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Cultivating Forgiveness and Compassion Through a Mindfulness-based Program for Teachers: Results from Two Field Interventions

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**Cultivating teachers' habits of mind through mindfulness training:
Preliminary evidence from two randomized field trials**

Abstract

The aim of this research was to determine if a mindfulness-training (MT) program for teachers cultivated habits of mind (e.g., mindfulness, emotion regulation, compassion and forgiveness) conducive to effective teaching. Data were gathered in two randomized control trials. Results from pre- to post-test and follow-up showed that MT was associated with increases in mindfulness, efficacy for regulating emotion on the job, and the tendency to forgive others. Linguistic analyses revealed that teachers who underwent MT expressed more positive affect when discussing their most challenging student than those in the waitlist control group. Results warrant further investigation using behavioral-, observational-, and third-person measures of these habits of mind in the target individual.

Cultivating teachers' habits of mind through mindfulness training:
Preliminary evidence from two randomized field trials

As important as methods may be, the most practical thing we can achieve
in any kind of work is insight into what is happening inside us as we do it.
The more familiar we are with our inner terrain, the more surefooted our
teaching—and living—becomes.

(Palmer, 2007,
pg. 6)

In recent years, increasing attention has been focused on how teacher professional development activities might better equip teachers with the habits of mind that are needed to manage occupational stress and maintain well-being, and at the same time, create well-managed, community-oriented, motivating classroom environments conducive to student learning in the 21st century (Darling-Hammond & Bransford, 2005; Jennings & Greenberg, 2009; Partnership for 21st Century Skills, 2008). Habits of mind are defined as "those dispositions toward behaving intelligently when confronted with problems, the answers to which are not immediately known" (Costa & Kallinick, 2011). Costa and his colleagues have outlined sixteen such habits of mind, including, gathering data through all of the senses, meta-cognitive awareness, cognitive flexibility, emotion regulation, resilience despite setbacks, and attending to others with empathy and compassion. Given that the work of teaching is inherently ambiguous due to its social-emotional nature and the fact that the "outcome" of education is the formation of a human being (Hargreaves, 2000; Helsing, 2007), it seems likely that such habits of mind play a central role in the enactment of high quality teaching (Costa & Kallinick, 2011). The aim of this research was to determine if a mindfulness-based professional development program was associated with teachers' development of habits of mind related to mindfulness and its

application to emotion regulation and the management of social relationships in the classroom, especially relationships with students who display challenging classroom behavior.

In one conceptualization, Jennings and Greenberg (2009) coined the term "social-emotional competence" (SEC) to refer to a constellation of habits and dispositions beyond teachers' content knowledge and pedagogical knowledge that are essential for effective teaching. In this conceptualization, SEC consists of five core skills applied to the daily demands of teaching and relationships with students: self-awareness, social awareness, responsible decision-making, self-management, and relationship management (Jennings & Greenberg, 2009). This conceptualization is aligned with the definition of emotional intelligence offered by Goleman (1995) as well as the social-emotional learning (SEL) movement for students more generally (e.g., CASEL, 2011).

In a similar vein, teacher educators have outlined a set of psychological factors that are integral to high quality teaching called "teacher professional dispositions" (TPDs) (Dottin, 2009). TPDs are defined as those "values, commitments, and professional ethics that influence behaviors toward students, families, colleagues, and communities and affect student learning, motivation, and development as well as the educator's own professional growth" (National Council for the Accreditation of Teacher Education, 2006). Honesty, respect and an ethical concern for the well-being of all students are examples of teacher professional dispositions.

Both the SEC and TPD conceptualizations assume there are a set of habits and competencies such as mindful awareness, emotion regulation, and compassion towards others that are important and understudied components of being a highly effective

teacher. That is, both views assume that beyond teachers' training in the areas of content knowledge, pedagogical content knowledge, and developmental knowledge of students (e.g., Darling-Hammond & Bransford, 2005; Pianta, Hitz & West, 2010; Snyder & Lit, 2010), there is an additional set of factors that is essential to cultivate if teachers are to manage their classrooms effectively, develop and maintain supportive relationships with students, and respond to challenging student behavior in a professional, non-reactive, and empathic way (see Jennings & Greenberg, 2009). In both conceptualizations, there is also a basic postulate that qualities such as a calm body and mind, a clear and insightful awareness, and caring intentions for others on the part of teachers are complex skills or "habits of mind" that can be cultivated through specialized professional development programs (Jennings, Lantieri & Roeser, 2011).

We examine this postulate in this paper, and conceptualize teachers' SEC and professional dispositions in relation to several *habits of mind* involved in the regulation of attention, emotion, and social relationships with others (e.g., Davidson et al., 2011; Dewey, 1944; Shulman, 2005). Specifically, we focus on habits of mind related to mindful (e.g., meta-cognitive) awareness, the ability to be emotionally non-reactive in interactions with students and colleagues, and dispositions towards compassion and forgiveness for others in the school setting, especially challenging students. The primary aim of this study is to determine whether or not a 36.5-hour mindfulness training (MT) program for public school teachers in Canada and the United States supports the development of these particular habits of mind (Figure 1).

Mindfulness as a master habit of mind

Mindfulness has been described as an attentive, non-judgmental and receptive form of

awareness of present moment experience (Kabat-Zinn, 1990). This includes attentiveness in the present moment to sensation-perceptions attained through the five senses, as well as feelings, images, and thoughts. In an effort to operationalize the construct of mindfulness for research purposes, Bishop and colleagues (2004) proposed a two-part definition. First, mindfulness is related to the volitional regulation of attention. Specifically, mindfulness involves sustained attention to the constituents of consciousness arising moment to moment (here-and-now) in terms of sensations, feelings, images and beliefs. Second, mindfulness involves the adoption of a particular orientation towards what is occurring in the present - an orientation characterized by dispassionate curiosity, openness, and acceptance in terms of neither fixating on, nor denying, aspects of present-moment experience.

Mindfulness and emotion regulation

Mindfulness, so defined, has been linked to another key habit of mind, the capacity of individuals to effectively regulate emotion, especially during times of stress (Davidson, 2010). Gross (1998) defines emotion regulation (ER) as a process of modulating aspects of an emotional experience or response, and has identified two basic sets of strategies for doing this: (a) strategies that focus on the antecedents leading to an emotional experience and (b) strategies focused on the regulation of emotional responses once an emotion has begun. In the former case, antecedent-focused strategies might include the selection and modification of situations to reduce the chances of experiencing certain emotions, the skillful deployment of attention towards or away from certain stimuli (e.g., don't look as you pass the donut store) and cognitive reappraisal of events. In the latter case, response-focused ER strategies include response selection (choosing how to respond rather than

reacting automatically) and response modulation (down-regulating dominant responses once they have begun).

Mindfulness appears to be essential for both antecedent and response-focused forms of ER. For example, the process of becoming more aware of environmental cues that activate certain emotions requires mindful awareness of the contexts, people and relational issues that may function as "emotional triggers." In addition, the notion of being "swept up in an emotion" suggests that once an emotion begins, unless we have particular awareness of our arousal, what emotion we are experiencing, or how to calm the body and mind down through breathing or re-appraisal, then we will be caught in the "grips of an emotion" and somewhat enslaved to our habitual reactive tendencies in the presence of that emotion (e.g. reacting angrily or with aggression to experiences of perceived disrespect). Studies have begun to show the efficacy of mindfulness training with regard to strengthening the brain functions that are responsible for emotion regulation and resilience in the face of life stress (Davidson, et al., 2003; Lutz et al., 2008a, 2008b; Ramel, Goldin, Carmona & McQuiad, 2004). In this study, we examine how mindfulness training might affect one key habit of mind: teachers' sense of efficacy regarding their ability to remain non-reactive emotionally in the context of challenging student and colleague behavior in the classroom or school as a whole. These kinds of efficacy beliefs are hypothesized to develop in parallel with the actual skill of emotion regulation, but only the former and not the latter are assessed in this particular study.

