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Mindfulness Training and Classroom Behavior Among Lower-Income and Ethnic Minority Elementary School Children

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Abstract

This field intervention trial evaluated the effect of a 5-week mindfulness-based curriculum on teacher-ratings of student classroom behavior at a Richmond, CA public elementary school, and examined if the addition of more sessions provided added benefit to student outcomes. Seventeen teachers reported on the classroom behaviors of 409 children (83 % enrolled in a California free lunch program and 95.7 % ethnic minority) in kindergarten through sixth grade at pre-intervention, immediate post-intervention, and 7 weeks post-intervention. Results showed that teachers reported improved classroom behavior of their students (i.e., paying attention, self-control, participation in activities, and caring/respect for others) that lasted up to 7 weeks post-intervention. Overall, improvements were not bolstered by the addition of extra sessions, with the exception of paying attention. The implications of this study are limited due to the lack of a mindfulness program-naïve control group, yet findings suggest that mindfulness training might benefit teacher-based perceptions of improved classroom behavior in a public elementary school, which has practice implications for improving the classroom learning environment for lower-income and ethnically-diverse children.

Keywords

Mindfulness; Meditation; Children; Teachers; Ethnically-diverse; School-based

Introduction

Success in student learning likely requires a non-disruptive classroom environment so students can fully concentrate on educational material. Teachers are given the unique challenge to balance the various learning needs of children while simultaneously managing the disruptive behaviors that occur in the classroom. Unruly behaviors in classrooms

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increase the emotional distress of teachers, which is a principal reason for job dissatisfaction and poor teacher retention (Darling-Hammond 2001; Montgomery and Rupp 2005). Conversely, when encountering low rates of classroom disruption, teachers are more likely to implement proactive strategies that lead to better classroom management and student learning outcomes (Pas et al. 2010). Indeed, programs that train students in skills that promote prosocial behavior in order to create a non-disruptive classroom might alleviate teacher burden and benefit student learning.

Mindfulness training involves developing mindful awareness that is acquired through the intentional practice of sustained and non-judgmental attention to present moment experience (see Kabat-Zinn 2003 for expanded definition). Said differently, mindful awareness is the trainable skill of intentionally remembering to pay attention in the present moment without habitual reaction (i.e., needless emotional, cognitive, or behavioral reactivity) or conceptual exaggeration (i.e., needless elaboration of thought). Mindfulness training is associated with improved self-regulation, attentional control, and reduced psychological stress in youth (Barnert et al. 2013; Bögels et al. 2008; Coholic et al. 2012; Flook et al. 2010; Semple et al. 2010; Schonert-Reichl and Lawlor 2010), and as such, may have a role in improving classroom behavior enacted by students.

The above-mentioned capacities of self-regulation and attentional control are positively associated with school readiness, prosocial behavior, and academic achievement (Brock et al. 2009; Ponitz et al. 2009), and inversely associated with externalizing problems (Rydell et al. 2003). Importantly, reviews of the research literature find that mindfulness training can improve teacher-reports of students' attention and self-regulation problems (see reviews, Black et al. 2009; Burke 2010). Although initial findings suggest that mindfulness training is somewhat promising for shaping attentional and self-regulation capacities in youth, which has implications for a non-disruptive classroom environment, the majority of studies have recruited small samples of youth (60 % of available literature has samples fewer than 50 participants), and results have yet to be replicated in larger samples of ethnically- and socioeconomically-diverse children in real-world public school settings.

In the current field intervention trial, we evaluated teacher-reports of students' classroom behaviors before and after a 5-week mindfulness-based program, using the K-5 curriculum from *Mindful Schools* (MS), delivered at a public elementary school in California. We also examined if the addition of more sessions at follow-up versus no addition of sessions provided added benefit to students' classroom behaviors. We hypothesized that the mindfulness intervention would improve teacher-reported scores of students' classroom behaviors, and that the addition of more sessions would provide an added benefit to students' classroom behaviors.

Method

Participants and Procedures

This field study was conducted in Spring 2011 at one elementary school in Richmond, CA. The Richmond school solicited the MS program, thus they self-selected the intervention. The school received the program curriculum at no cost. The public school was comprised

mainly of low income (83 % enrolled in the free lunch program) and ethnic minority (95.7 %; 52.3 % Hispanic, 28.0 % Black, 15.0 % Asian, 4.3 % White, and .4 % other) children who tested at the national 44 percentile in English and 59 percentile in math. Data were collected from 17 teachers in 17 different classrooms at pre-intervention, immediate post-intervention (after a 5-week intervention), and 7 weeks post-intervention. Teachers used a rubric to report on the behaviors of 409 students in grades kindergarten through sixth at the three assessment periods.

