.

Table 1. Comparison between Groups on Outcome Variables.

	Control ($n = 13$)		L2B ($n = 10$)			
	Pre	Post	Pre	Post		
	M (SD)	M (SD)	M (SD)	M (SD)	*d*	*p*
PSS TOT	28.00 (8.7)	29.14 (7.4)	23.00 (4.8)	22.42 (7.2)	−.66	.29
DERS TOT	90.14 (27.2)	92.00 (23.1)	86.43 (16.7)	77.85 (15.1)	−.78	.16
DERS Nonaccept	15.14 (5.9)	15.00 (5.8)	11.28 (3.4)	9.51 (3.2)	−.68	.22
DERS goals	15.57 (3.7)	16.71 (4.2)	17.00 (3.2)	16.14 (3.43)	.63	.49
DERS impulse	13.71 (3.7)	11.57 (3.4)	16.57 (3.82)	12.85 (2.79)	−.15	.75
DERS EmotAware	14.71 (4.6)	17.28 (4.4)	11.43 (3.4)	14.28 (4.27)	−.06	.88
DERS strategies	19.57 (6.8)	19.42 (5.9)	19.86 (5.0)	16.00 (4.39)	−.86	.13**
DERS clarity	11.43 (5.6)	12.00 (3.2)	10.29 (2.4)	9.00 (2.3)	−1.09	.09*
PANAS – POS	36.14 (8.1)	33.42 (9.27)	35.43 (5.2)	37.71 (5.49)	.78	.22
PANAS – NEG	23.00 (5.2)	20.14 (6.9)	23.71 (6.1)	22.42 (7.7)	.23	.57
KIMS Observe	39.96 (6.1)	34.90 (5.1)	36.77 (2.4)	37.71 (5.0)	.64	.25
KIMS Describe	24.43 (7.3)	23.29 (4.9)	27.86 (3.6)	28.86 (6.3)	.38	.50
KIMS Aware	30.86 (5.0)	28.43 (2.6)	28.43 (3.3)	28.86 (3.2)	.48	.39
KIMS Accept	26.67 (5.7)	25.87 (5.1)	30.21 (5.6)	31.98 (5.0)	.91	.12**
SCS kind	13.00 (2.5)	12.71 (1.7)	16.57 (2.4)	16.28 (2.4)	.79	.18
SCS judge	12.00 (5.1)	11.42 (4.6)	17.86 (4.5)	17.00 (5.7)	.14	.78
SCS humanity	11.29 (1.6)	10.57 (1.8)	13.00 (2.1)	12.57 (.9)	.91	.13**
SCS isolation	12.00 (3.3)	11.14 (3.6)	11.71 (2.5)	12.71 (3.3)	.91	.11**
SCS mindfulness	12.14 (2.8)	10.28 (1.7)	12.86 (1.9)	13.14 (2.1)	1.42	.02*
SCS overidentified	10.71 (2.4)	10.42 (3.6)	12.00 (2.4)	12.28 (3.7)	.11	.82

Notes: PSS = Perceived Stress Scale, DERS = Difficulties in Emotion Regulation Scale, PANAS = Positive and Negative Affect Scale, KIMS = Kentucky Inventory of Mindfulness Scale, SCS = Self Compassion Scale.
Cohen's d effect sizes −.2 small, .5 medium, and .8 large.
*$p < .05$; **$p < .10$; ***$p < .15$

Using these criteria, results indicated significant differences between the two groups on the Strategies ($p = .13$, $d = -.86$) and the Clarity subscales of the DERS ($p = .09$, $d = -1.09$). For the DERS Total scale, although a significant difference wasn't found, there was a fairly large effect size in the predicted direction ($p = .16$, $d = -.78$). For both subscales, mean scores dropped from pre- to posttest for the L2B group, but remained the same or increased for the control group. This is consistent with the hypothesis, as lower scores on the DERS indicate better emotional functioning.

The groups also differed significantly at posttest on the KIMS Acceptance subscale ($p = .12$, $d = .91$). However, the confidence interval included zero, so we excluded this result from further analysis. No other KIMS scales showed between-group significance. For the SCS, significant results were obtained on the SCS Mindfulness subscale ($p = .02$, $d = 1.42$), the SCS Humanity subscale ($p = .13$, $d = .91$), and the SCS Isolation subscale ($p = .11$, $d = .91$). For all three SCS subscales, subjects in the L2B group maintained their pretest level or increased slightly, whereas the control group showed a drop in scores. No other between-group comparisons reached significance.

Pre–post differences within groups on outcome measures

To better understand how the program impacted the participants who received the mindfulness training, we conducted pretest to posttest paired-samples *t*-tests within each group. Here, we used a more conservative strategy than employed for the between-group analysis ($p \leq .10$ and .95 confidence intervals excluding zero).