Mindfulness, compassion, and forgiveness

In addition to emotion regulation, mindfulness training has also been linked the cultivation of habits of mind associated with compassion and forgiveness. A key aspect

of mindfulness practice, for instance, is learning how to be present, compassionate, and forgiving with oneself and others (Kabat-Zinn, 1990). In the classroom, compassion and forgiveness are instrumental for teachers' awareness of student needs, questions and points of confusion while trying to learn new things, and for teachers' capacity to "see beyond" student problem behavior to its underlying motives which often involve needs for safety, care, reassurance or limit-setting. Compassion and forgiveness are also essential for teachers' ability to build and to repair what are relatively long-term relationships with students and colleagues, relationships in which conflicts are inevitable.

Compassion is a relatively new construct of scientific inquiry and has proven challenging to define and differentiate from concepts such as empathy and altruism (Goetz, Keltner, & Simon-Thomas, 2010). The definition of compassion we adopted for this study encompasses both cognitive and affective/motivational dimensions that have been identified with some consensus among scholars. Namely, compassion for others is defined as an awareness of and feeling of concern for another person's suffering, accompanied by a subsequent desire to alleviate that suffering through action (e.g., Goetz, et al., 2010; Eisenberg, 2002;).

There is some evidence to suggest that compassion is a trainable skill rather than a trait that is stable within individuals. Mindfulness training in particular is thought to increase one's disposition to be compassionate through awareness of self and others, an acknowledgement of the universal desire for happiness and freedom from suffering, and specific practices for cultivating loving-kindness towards oneself and others (e.g., Pace et al., 2009; Ringu Tilku Rinpoche & Mullen, 2005; Tirch, 2010). In one study, Lutz and his colleagues (2008) tested the hypothesis that compassion and empathy could be trained

through mindfulness practices in ways comparable to the training of attentional or sensory motor skills. The authors studied the brain patterns of both expert meditators who had more than 10,000 hours of experience in Buddhist contemplative practices, including compassion meditations, and novices with no meditation practice prior to the training in the study. They found that during compassion meditation versus a rest state, both experts and novices showed heightened reactions in brain areas associated with affective processing to positive and negative emotional vocalizations of humans. This kind of brain response was particularly pronounced for the expert meditators, and especially during vocalizations expressing negative affect (Lutz et al., 2008). These results, along with their replication and extension (Lutz et al., 2009), provide evidence that emphatic and compassionate responses to the suffering of others can be enhanced through training.

Similar to research on compassion, research on forgiveness is still in a nascent state and the construct remains a challenge to define. For purposes of this study, we adopted a definition of forgiveness as a pro-social change in an aggrieved individual's thoughts, emotions, and/or behaviors towards a blameworthy transgressor, including a reduction or elimination of resentment and motives toward revenge and decreased behavioral avoidance of the transgressor (Enright & Fitzgibbons, 2000; McCullough, 2000; Worthington, 2010). Some researchers extend the definition of forgiveness beyond the reduction of afflictive emotions and related actions towards the perceived transgressor (e.g., hostility, avoidance) to include the cultivation of benevolent or wholesome emotions such as loving-kindness towards them (e.g., Exline et. al., 2008; van Oyen, Witvliet, Ludwig, &Vander Lann, 2001;).

In an attempt to further define the construct of forgiveness, researchers have also

examined the process of being actively *unforgiving*. Unforgiveness has been defined as state of rumination in which chronic negative thoughts and emotions (e.g., bitterness, hostility, anger, fear, hatred, resentment) toward a transgressor are maintained over time (e.g., Worthington & Scherer, 2004;).

Over the past decade, numerous studies have linked forgiveness to mental and physical health (e.g.,Harris et al., 2006; Lawler et al., 2003; van Oyen, Witvliet, Ludwig, & Vander Laan, 2001). Moreover, randomized controlled intervention studies with adults have shown that forgiveness training can lead to increases in psychological health and decreases in afflictive emotions, rumination and reactivity (e.g., Baskin & Enright, 2004; Harris et al., 2006; Luskin, Ginzburg, & Thoresen, 2005; Reed & Enright, 2006; Waltman et. al., 2009). In this study, we examine how mindfulness training might lead to increases in teachers' efficacy for and tendency to forgive students and colleagues, especially those students and colleagues whom teachers feel are particularly challenging or who have wronged or mistreated them in some way.

A mindfulness-based teacher professional development program

The **SMART**-in-Education (**S**tress **M**anagement **a**nd **R**esiliency **T**raining) program is a fully manualized, mindfulness-based professional development program for teachers (Cullen & Wallace, 2010). The SMART program represents approximately 70% of the same components as Jon Kabat-Zinn's (1990) widespread Mindfulness-based Stress Reduction (MBSR) program, including many of the same mindfulness and movement practices. Differing from MBSR, about 20% of the SMART program is devoted to emotion theory and the application of mindfulness to emotion, with the remaining 10% devoted to forgiveness and the application of mindfulness to issues of forgiveness. An

overview of the sessions and topics covered in the SMART program is presented in Table 1.

The main program components of the SMART program fall into three categories: (a) group discussions and didactic presentations, (b) mindfulness, loving-kindness and forgiveness practices and (c) homework assignments. Group activities include what happens during the weekly sessions of the SMART Program – question and answer periods, group discussions, didactic lectures, modeling of mindfulness practices and group mindfulness practice. For instance, relevant to this paper, participants in the program are presented with mini-lectures on emotion and its function, the processes of emotion regulation, and forgiveness to provide them with "conceptual tools." The question and answer periods characteristic of each session also provide a means of answering questions and exploring the application of conceptual and contemplative tools to teachers' personal and professional lives.

Mindfulness practices include specific mental training exercises such as concentration on sensations in the body, feelings, thoughts, the breath, and the on-going flow of experience moment to moment. The aim of all of these practices is to develop mindfulness in the form of concentration, clarity of perception, and emotional balance. The loving-kindness meditation practice trains teachers to re-imagine their relationships with other people by viewing all people as equally valuable and important, and by generating strong feelings of kindness first towards individuals that one already cares about, then towards people about whom one feels neutral, and finally towards those who are perceived as enemies but who, nonetheless, teach us many valuable life lessons (e.g., the lesson of patient forbearance, Dalai Lama, 1999). In the SMART program,

participants are guided through an exploration of both forgiveness and lack of forgiveness

through personal reflections, dyadic exercises, discussions in which misperceptions about

forgiveness are challenged, and through mindfulness of feelings and thoughts that

individuals are holding onto with regard to a perceived transgression in their lives.

Participants also engage in a practice of loving-kindness in which benevolent feelings are

silently extended to oneself, others, and perhaps, to those by whom one feels aggrieved.

Finally, homework practices refer to what individuals do with regard to the program

outside of group sessions and include things like daily mindfulness practice and keeping

a meditation journal, and engaging in weekly activities around specific topics. For

example, participants are asked to engage in loving kindness practice with respect to a

challenging student in their classes, and to examine how their reactions and interactions

with that student unfold during the week in which they engage in this homework activity.

Theory of Change and Hypotheses

The theory of change for the SMART program begins with a consideration of the

effect of the implementation fidelity of the program and participants' engagement with

the program (see Figure 1). Given fidelity and participant engagement, we predict that the

program will cultivate the skill of mindfulness and its application to issues of emotion

regulation, compassion and forgiveness. Specifically, compared to teachers in the waitlist

control conditions, we hypothesize that teachers who receive mindfulness training (MT)

will show increases in mindfulness, efficacy for regulating emotion at work, and efficacy

for and a disposition to forgive students and colleagues at work with whom they

experience conflicts. Finally, we hypothesize that teachers who receive MT will report

greater levels of expressed compassion for their "most challenging student," but may not

show any differences on explicit self-report measures of compassion due to self-presentation biases.