Within the school, all classrooms were randomly assigned to receive the MS curriculum or MS plus additional seven once-weekly classes (MS+). Details about the MS curriculum can be found online (see Mindful Schools 2012) and in "Appendix" section. The MS curriculum was delivered to students in 15-min sessions running 3 times per week for a total of 5 weeks. MS+ included the MS curriculum plus additional once-weekly classes for 15 min for a total of 7 weeks (in total, 12 weeks of intervention). Content delivered during the additional 7 weeks in MS+ was a review of lesson content learned from the original 5 weeks MS intervention. Two mindfulness meditation teachers, one with 3 years of formal practice and one with 20 years of formal practice, delivered the curriculum. Classroom teachers were given a briefing on mindfulness for 1 h and they also participated in the mindfulness classroom activities. Teachers were asked to administer short (2-min) practices with their students on the days the MS instructors were not present. Students were asked to practice learned mindful skills in daily life (e.g., in the classroom, on the playground, bus, and at home). The program curriculum was the same for all grade levels. The school administration and teaching staff approved the study protocol; however, IRB approval was not required as the intervention was solicited by the school and integrated into regular classroom education. The teachers assented to participate in self-reporting data via a student evaluation method that was already being implemented by teachers. Therefore, the study can be conceptualized as a naturalistic field evaluation of a program curriculum recruited by the school.

Measures

Classroom Behavior—The Student Behavior Rubric by Kinder Associates, LLC (2007) assesses four categories of teacher-rated classroom behavior enacted by students, including: (1) paying attention (pays attention all of the time), (2) self-control (i.e., demonstrates calmness and self control), (3) participation in activities (physical engages and participates in all activities), and (4) caring and respect for others (shows care and respect for teachers and fellow students). Each item is ranked on a Likert scale ranging from 0 to 4. Higher scores indicate better student behavior. This brief measure was selected in order to meet the pressing time demands of teachers and because its format was similar to conventional evaluations administered by the school. Our data support the reliability of the four summed items (Cronbach's alpha: pretest = .83, post-test = .87, follow-up = .86; 5-week test–retest $r = .51$, $p < .001$). For comprehensiveness, each category as well as the total score for all categories was modeled as an outcome.

Analysis

Analyses were performed in SPSS version 20 (IBM Corp., Armonk, NY). Cohen's *d* was calculated adjusting for the dependence of observations (Morris and DeShon 2002). Data

showed significant within-teacher variability ($s^2 = 9.07$, $p < .05$) but not between-teacher variability ($s^2 = .97$ ns) on the summed Student Behavior Rubric; thus, nested modeling of students within teacher was not necessary. Estimated intervention effects were evaluated with a grade-adjusted MIXED model inclusive of a between groups factor (group: MS vs. MS+), a repeated measures factor (time: pre-intervention, post-intervention, and 7 weeks post-intervention), and their interaction (group × time).

Results

Sample Characteristics

At baseline, both groups were equivalent on grade level (MS: $M = 3.04$, $SD = 2.05$; MS+: $M = 3.17$, $SD = 1.96$, $p = .27$) and on scores for all four outcomes of classroom behavior (see Table 1).

Effects on Classroom Behavior

Table 1 presents the observed means of teacher-reported student behavior by group over time. From baseline to immediate post-test, student behavior scores improved on all four outcomes as well as for the summed score in both groups (d range across outcomes = .25–.52). Grade-adjusted MIXED model estimates indicated that all teacher-reported outcomes significantly improved over time for both groups from pre- to post-intervention for paying attention $F(1.76, 616.59) = 14.18$, $p < .001$), self-control $F(1.74, 609.54) = 16.16$, $p < .001$, participation $F(1.82, 637.14) = 4.78$, $p < .05$), respect for others $F(1.90, 664.31) = 13.38$, $p < .001$), and total sum score $F(1.63, 570.43) = 22.39$, $p < .001$). Simple effects from the estimated model show improvement over time from baseline lasted up to 7 weeks post-intervention for both groups on all outcomes (all p's < .001).