For the L2B group, significant differences in the predicted direction were found for the DERS total score and for two DERS subscales: Impulse and Strategies. The DERS total score was $M = 86.43$ at pretest and $M = 77.85$ at posttest; $t(6) = 2.2$, $p = .06$. The DERS Impulse subscale dropped from $M = 16.57$ at pre-test to $M = 12.85$ at posttest; $t(6) = 4.59$, $p = .01$. Finally, the DERS Strategies subscale went from $M = 19.86$ at pretest to $M = 16.00$ at posttest; $t(6) = 4.11$, $p = .02$. Scores on the DERS Non-acceptance subscale approached significance at $p = .11$. Unexpectedly, the L2B group showed higher average scores at posttest for the DERS Awareness subscale; Pretest $M = 11.43$ and posttest $M = 14.29$; $t(6) = 4.11$, $p = .03$.

For the control group, pre to posttest difference was significant for the Mindfulness subscale of the Self Compassion Scale with pretest $M = 12.14$ and posttest $M = 10.28$; $t(7) = 2.70$, $p = .08$. Thus, the control group's scores indicated that they became less mindful across the semester. Significance was also found for the DERS Emotional Awareness subscale, with pretest $M = 14.71$ and posttest $M = 17.28$; $t(7) = -2.05$, $p = .09$. Similarly, scores show the control group reported lower levels of emotional awareness from pretest to posttest.

Discussion

The current study was designed to investigate the utility of offering pre-service teachers mindfulness training. We predicted that the L2B program would help alleviate the stress brought on by the student-teacher experience and enhance emotion regulation skills among subjects. As predicted, there is evidence that the program was effective, especially with respect to emotion regulation. Mindfulness participants reported improvements in managing negative emotions and also experienced greater emotional clarity. Given the small sample size, these effects suggest important benefits for this sample.

Moreover, the within-group analysis suggests that the L2B group was better able to control impulsive behaviors, respond more flexibly to emotions and experience less emotion dysregulation. These findings, in fact, align with previous L2B studies (Broderick & Metz, 2009; Metz et al., 2013). Our results also confirm theoretical models that propose mindfulness meditation has a positive impact on emotion regulation (Farb, Anderson, Irvin, & Segal, 2014; Holzel et al., 2011). It is unclear from the data why the L2B group reported lower emotional awareness, as measured by the DERS Awareness subscale, at posttest. It should be noted, however, that the control group had a similar result on this measure.

The results also show a slight increase in mindfulness for the L2B group as measured by the Self-Compassion Scale. Although this increase was not statistically significant within the L2B group, there was a significant decrease within the control group. Items on this subscale reflect an ability to keep emotional upset in check (e.g. 'When something painful happens, I try to take a balanced view of the situation,' 'When something upsets me, I try to keep my emotions in balance'). The fact that the control group's mindfulness scores dropped, while the L2B scores did not, suggests the training had a protective effect. This result is consistent with the control group increases on the DERS subscales. The mindfulness group also reported feeling slightly less isolated across the semester, whereas the control group reported an increased sense of isolation.

Finally, although the means on the PSS were in the predicted direction, we found no significant differences between the groups (see Table 1). It's unclear if this result was due to the small sample size or to the unique nature of the stress associated with the student teaching experience.

Limitations and future directions

The most significant limitation of the study is the sample size, as is sometimes the case in pilot studies of mindfulness with unique groups (Bluth et al., 2015; Mackenzie, Poulin, & Seidman-Carlson, 2006; Short, Mazmanian, Ozen, & Bédard, 2015; Zylowska et al., 2008). This likely impacted our ability to find additional differences between the groups. However, although many of the predicted changes failed to achieve statistical significance, the group means were mostly in the expected direction. Another limitation was the lack of randomized design, which was controlled for by checking for significant differences in pretest scores. Finally, given the relatively short duration of mindfulness programs like L2B, perhaps there wasn't sufficient time for noticeable changes to occur on many of the scales. What's more, this was the subjects' first exposure to a formal mindfulness program (Grossman, 2008).

Promisingly, several participants provided positive feedback during the training. These subjects indicated they felt overwhelmed and stressed at the start of each L2B session, but left feeling considerably calmer. Participants also reported using L2B methods to reduce stress during their daily lives.

The present study is the first to integrate a mindfulness meditation program into the pre-service teaching experience. Considering the impact of stress on current teachers (Darling-Hammond, 2001; Kyriacou, 2001) and the importance of emotion management in the teaching profession (Sutton, 2004; Sutton & Wheatley, 2003), it is crucial to train pre-service teachers in these areas. Society needs teachers who are both academically competent and emotionally balanced to educate the next generation. Given the results of the present study, this goal could be advanced by incorporating mindfulness training into teacher education programs. Future, large-sample studies are also needed to provide additional support for these findings.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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