METHOD

Study Design

Two studies of the SMART program, one in the United States and one in Canada were conducted. Both were randomized waitlist control studies with assessments at baseline (T1), post-intervention (T2), and 3-month follow-up (T3). Those randomly assigned to the intervention condition completed the SMART-in-Education program in spring 2009 or 2010; those in the waitlist condition completed the SMART program in autumn 2009 and 2010. The three measurement time points in each study included two in the last half of the school year, including baseline (February-March) and post-intervention (June), and a three-month follow-up at the beginning of a new school year following the summer break (October).

Sample

The sample is based on two studies that, when combined, included 120 public school teachers. The Canadian Study included 60 elementary (65%) and secondary public school teachers (54 women, 6 men) from an urban school district in western Canada.[1] The U.S. Study included 60 elementary (75%) and secondary public school teachers (53 females, 7 males) from a suburban school district in the western United States. In both samples, females were overrepresented (>88%). The age of participants in combined sample ranged from 27 to 64 years of age ($M = 46.9$, $SD = 9.2$). In the Canadian sample, 42% of

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[1] Teachers in this particular Canadian school district were screened for prior exposure to training for the MindUp™ program (see http://www.thehawnfoundation.org/mindup), a mindfulness-based program for students that is very popular in this district. We excluded teachers who had received MindUp™ training from our study.

the teachers reported having bachelor's degrees; 22% reported having post-bachelor's diplomas, and 35% reported having master's degrees. In the US sample, 20% of the teachers reported having bachelor's degrees; 73% reported having master's degrees, and 7% reported having a J.D. or Ph.D. Teachers in the combined sample ranged from having taught from 1 to 35 years in the classroom ($M = 14.9$, $SD = 8.5$). There were no significant differences in years of teaching experience between research sites, although teachers in the Canadian sample were slightly younger than those in the U.S. sample, $t(117) = 2.53$, $p < .05$ ($M_{Canada} = 44.8$, $SD = 9.45$ and $M_{USA} = 49$, $SD = 8.55$). Thus, we control for age in all analyses.

Thirty percent of the Canadian teacher sample reported being married at the time of the study, while another 15% reported having a common law marriage. In contrast, seventy percent of the US teacher sample reported being married at the time of the study (overall marital status difference by site: $\chi^2(4, 114) = 21.19$, $p<.01$). Because of this difference, both research site and marital status were included in statistical analyses as controls. Participants in the Canadian sample self-identified as 67% European-Canadian; 18% Asian-Canadian, and 15% other race/ethnicities (e.g., French-Canadian, Aboriginal, Filipino, US Black Canadian, etc.). Those in the US sample self-identified as 93% European-American, 5% mixed ethnicities (e.g., Japanese and American), and 2% Asian-American. Given the small numbers of individuals in each racial/ethnic subgroup, and a lack of hypotheses regarding why race/ethnicity might affect the development of mindfulness or its correlates, statistical variables for race or ethnicity are not included in the analyses presented in this report.

Procedures

Human Subjects Research Review Committees at Portland State University (Canada and US Study), the University of British Columbia (Canada Study), and each school district's research review board approved this research. In Canada, data collection included assessments conducted in the teachers' classrooms (e.g., blood pressure, cognitive tasks, interviews) as well as a take home survey at pre/post and a take-home survey at follow-up. Teachers in Canada were compensated $135 CAN for completing these assessments at each time point. In the United States, data collection included a health assessment conducted at the school district office as well as a take home survey at all three time points. Teachers in the United States were compensated $25 US in the form of a gift certificate to Amazon.com for their completion of the assessments at each time point in the study. Participants in both samples were also offered the SMART-in-Education program free of charge.

At the conclusion of the intervention condition in the spring of 2009 and 2010, teachers in both Canada and the U.S. were asked to complete a program evaluation survey. These data allowed us to assess participants' reports of the quality of the curriculum and instructor, the extent of benefits teachers felt that they had derived from program participation, and whether or not teachers would recommend the program to their principals and teacher colleagues. Fifty-three teachers in the intervention condition completed and returned the program evaluation survey (Canada n=26, US n=27).

Measures

Program Fidelity. The SMART curriculum has a full instructor's manual that provides information on the specific content of each session, as well as recommendations on ways of teaching the content in each session. Nonetheless, there is still considerable

latitude for SMART instructors to implement the program based on their own background and experiences. At the same time, instructors who teach the SMART program are required to have a mindfulness practice of their own, experience in leading groups and talking about mindfulness in secular ways, a non-confrontational but authentic relational style, and formal experience with teaching mindfulness (Cullen & Wallace, 2010). Thus, fidelity of program implementation in both the Canadian and US studies was assumed to be high. *Program acceptability.* Research on motivation to learn has shown that intrinsic motivation and engagement are facilitated when individuals are afforded learning environments that address basic needs for safety and belonging, for support when learning new competencies, and for the exercise of autonomy while learning material and connecting it to one's life experiences (Deci & Ryan, 1985). We have reported data elsewhere showing that the teachers who participated in the SMART program in Canada and the United States showed positive engagement with the program in terms of attendance, program completion, and recommendations of the program to colleagues (Roeser et al., 2011). Here, additional indicators from the program evaluation survey regarding how helpful and beneficial participants found the group discussions, group practices, and didactic forms of instruction in the SMART program associated with mindful emotion regulation, compassion and loving-kindness, and the practice of forgiveness were examined (see Tables 2-3).

Program efficacy was examined in relation to changes in mindfulness, efficacy beliefs concerning one's ability to regulate emotion at work, explicit and implicit compassion, forgiveness, and efficacy beliefs regarding the ability to forgive challenging students and colleagues.

Mindfulness. Mindfulness was assessed using two slightly different versions of the

Five Factor Mindfulness Questionnaire (FFM; Baer et al., 2006; Baer et al., 2008). The

FFMQ is comprised of 38 Likert items (1=almost never, 5 = almost always) and five

subscales that form an overall mindfulness score. Subscales include acting with

awareness ("When I do things, my mind wanders off and I'm easily distracted"

[reversed]), noting and labeling experience with words ("I have trouble thinking of the

right words to express how I feel about things" [reversed]), non-judgment of experience

("I criticize myself for having irrational or inappropriate emotions" [reversed]), non-

reactivity to experience ("I perceive my feelings and emotions without having to react to

them"), and awareness of sensations, feelings, and thoughts ("I pay attention to

sensations, such as the wind in my hair or the sun on my face"). Cronbach alphas for both

versions of the *Total Mindfulness Scale* were high in both the Canadian sample (38 items,

T1 α = .95; T2 α = .95; T3 α = .94) and the US sample (38 items, T1 α = .92; T2 α

= .95; T3 α = .97). Therefore, we pooled all 38 items in each research site into a unit

weight mean "total mindfulness score" for each time point.

Efficacy for regulating emotion at work. A new set of items was created to assess

teachers' perceived self-efficacy regarding their ability to regulate emotion effectively on

the job. This measure was created by the first author based on previous research on

"affective self-regulatory efficacy beliefs" among adolescents (Bandura, Caprara,

Barbaranelli, Gerbino & Pastorelli, 2003) and emotion regulation efficacy beliefs among

adult cancer patients with respect to their disease (Han et al., 2004). The *efficacy for*

regulating emotion at work scale was comprised of 9 items. Sample items included,

"How confident are you in your abilities to manage negative feelings that can arise when

students are not doing what you have asked them to do in the classroom?" and "How confident are you in your abilities to *not* get discouraged when working with difficult students?" (1 = not at all confident, 5 = totally confident). Cronbach alphas were acceptable (T1 α = .87; T2 α = .92; T3 α = .89) and unit weight mean scales were created for each time point.

Explicit compassion for others. Teachers' explicit self-reported compassion for others was assessed with 4 self-report items of the Santa Clara Brief Compassion Scale (Hwang, Plante, & Lackey, 2008). Items were assessed on a 5-point scale (1 = not at all true of me, 5 = very true of me) and included such statements as, "I tend to feel compassion for people, even though I do not know them." Cronbach alphas in this sample were acceptable (T1 α = .80; T2 α = .81; T3 α = .79) and a unit-weight mean scale was created for each time point.