Effect of Added Sessions

To determine if the addition of seven more sessions after the initial 5-week mindfulness intervention would be of greater benefit on the outcomes than no additional sessions, group × time effects were examined in the grade-adjusted MIXED model. Teacher-reported changes in classroom behavior were statistically similar across groups over time for paying attention $F(2, 380.30) = 1.28$, $p = .28$), self-control $F(2, 379.20) = .40$, $p = .67$, participation $F(2, 385.22) = .34$, $p = .34$, respect for others $F(2, 286.61) = .52$, $p = .60$, and total sum score $F(2, 381.99) = .85$, $p = .43$. However, simple effects indicated attention continued to increase in the MS+ group ($p < .01$) but remained unchanged ($p = .71$) in the MS group during the 7-week post-intervention period. Overall, given that treatment group scores improved at a similar rate over time, Fig. 1 provides estimated means for the total sample over the course of the study.

Discussion

This study yields data from the largest mindfulness intervention trial for children we know of published to date. Our findings indicate that the mindfulness intervention was associated with improvements in various indices of student behavior via teacher report that lasted up to 7 weeks after the intervention period. Over time, the children were reportedly improved at

paying attention, calm and self-control, participation in activities, and caring/respect for others. The addition of seven once-weekly sessions after completion of the original 5-week curriculum did not appear to add significant benefit beyond what was already gained from the intervention to the majority of behaviors assessed. However, it appears that one outcome, paying attention, continued to rise in accord with the additional sessions whereas attention flattened among students who did not receive the additional sessions. It is important to consider a possible ceiling effect on the teacher-reported rubric, which may be masking additional benefits garnered from added sessions. Moreover, teachers in MS may have continued to use mindfulness skill training in their classrooms, thus matching the additional training time administered to the MS+ group.

These findings contribute to a growing line of research pertaining to the evaluation of mindfulness-base interventions among children and youth in school-based settings (Black et al. 2009; Burke 2010). Our findings lend evidence to suggest that teachers perceive that students have improved classroom behavior after they participate in a relatively short (5 weeks) mindfulness-based program (i.e., on average, mindfulness programs for youth last about 8–12 weeks, see Black et al. 2009). These findings have important implications considering that student learning excels most optimally in a non-disruptive classroom environment where teachers feel in control and not under emotional distress (Pas et al. 2010). Such optimal conditions may also possibly function to increase teachers' job satisfaction and improve teacher retention (Darling-Hammond 2001; Montgomery and Rupp 2005). Therefore, mindfulness-based programs may possibly benefit not just students who are trained in mindfulness skills, but also the broader learning environment including school personnel who are also exposed to the program.

Lacking a control condition naïve to the MS program curriculum, this study has several limitations. A control group was not included in the study due to lack of resources, thus alternative explanations for intervention effects such as maturation, history, and regression to the mean are all plausible. Teachers were not blind to the intervention, thus teacher-reports are subject to expectancy effects from observation of and participation in mindfulness activities. Single-item outcome measures were used due to limited teacher time and to match current reporting methods used at the school; however, lack of a validated scale limits our interpretation of the underlying construct that yielded change over time. Also, responses to single items can incur a ceiling effect that falsely masks a true change in the outcome, which may have been the case with our follow-up comparisons between MS and MS+. Future field evaluation studies with large samples, such as the one in the current study, will benefit by including a comparator group and multiple measurement methods including teacher-, student-, and parent-reports of behaviors. While these limitations are important to consider, this study suggests that mindfulness training may improve classroom behaviors among ethnically-diverse and lower-income school children, which may have implications for enhancing the classroom learning environment in schools.

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Appendix

See Table 2.

Table 2

Mindful schools K-5 grade curriculum outline

Week	Lesson titles	Lesson content
1	Mindful bodies ans listening Mindfulness of breathing Heartfulness: sending kind thoughts	Practice still and relaxed sitting posture; concentrate attention on sound of a bell from sound start to finish; careful listening to ambient sounds in the classroom; following the breath; sending kind thoughts and wishes to other people we care about
2	Body awareness Mindfulness of breathing Heartfulness: generosity	Whole body scan while noting feelings and sensations; teach “anchor word” to help stay connected with breath; discuss and visualize ways to be generous
3	Thoughts Mindful seeing Heartfulness: kind and caring on the playground	Discussion about thoughts and the way thoughts dictate feelings and actions; practice mindful breathing and noticing when there are thoughts; looking around to find things with our eyes that we haven’t noticed before; carefully observe one object; discussion and visualization of various instances and feelings on the playground
4	Emotions: creating space Slow motion Gratitude: looking for the good	Discussion about emotions; identifying where in the body various emotions are felt; awareness of slow moving arms and standing up slowly; discussion and visualization of being grateful and how gratitude relates to feelings
5	Mindful walking Mindful eating Mindful test-taking	Slow mindful walking and noticing sensations; mindful eating of raisin exercise; discussion and visualization of feelings that come up before, during and after tests: how to apply mindfulness to these feelings during tests