Implicit compassion for challenging students. In the Canadian sample, we assessed teachers' implicit compassion using teachers' verbal responses to an interview question about the kind of problem behavior that they found to be the most challenging to deal with in the classroom, and a particular student who manifested that problem behavior. The interview measure was adapted from Brophy and Rohrkemper (1988). In the interview, teachers were first asked to identify the kind of student misbehavior that they found "the most challenging" from a list that included students who manifest a lack of motivation, learning difficulties, hostile or passive aggressive behavior, inattention, immaturity, peer rejection, and so on. Overall, the most frequently chosen problem behaviors were for students who were "defiant" (23%), "hostile aggressive" (23%), "shy and withdrawn" (8%), "underachievers" (8%), "passive aggressive" (7%) and "failure

syndrome" (5%), with the remaining responses spread equally among the rest of the problem behavior categories. Teachers were asked why they chose this particular form of misbehavior, and then asked to think about, but not name, a specific student who displayed this behavior. Next, they were asked questions about why they found this particular kind of behavior so challenging, as well as their perceptions of the student who displayed such behaviors (e.g., "Why might this student behave in this way?"; "What have you found to be successful in addressing such behaviors with this student?"; "If you could find out more information about this student, what that would it be?"). Teachers' responses were recorded, transcribed and analyzed for "expressed compassion for their most challenging student" using both qualitative thematic and quantitative linguistic approaches.

A thematic coding system was developed to code the interview based on the working definition of compassion used in this study, namely "an awareness of and feeling of concern for another person's suffering, accompanied by a subsequent desire to alleviate that suffering through action" (e.g., Goetz, et al., 2010). Three independent raters, blind to the study condition of the transcript they were coding, assessed the level of compassion expressed in each teacher transcript on a 3-point omnibus scale (1 = less expressed compassion than other teachers, 2 = average expressed compassion, 3 = above average expressed compassion compared to other teachers). To arrive at the omnibus rating, each rater read and re-read the transcripts and made initial assessments of them along four dimensions – two of which were more cognitive in nature, and two of which were more affective/motivational in nature. The cognitive dimensions included seeing the child and his or her problem behavior in (a) *clear* and (b) *insightful* ways. The

affective/motivational dimensions included (c) an expressed *concern* for the child and (d) an expression of a *realistic, optimistic desire to relieve difficulties* in the child's life that might be causing the problematic behavior to occur. *Clarity* was defined as "specificity of the participants' description of the child and their challenging behavior without blaming or stigmatizing the child" and *insight* was defined as "the degree of tentatively held ideas concerning the causes of the child's manifest problem behavior as well as the degree of insight into their own emotional reactions to the challenging student." *Concern* was operationalized as teachers' "expressions of care for the student and not just for themselves regarding the distress the child's behavior might precipitate in them" whereas a *realistic optimistic motive to help* was operationalized as teachers' "expressed optimism regarding the possibility of helping the student" versus their "expressions of pessimism or discouragement in this regard."

Raters agreed 90% of the time on the omnibus ratings of each transcript and discussed disagreements until unanimous agreement was reached for all coded transcripts.

A second implicit measure of teachers' expressed compassion in this interview was derived using the Linguistic Inquiry and Word Count (LIWC) software program (Pennebaker et al., 2001). The LIWC program was originally designed to examine if individuals' psychological and physical health could be predicted by their language use (e.g., Rosenberg & Tucker, 1978; Stiles, 1992). Research using LIWC has shown that people benefit from the mere act of writing about their challenging emotional experiences, and those who showed the most improvement in their physical and psychological well-being tended to use relatively more positive emotion words in their writings (e.g., Pennebaker, 1997; Pennebaker, Mayne, & Francis, 1997; Smyth, 1997).

The software has been used and validated across a wide range of research fields (see Kahn et al., 2007).

Because the categories of LIWC were not originally designed to capture aspects of empathetic and compassionate expression in particular, we drew upon research on moral exemplars (e.g., Walker & Frimer, 2007; Walker & Pitts, 1998) and attempted to assess the ecological validity of the LIWC categories on transcribed speeches associated with a small group of Nobel Laureates who are generally recognized as exemplars of compassion. Specifically, we chose the Nobel acceptance speeches of five moral exemplars, including Dr. Martin Luther King Jr. (winner in 1964), Mother Teresa (1979), Desmond Tutu (1984), His Holiness the 14th Dalai Lama (1989), and Nelson Mandela (1993). We then compared the linguistic features of their acceptance speeches with the Nobel Laureates in physics from the corresponding years (see www.nobelprize.org).

Both cognitive and emotional words in these speeches were examined in order to parallel our theoretical conceptualization of compassion as incorporating both cognitive and affective/motivational dimensions. From this comparison and our a priori definition of compassion, we found that the Nobel Peace Laureates differed from their contemporary Nobel Physics counterparts in the percentage of words they used that fell into categories in LIWC linked denoting affect, specifically positive affect and positive feelings words. A graphical representation of the comparison of the Peace and Physics Laureates on these affective dimensions is presented in Figure 3.[2] In addition, we examined the LIWC categories having to do with words denoting cognitive mechanisms

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[2] Non-parametric Mann-Whitney U-tests were used to test group differences between the Peace and Physics laureates on the LIWC categories of affective processes. Results showed the Peace Laureates used a greater percentage of affect words in all affective categories (positive and negative) except optimism.

such as the causes for events, insight into these causes, discrepancies, and so on. We found little difference between these factors in the speeches of the Nobel Peace vs. Physicist Laureates, however, and so we did not purse an analysis of cognitive-related word categories in LIWC.

In sum, using the LIWC default categories, we compared teachers in the SMART program to those in the waitlist control conditions on overall the percentage of words they used that were reflective of *affective processes*, of two broadband categories of overall affective processes including *positive emotions* (e.g., happy, pretty, good) and *negative emotions* (e.g., hate, worthless, enemy); and of several narrow-band categories of these broadband categories including *positive feelings* (e.g., happy, joy, love) and *optimism* (e.g., hope, enthusiasm, zeal) as well as *anxiety / fear* (e.g., nervous, afraid, tense), *anger* (e.g., hate, kill, pissed) and *sadness / depression* (e.g., grief, cry, sad). No comparisons were made on overall *cognitive processes* or the subcategories of cognitive processes in LIWC.

Tendency to forgive others. Teachers' general tendency to forgive others was assessed with the 4-item Tendency to Forgive scale (TTF; Brown, 2003). Items on the TTF ask individuals to indicate how they usually respond when someone commits a transgression against them (e.g., "I tend to get over it quickly when someone hurts my feelings," [1 = not at all true, 5 = very true]). Cronbach alphas were adequate (T1 α = .76; T2 α = .79; T3 α = .83) and a unit-weight mean scale was created for each time point.

Forgiveness of others at work. Situation-specific forgiveness was assessed using stimulated-recall format measures developed by Brown and Phillips (2005). Participants

were asked to recall in writing an incident in which a student or a work colleague had wronged, mistreated, offended, or betrayed them. They were then asked to answer a series of questions on the perceived offense, including their pre- and post-offense closeness to the offender (1 = not at all close, to 7 = extremely close), the hurtfulness and severity of the offense (1 = "not at all hurtful/serious," to 7 = "extremely hurtful/serious"), and whether or not the person had apologized to them. At the end of these questions, teachers were asked how much they agreed with the statement "I have forgiven this person" (1 = not at all true, 3 = somewhat true, 5 = very true). Teachers' work-related tendency towards forgiveness at school was assessed as the extent to which teachers rated this latter statement as "true" after accounting for their perceptions of the seriousness of the transgression, whether or not the person him or herself had apologized to the teacher for the incident, and teachers' demographic characteristics and baseline level of the tendency to forgive (see above).

Efficacy for forgiving others at work. Two single items, newly created for this study, were used to assess teachers' self-perceived efficacy for offering forgiveness to (a) challenging students and (b) colleagues at work with whom they have conflicts. Specifically, teachers were asked how confident they felt in their ability to forgive a student in the classroom who has upset them or let them down or a work colleague who had done so (1 = not at all confident to 5 = totally confident).

RESULTS

Program Acceptability

The first set of analyses were descriptive and focused on teachers' perceptions of the acceptability of the SMART program with respect to the application of mindfulness to

social-emotional issues that arise in the context of teaching, specifically and life more generally. Table 2 presents the results of a series of questions we asked SMART program participants in the experimental conditions in both Canada and the US in this regard. In terms of instructor-facilitated group discussions of topics such as stress reactivity, working with uncomfortable emotions (e.g., anger, fear), the human tendency to appraise events as positive/neutral/negative, and the practice of loving-kindness, teachers rated these components, on average, as "quite helpful." Similar results were found for teachers' perceptions of the facilitated group practices and formal presentations on aspects of emotional experience to which mindfulness can be applied. Generally, teachers in the SMART program rated these components as "quite helpful."

Next, teachers were asked about their perceptions of the benefits, if any, they derived from the social-emotional applications of mindfulness covered in the SMART program. Descriptive results are presented in Table 3. Teachers reported that they benefitted "quite a lot" with regard to learning about emotion regulation and their own emotional triggers, about how to relax and reduce stress, and about the practice of forgiveness. With regard to program benefits regarding the improvement of relationships with students and family, teachers again reported "quite a bit" of benefit. They reported a "moderate amount of benefit" with regard to improving their relationships with colleagues.

Program Efficacy

In order to test program efficacy with regard to the outcomes, a series of analysis of covariance models with statistical significance tests were run for each outcome variable, with condition (intervention vs. waitlist control) and research site (Canada vs. USA) as between-subjects factors, and baseline measures of the outcome variable, sex, age in

years, and marital status as covariates. In each analysis, we also tested the condition by research site interaction and trimmed it from the final model if it was not significant. Effect sizes are reported as eta-squares in the text and a final table of effect sizes using Hedge's G and Cohen's d with unadjusted means is also presented.

Group equivalence following randomization. All study participants were assessed at baseline prior to randomization. In order to insure the equivalence of the SMART intervention and waitlist control groups following the randomization procedure, we conducted a series of simple ANOVAs on pre-test measures of key study variables with condition (intervention vs. control) as the between-subjects factor. Results showed that teachers *did not* differ significantly at pre-test on any measures, as shown in Table 3.

Mindfulness. Trends in the unadjusted means for teachers' self-reported mindfulness by condition (intervention vs. control) from baseline (Time 1) to post-test (Time 2) to follow-up (Time 3) are presented in Figure 2. As hypothesized, analyses of covariance indicated that the SMART training had a significant effect above and beyond research site and the covariates on teachers' self-reported mindfulness compared to teachers in the waitlist control condition at both post-test [$F(1,98) = 24.82$, $p < .01$, $\eta^2 = .20$] and follow-up [$F(1,91) = 20.70$, $p < .01$, $\eta^2 = .20$]. After accounting for these factors, teachers in the SMART program reported greater mindfulness at post-test (Estimated Marginal $M_{\text{INTERVENTION}} = 3.57$, $SE = .05$ vs. Estimated Marginal $M_{\text{CONTROL}} = 3.22$, $SE = .05$) and follow-up (Estimated Marginal $M_{\text{INTERVENTION}} = 3.60$, $SE = .06$ vs. Estimated Marginal $M_{\text{CONTROL}} = 3.20$, $SE = .06$) than those in the waitlist control groups. At follow-up, a significant research site by condition interaction effect was also found, $F(1,91) = 6.31$, $p < .01$, $\eta^2 = .07$. Although teachers in the SMART training reported greater mindfulness

than their colleagues in the waitlist control groups in both Canada and the United States, post-hoc analyses revealed that this difference was even greater among teachers in the United States at follow-up. ANCOVA results for all effects are presented in Table 4.

Efficacy for regulating emotions at work. Trends in the unadjusted means for teachers' self-reported compassion for others by condition (intervention vs. waitlist control) from baseline (T1) to post-test (T2) to follow-up (T3) are presented in Figure 2. As hypothesized, analyses of covariance indicated that the SMART training had a significant effect on teachers' self-reported emotion regulation efficacy at post-test [$F(1,100) = 21.39, p < .01, \eta^2 = .18$] and follow-up [$F(1,87) = 7.89\ p < .01, \eta^2 = .08$] compared to those in the waitlist control condition after accounting for the other factors in the model. Interactions of research site by condition were tested but were not significant, so they were trimmed from the final analyses. ANCOVA results for all effects are presented in Table 5.

Explicit compassion for others. Trends in the unadjusted means for teachers' explicit self-reported compassion for others by condition (intervention vs. control) from baseline (T1) to post-test (T2) to follow-up (T3) are presented in Figure 2. As hypothesized, analyses of covariance indicated that the SMART training did <u>not</u> have a significant effect on teachers' self-reported compassion compared to teachers in the waitlist control condition at post-test [$F(1,100) = 2.08, ns, \eta^2 = .02$] or follow-up [$F(1,93) = 0.23\ ns, \eta^2 = .00$] after accounting for the other factors in the model. The only significant predictor of compassion at post-test [$F(1,100) = 86.76, p < .01, \eta^2 = .47$] and follow-up [$F(1,93) = 47.68, p < .01, \eta^2 = .35$] for all teachers was their self-reported level of compassion at baseline.

Implicit compassion for challenging students. In the Canadian study, the level of implicit compassion in teachers' speech as they discussed their most challenging students was assessed. Fifty-three complete transcripts were coded. Overall, raters found that 5 individuals (9%) expressed "below average compassion," 47 individuals expressed "average levels" (87%), and 2 individuals (4%) expressed "above average compassion." A 2x3 chi-square cross-tabulation was used to assess if experimental condition (2-level: intervention vs. waitlist control) was associated with level of implicit compassion (3-level: below-average, average, above-average) at post-intervention. Contrary to our hypotheses, the relation between condition and teachers' expressed compassion for their most challenging student was *not* significant [χ^2 (2, 53) = .12, *ns*)]. We reran the analysis using ANCOVA with experimental condition as the between subjects factor and baseline explicit compassion as a covariate. Although this model revealed that baseline compassion was significantly related to subsequent level of implicit compassion [$F(1,49)$ = 4.67, $p < .05$, η^2 = .09], there was still no main effect by condition [$F(1,49)$ = 0.01, *ns*, η^2 = .00] presumably due to the lack of variance in the omnibus rating.

Next, quantitative analyses of teacher interview data using the LIWC emotional word categories as dependent measures were conducted. These statistical models included experimental condition (intervention vs. control) as the between-subjects factor and controls for baseline explicit compassion, sex, age in years and marital status. As hypothesized, ANCOVAs revealed several significant differences between teachers in the SMART intervention and those in the waitlist control groups in terms of the percentage of affect-related words used. These results are depicted graphically in Figure 3.