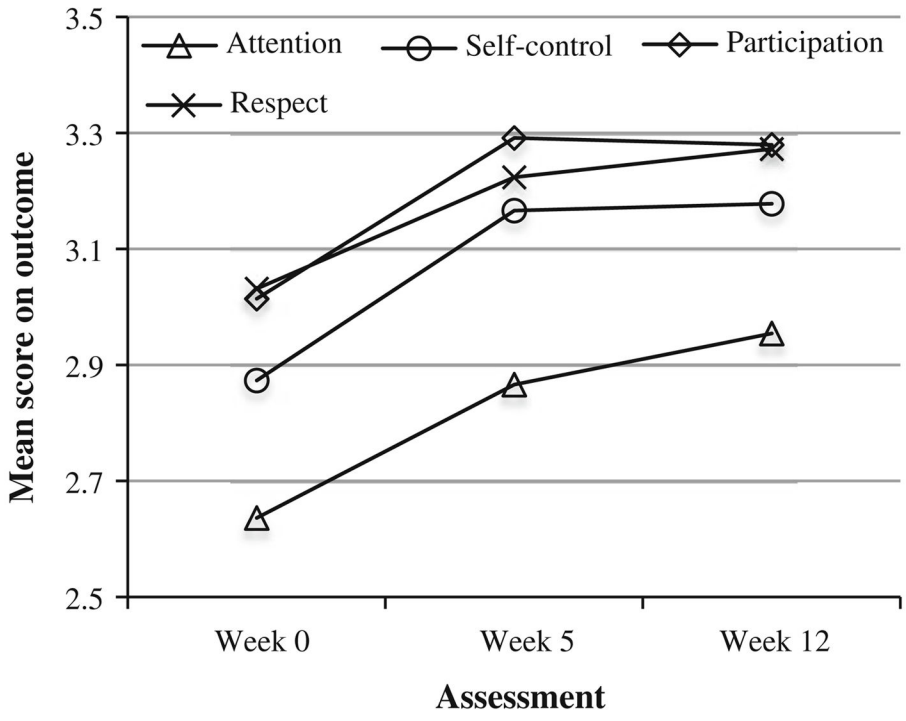

Fig. 1.

Estimated means for teacher-report of student behaviors with MS and MS+ groups combined, N = 409. Week 0 = pre-intervention assessment; week 5 = post-intervention assessment; week 12 = 7 weeks post-intervention assessment

Table 1

Observed means for outcome measures over time by group with effect sizes

Variable	Pretest (n = 404) M (*SD*)	Post-test (n = 364) M (*SD*)	M Δ[a]	*d*	Follow-up (n = 403) M (*SD*)	M Δ[b]	*d*
Paying attention							
MS	2.63 (1.0)	2.95 (.9)	+.32**	.42	2.91 (.9)	+.28**	.37
MS+	2.64 (1.0)	2.89 (.9)	+.25**	.33	3.01 (.9)	+.37**	.46
Between group difference			.07	.09		.09	.09
Self-control							
MS	2.79 (1.0)	3.13 (.9)	+.34**	.43	3.07 (1.0)	+.28**	.32
MS+	2.96 (1.0)	3.28 (.8)	+.32**	.42	3.30 (.8)	+.34**	.43
Between group difference			.02	.01		.06	.11
Participation							
MS	3.03 (.9)	3.31 (.9)	+.28**	.37	3.25 (.8)	+.22**	.28
MS+	3.00 (.9)	3.34 (.9)	+.34**	.45	3.31 (.8)	+.31**	.39
Between group difference			.06	.08		.09	.11
Respect for others							
MS	2.96 (1.0)	3.16 (1.0)	+.20*	.25	3.18 (.9)	+.22**	.26
MS+	3.11 (.9)	3.35 (.9)	+.24**	.33	3.37 (.8)	+.26**	.35
Between group difference			.04	.08		.04	.09
Sum score							
MS	11.40 (3.2)	12.54 (3.1)	+1.14**	.50	12.42 (3.0)	+1.02**	.43
MS+	11.70 (3.1)	12.86 (3.0)	+1.16**	.52	12.96 (2.8)	+1.26**	.55
Between group difference			.02	.02		.24	.12

** $p < .01$,

* $p < .05$—significance for paired sample *t* test for within-subjects repeated measures

[a] M Δ = mean difference between baseline and immediate post-test score;

[b] M Δ = mean difference between baseline and follow-up score; *d* = Cohen's *d* corrected for within-subjects dependence between means; MS = Mindful Schools; MS+ = Mindful Schools + added sessions