First, we found a main effect for condition on the total percentage of *affective words*

used, $F(1, 48) = 4.16$, $p < .05$, $\eta^2 = .08$. After controlling for baseline explicit compassion, gender, age, and marital status, results showed that teachers in the SMART program used a greater percentage of affective words when talking about their most challenging student than did control participants (Estimated Marginal $M_{INTERVENTION} = 4.10$, $SE = .27$ vs. Estimated Marginal $M_{CONTROL} = 3.36$, $SE = .24$). When considering the two broadband subcategories of affect, we found that main effects of condition were specific to the percentage of *positive affect* [$F(1, 48) = 6.15$, $p < .05$, $\eta^2 = .11$] but not *negative affect* words used [$F(1, 48) = .73$, *ns*]. Specifically, teachers who had participated in the SMART program used a greater percentage of words expressing positive affect when talking about their most challenging student's behavior than did participants in the control (Estimated Marginal $M_{INTERVENTION} = 1.83$, $SE = .22$ vs. Estimated Marginal $M_{CONTROL} = 1.58$, $SE = .20$). In addition, we found a significant effect of condition on the narrowband sub-categories of positive affect words, specifically in the category called *positive feelings*, $F(1,48) = 5.03$, $p < .05$, $\eta^2 = .10$. However, no group differences were found for words related to *optimism*, $F(1,48 = 1.24$, *ns*. The result for the positive feelings category suggests that teachers in the SMART group used more words referring such as love and happiness than those in the control group (Estimated Marginal $M_{INTERVENTION} = 0.40$, $SE = .06$ vs. Estimated Marginal $M_{CONTROL} = 0.21$, $SE = .06$). Finally, we found no significant main effects by condition on the narrow-band sub-categories of negative affect words such as *anger* [$F(1,48) = .39$, *ns*]; *anxiety* [$F(1,48) = .00$, *ns*] or *sadness* [$F(1,48) = .27$, *ns*] between experimental conditions. Furthermore, none of the covariates were significant in any of these models.

Tendency to forgive others. Trends in the unadjusted means for teachers' tendency to

forgive others by condition (intervention vs. control) from baseline (T1) to post-test (T2) to follow-up (T3) are presented in Figure 2. Analyses of covariance indicated that the SMART training had a significant effect above and beyond research site and the covariates on teachers' tendency to forgive others compared to teachers in the waitlist control condition at both post-test [$F(1,99) = 16.62$, $p < .01$, $\eta^2 = .14$] and follow-up [$F(1,86) = 12.33$, $p < .01$, $\eta^2 = .13$]. After accounting for these factors in the models, teachers in the SMART program reported a greater tendency to forgive others at post-test (Estimated Marginal $M_{INTERVENTION} = 3.23$, $SE = .08$ vs. Estimated Marginal $M_{CONTROL} = 2.81$, $SE = .07$) and follow-up (Estimated Marginal $M_{INTERVENTION} = 3.20$, $SE = .08$ vs. Estimated Marginal $M_{CONTROL} = 2.81$, $SE = .07$) than those in the waitlist control groups. ANCOVA results for all effects are presented in Table 6.

Forgiveness of others at work. In the next series of analyses, we examined if the SMART program affected teachers' tendency to forgive others at work in particular. The incidents that teachers wrote about with regard to perceived offenses at work mostly involved colleagues (57% at post-test; 55% at follow-up), followed by students (17% at post-test; 7% at follow-up) and then parents (7% at post-test and follow-up). The remaining responses did not clearly specify the person who was perceived as committing the offense. There was no consistent relation between experimental condition (intervention vs. control) and the individual who was perceived as committing the offense (e.g., colleague, student, parent).

To analyze teachers' tendencies to forgive others at work, we used baseline tendency to forgive, perceived seriousness of the offense, and whether or not the person had apologized for the incident as additional statistical controls. This allowed us to see if

teachers were more likely to forgive specific transgressions at work at post-intervention and follow-up above and beyond this initial tendency towards forgiveness and these specific dimensions of the perceived offense. Results of ANCOVAs showed that the SMART training had a significant effect above and beyond research site and the covariates on their tendency to forgive others for transgressions at work. This effect was significant at post-intervention [$F(1,88) = 7.69$, $p < .01$, $\eta^2 = .08$] but was attenuated and did not reach statistical significance at follow-up [$F(1,78) = 2.06$, ns, $\eta^2 = .03$]. Teachers in the SMART program reported a greater degree of forgiveness towards the perceived transgressor than those in the waitlist control condition at post-intervention (Estimated Marginal $M_{INTERVENTION} = 3.34$, $SE = .16$ vs. Estimated Marginal $M_{CONTROL} = 2.74$, $SE = .14$). ANCOVA results for all effects in these analyses presented in Table 7.

Efficacy for forgiving students and colleagues at work. In a final set of analyses, ANCOVAs were used to assess if teachers' efficacy beliefs concerning their capacity to forgive perceived transgressions involving students or colleagues at work was affected by the SMART training. First, we examined teachers' efficacy for forgiving challenging students. After controlling for research site and teachers' baseline efficacy for forgiving students, gender, age, and marital status, we found the SMART training had a significant effect on teachers' perceived efficacy for forgiving challenging students at post-intervention, $F(1,99) = 4.09$, $p < .05$, $\eta^2 = .04$. This effect was attenuated and not statistically significant at follow-up, however [$F(1,87) = 2.29$, ns, $\eta^2 = .03$]. Furthermore, results of the ANCOVA at post-intervention revealed a significant interaction of research site by condition at post-intervention, $F(1,99) = 4.23$, $p < .05$, $\eta^2 = .04$. Post-hoc analyses revealed that in the Canadian sample (Estimated Marginal $M_{INTERVENTION} = 4.33$, $SE = .15$ vs.

Estimated Marginal $M_{CONTROL}$ = 3.76, SE = .13) , but not the US sample (Estimated

Marginal $M_{INTERVENTION}$ = 4.01, SE = .15 vs. Estimated Marginal $M_{CONTROL}$ = 4.02, SE = .

14), teachers in the SMART training reported increased efficacy for forgiving

challenging students who upset or let them down at post-intervention.

We also examined teachers' efficacy for forgiving colleagues at work who had upset

or let them down at post-intervention and follow-up. After controlling for research site

and teachers' baseline efficacy for forgiving colleagues, gender, age, and marital status,

we found the SMART training had a significant effect on efficacy for forgiving

colleagues at work at post-intervention [$F(1,99)$ = 7.12, p < .01, η^2 = .07] and follow-up

[$F(1,87)$ = 9.11, p < .01, η^2 = .10]. Specifically, teachers in the intervention group

reported greater efficacy for forgiving work colleagues at post-intervention (Estimated

Marginal $M_{INTERVENTION}$ = 3.59, SE = .11 vs. Estimated Marginal $M_{CONTROL}$ = 3.20, SE = .10)

and at follow-up (Estimated Marginal $M_{INTERVENTION}$ = 3.72, SE = .11 vs. Estimated

Marginal $M_{CONTROL}$ = 3.25, SE = .11)

Meditational analyses

The next series of analyses tested the main postulate of our logic model (see Figure 1) –

namely, that changes in mindfulness mediated program effects on the other outcomes

examined in this study. First, we tested to see if post-intervention mindfulness mediated

the relation between experimental condition and teachers' efficacy for regulating

emotions on the job. In accordance with the criteria for a simple mediation (Barron &

Kenney, 1986), teachers in the intervention group reported significantly greater efficacy

for regulating emotion on the job at follow-up than did those in the control group, though

the effect was marginal (β = .24, p = .07). Additionally, those in the intervention group

reported greater mindfulness after the intervention than those in the waitlist control group (β = .43, p < .01). Mindfulness at the post-intervention assessment was significantly related to efficacy regarding emotion regulation at the follow-up assessment even after controlling for intervention condition (β = .55, p < .01). Finally, the direct effect of the intervention condition on emotion regulation efficacy was fully mediated by teachers' post-intervention self-reported mindfulness (β = .01, *ns*), as confirmed by a two-tailed Sobel (1982) test [Z= -3.11, p < .01] and bootstrap results for an indirect effect (95% Confidence interval of -.40 to -.10), using the model proposed by Preacher & Hayes (2004). These results are presented in Figure 4.

Next, we assessed mindfulness as a mediator of the effects of intervention condition on forgiveness. Teachers in the intervention group reported significantly greater dispositional forgiveness at the follow-up assessment than did those in the control group (β = .34, p < .05). Additionally, those in the intervention group reported greater mindfulness after the intervention than those in the waitlist control group (β = .43, p < . 01). Mindfulness at the post-intervention assessment was significantly related to forgiveness at the follow-up assessment even after controlling for intervention condition (β = .52, p < .01). Finally, the direct effect of the intervention condition on dispositional forgiveness was fully mediated by teachers' post-intervention self-reported mindfulness (β = .11, *ns*), as confirmed by a two tailed Sobel test [Z= -2.74, p < .01] and bootstrap results for an indirect effect (95% Confidence interval of -.38 to -.06). These results are presented in Figure 5.

In the final mediation analyses, we assessed mindfulness as a mediator of the effects of intervention condition on teachers' efficacy to forgive challenging colleagues.

Teachers in the intervention group reported significantly greater efficacy for forgiveness at the follow-up assessment than did those in the control group ($\beta = .48$, $p < .01$). Additionally, those in the intervention group reported greater mindfulness after the intervention than those in the waitlist control group ($\beta = .43$, $p < .01$). Mindfulness at the post-intervention assessment was also significantly related to forgiveness efficacy at the follow-up assessment even after controlling for intervention condition ($\beta = .52$, $p < .01$). Finally, the direct effect of the intervention condition on teachers' efficacy for forgiveness was fully mediated by teachers' post-intervention mindfulness ($\beta = .20$, *ns*), as confirmed by a two tailed Sobel test [$Z = -2.83$, $p < .005$] and bootstrap results for an indirect effect (95% Confidence interval of -.47 to -.11). These results are presented in Figure 6.

Selected Program Effect Sizes

In a final set of analyses, we computed effect size (ES) estimates with 95% confidence intervals as an alternative means of assessing the strength of relationship between the SMART intervention and study outcomes (Valentine & Cooper, 2003). To calculate effect sizes (ES) for selected continuous outcomes in this study, we used Cohen's *d*. Effects sizes for selected measures at post-intervention are presented in Table 3. Cohen (1988) proposed the following guidelines for interpreting ES: a "small" effect size is .20, a "medium" effect size is .50, and a "large" effect size is .80. In education, Hattie (2009), after examining effect sizes of numerous factors and programs with student achievement in a meta-analysis of over 800 meta-analyses, recommends that in education, a "small" effect size be defined as .20, a "medium" effect size as .40, and a "large" effect size as .60. We adopt this latter recommendation (see also Valentine &

Cooper, 2003). Results of this study showed that the SMART intervention had large effects on teachers' mindfulness and efficacy for regulating emotions on the job and medium effects on teachers' forgiveness of others and expressions of positive affect for their "most challenging student" at post-intervention.

DISCUSSION

The aim of this study was to determine if a mindfulness-based professional development program for public school teachers cultivated particular habits of mind (e.g., mindfulness, emotion regulation, compassion and forgiveness) hypothesized to be characteristics of highly effective teachers. These habits of mind are all essential for teachers' ability to manage effective and supportive classroom climates for learning, and to build and repair what are relatively long-term relationships with students and colleagues, relationships in which conflicts are inevitable. Recently, scholars have argued that teachers' social-emotional competence (Jennings & Greenberg, 2009), professional dispositions (Dottin, 2009) or habits of mind (Costa & Kallinick, 2011) are educable dimensions of teachers' professional identities that matter for student learning. In addition, others have posited that mindfulness, as a master "habit of mind" involving attention and awareness, can be skillfully deployed to regulate emotion and manage social relationships in health- and harmony-producing ways, respectively (see Davidson & MLERN, 2011).

In this study, these two lines of research were brought together in the context of an intervention study that examined the feasibility and efficacy of a mindfulness-based program for teachers. After taking the intervention, results showed that teachers reported that instructor-facilitated group discussions of topics such as stress reactivity, working

with uncomfortable emotions (e.g., anger, fear) and the application of mindfulness and the practice of loving-kindness to challenging emotional issues that arise constantly in the practice of teaching to be quite helpful. Teachers also reported that they benefitted quite a lot with regard to learning about emotion regulation and their own emotional triggers, how to relax and reduce stress, the practice of forgiveness and about how mindfulness could be applied to each of these social-emotional issues relevant to teaching.

Results of the analyses from pre- to post-intervention and 3 month follow-up showed that the SMART training proved efficacious with respect to increasing teachers' mindfulness, efficacy for regulating emotions at work, general tendency to forgive others, and efficacy for forgiving colleagues at work at post-test. Furthermore, these program effects were maintained at 3-month follow-up. These results suggests that from teachers' subjective perspectives, the intervention was associated with greater mindfulness in the form of their being aware of sensations, feelings and thoughts; acting with awareness instead of being on "autopilot", noting and labeling experience, and practicing non-judgment of experience. Those in the intervention also reported a greater sense of confidence in being able to regulate challenging emotions on the job and in being able to forgive others at work and more generally following conflicts. In addition, teachers who participated in the intervention used a greater percentage of affect words, specifically positive affect and positive feeling words when discussing their most challenging student compared to teachers in the waitlist condition. This pattern of results mirrored patterns of speech we found in our comparison of Nobel Peace Laureates and their Nobel prize-winning physicist counterparts. In addition, given that Pennebaker and his colleagues who have shown that the expression of affect in relation to stressful life experiences

improves psychological and physical health (Pennebaker, 1997; Pennebaker, Mayne, & Francis, 1997), our results are suggestive of the notion that the SMART program helps teachers to acknowledge emotion in their work with challenging students, and to do so in compassionate ways. This may also lower teachers' own stress and distress. More work on this needs to be done, however, before we can be certain of these interpretations.

It is also interesting to note that no differences were found as a function of the training in our thematic codes of teachers' perceptions of their most challenging student, or in teachers' explicit self-reported compassion for others. Clearly, the coding scheme we created and applied did not do a good job of differentiating the transcripts on compassion as evidence by the low level of variance in the final measure. We believe that the paucity of research on compassion for others comes, in part, from the difficulty of measuring compassion in a conceptually clear and reliable manner. In addition, as shown in this study, self-report scales of compassion are presumably vulnerable to strong self-presentation biases and therefore, ceiling effects. For this reason, the current study resulted in no differences on explicit measures of teachers' self-perceptions of compassion either. More work on the development of measures of compassion is needed so this important habit of mind can be studied more clearly in educators and others (e.g., Goetz et al., 2010).

Overall, the pattern of results of this study make sense given that the SMART program trains participants to see places of challenging emotions and pain in themselves and by extension, in others. Participants are invited to explore the idea that a key to freedom from unnecessary stress and suffering is a radical and unconditional acceptance of the present moment, of who they are and what is arising naturally in their minds, be it

positive, negative or neutral. In thus seeing, accepting, and implicitly forgiving their personal difficulties and shortcomings, participants are hypothesized to become more able to extend the same to accepting attitudes towards others in an implicit fashion. Broadly stated, the hypothesis behind this reasoning is that mindfulness training cultivates a kind of tolerance towards the fullness of our own humanity, along with the recognition that a wish for happiness and an inability to sustain happiness are universal conditions. These mindsets are not idiosyncratic to ourselves, but rather connect us to an experience that is common to all human beings. It is these skills of mindfulness— attending to the present with self-compassion, self-acceptance, and self-forgiveness, that are thought to set the stage for individuals to develop the capacity to extend these same attitudes towards others.

Thus, the results of this research suggest that it is not only the specific skills of mindfulness that the program teachers learn, but also the application of these skills to key social-emotional challenges at work. In fact, we found that program-related increases in mindfulness at post-intervention did in fact mediate the effect of the program of teachers' efficacy beliefs regarding emotion regulation on the job, their disposition to forgive others, and their sense of efficacy for forgiving colleagues at work following conflicts. These latter findings are similar to other interventions aimed at forgiveness, for example, where not only the skills necessary to forgive are fostered, but also the confidence to do so in appropriate situations (e.g., Harris et al., 2008).

It is also noteworthy that group differences on these outcomes were maintained at follow-up after the summer recess. These findings suggest that the SMART program imparted effects that were unique from those arising from the normal rest and recovery

that the summer vacation has been shown to effect in teachers generally (e.g., Ritvanen et al., 2003) in that they were specific to the targets of the program shown in Figure 1. Effect sizes of the SMART intervention on teacher mindfulness in this study, for instance, were on the same order of magnitude as those found in a meta-analysis of mindfulness interventions (e.g., Grossman et al., 2001). In addition, although the effect sizes of the disposition to forgive others were smaller in this study than those shown in process-oriented forgiveness interventions (e.g., Lundahl, Taylor, Stevenson & Roberts, 2008), they are nonetheless significant given that the topic of forgiveness was only the explicit focus of the SMART program during a single week of the overall 8 weeks of the program. Overall, given the fact that the habits of mind that were focal target outcomes of the SMART program showed change in the predicted directions, these results support the notion that such habits of mind are malleable and educable.

These results and the capacity of the SMART program to cultivate these dispositions through mindfulness training warrant further investigation using observations of social interaction by expert raters as well as reports on changes in target individuals' behavior by significant people in their lives (e.g., supervisors, spouses, students). Our findings are limited by their reliance on teacher self-reports. Future research is needed to evaluate how the SMART program shapes the enactment of the kinds of habits of mind examined in this study at the interpersonal level. Although progress is being made in identifying the interpersonal behaviors associated with these habits of mind (e.g., Luskin et al., 2005), most intervention research to date has focused on the individual experience of practicing these dispositional skills, and not the layers of transactions that invariably occur as teachers (and others) seek to live and work mindfully, compassionately, and

forgivingly in the context of ongoing relationships.

Additional study limitations include the small sample sizes in these pilot studies and the lack of active control groups. The present results likely to generalize to other populations of teacher that are similarly self-selected and motivated to take and complete a 36.5 hour after-school program. Thus, these results likely do not generalize to teachers as a whole. Studies of SMART that use larger, more ethnically and geographically diverse samples and include active control groups are needed. Despite these limitations, the current research suggests the possibility that mindfulness-based interventions can cultivate teachers' social-emotional competence, professional dispositions, and habits of mind that are theorized to be important for relational harmony and for the creation of socially and emotionally supportive classroom environments for student learning (Costa & Kallinick, 2011; Jennings & Greenberg, 2009). Teachers who are caring and competent, who both teach and learn the lessons of kindness and forgiveness, are likely to be those teachers who makes the most lasting impressions on young minds eager for belonging, acceptance, and guidance along the paths of their learning and development. We look forward to future research on new forms of mindfulness-based professional development programs aimed at assisting teachers in gaining insight into what is happening inside them as they do their work in order that familiarity with their inner lives may lead to their surefootedness in the uncertain landscapes of teaching.

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Table 1
Participants' Perceptions of the Helpfulness of SMART Program Components on Social-Emotional Topics

Next, please rate *how helpful you found each of the following course segments*. Use the following scale to score each item. If you do not recall that segment, or if you were not present when that segment was presented in class, mark "N/A".

1	2	3	4	5	N/A
Not at all helpful	A little bit helpful	Moderately helpful	Quite helpful	Very helpful	Do not recall/ missed this segment

SMART Program Components	Mean	SD
Facilitated Group Discussions		
Group discussion of loving-kindness	4.46	0.68
Group discussion of stress reaction cycle	4.42	0.80
Group discussion of working with uncomfortable emotions	4.37	0.76
Group discussion of working with anger	4.25	0.84
Group discussion of the nature of emotions	4.14	0.76
Group discussion of working with fear	4.04	0.88
Group discussion of positive/negative/neutral events	3.88	0.81
Facilitated Group Practices		
Group loving-kindness practice	4.20	0.76
Group body scan practice	4.17	1.06
Group forgiveness practice	4.15	1.00
Formal Presentations		
Presentation on loving-kindness meditation	4.46	0.73
Presentation on "emotional triggers"	4.35	0.69
Presentation on forgiveness	4.13	0.78
Presentation on emotion	4.08	0.84
Presentation and activity on the aikido of communications	4.02	1.06
Presentation on "emotional balance"	3.90	0.78

$\underline{n}$ = 53
No significant differences between research sites on these questions were found.

Table 2
Participants' Perceptions of SMART Program Benefits with Regard to
Social-Emotional Competence

Next, we would like to know how much benefit you received from the program with respect to the following possible outcomes of the program. Please use the following scale to rate each statement.

1	2	3	4	5
No benefit at all	Benefited a little bit	Benefited a moderate amount	Benefited quite a lot	Benefited a great amount

How much, if at all, did you benefit with regard to:

POSSIBLE BENEFITS	Mean	SD
Learning about your emotional triggers	3.98	0.96
Learning about forgiveness	3.94	0.87
Learning about emotion regulation	3.85	0.98
Learning how to relax	3.85	0.94
Reducing stress	4.15	0.87
Reducing negative moods	4.04	0.84
Enhancing happiness	4.04	0.84
Becoming more self-compassionate	4.27	0.91
Becoming more compassionate	3.92	0.90
Improving relationships with students	3.84	1.24
Improving relationships with family	3.70	1.06
Improving relationships with colleagues	3.35	1.03

n = 53
No significant differences between research sites on these questions were found.

Table 3
Effects of Mindfulness Training on Teacher Outcomes Post-Program and at Follow-up:
Unadjusted Means (SDs), ANCOVA F-Values and Effect Sizes for Condition

Constructs and Measures[a]	Time[b]	Intervention Group Mean (SD)	Control Group Mean (SD)	F[c]	d[d]
Mindfulness	T1	3.30 (0.51)	3.13 (0.59)	2.54	
(1-5)	T2	3.61 (0.49)	3.18 (0.62)	16.92**	.79
	T3	3.65 (0.54)	3.15 (0.62)	17.37**	.87
Teacher self-compassion	T1	3.11 (0.65)	2.90 (0.70)	2.61	
(1-5)	T2	3.45 (0.51)	2.93 (0.70)	19.43**	.85
	T3	3.46 (0.52)	3.09 (0.68)	8.70**	.62
Dispositional compassion	T1	3.89 (0.73)	3.70 (0.65)	2.04	
(1-5)	T2	3.89 (0.63)	3.69 (0.69)	2.46	.29
	T3	3.79 (0.66)	3.62 (0.73)	1.39	.25
Dispositional forgiveness	T1	2.77 (0.81)	2.74 (0.80)	0.05	
(1-5)	T2	3.24 (0.70)	2.80 (0.85)	8.39**	.57
	T3	3.16 (0.71)	2.80 (0.76)	5.64*	.49
Workplace forgiveness	T1	2.65 (1.26)	2.72 (1.32)	0.08	
(1-5)	T2	3.27 (1.32)	2.85 (1.23)	2.72+	.33
	T3	3.23 (1.29)	2.93 (1.33)	1.15	.23
Self-efficacy:	T1	3.25 (0.58)	3.16 (0.71)	0.56	
Regulating emotion at work	T2	3.61 (0.53)	3.20 (0.76)	10.99**	.63
(1-5)	T3	3.58 (0.53)	3.32 (0.72)	4.11*	.41
Self-efficacy:	T1	3.23 (0.98)	3.08 (0.92)	0.66	
Forgiving colleagues at work	T2	3.56 (0.87)	3.17 (0.96)	4.83*	.43
(1-5)	T3	3.68 (0.91)	3.24 (0.85)	6.10*	.51
Self-efficacy:	T1	4.09 (0.89)	4.00 (0.81)	0.36	
Forgiving challenging students	T2	4.15 (0.78)	3.86 (0.91)	3.25+	.34
(1-5)	T3	4.17 (0.84)	4.02 (0.71)	0.90	.19

[a] Scale ranges given in parentheses.

[b] T1=Baseline, T2=Post-MT, T3=4-Month Follow-up.

[c] Based on ANOVA with condition (intervention vs. control) as the between subjects-factor.

[d] Effect sizes were calculated as Cohen's d with unadjusted means at T2 and T3 using the following formula: d=difference in unadjusted means / pooled within group standard deviation of unadjusted means.
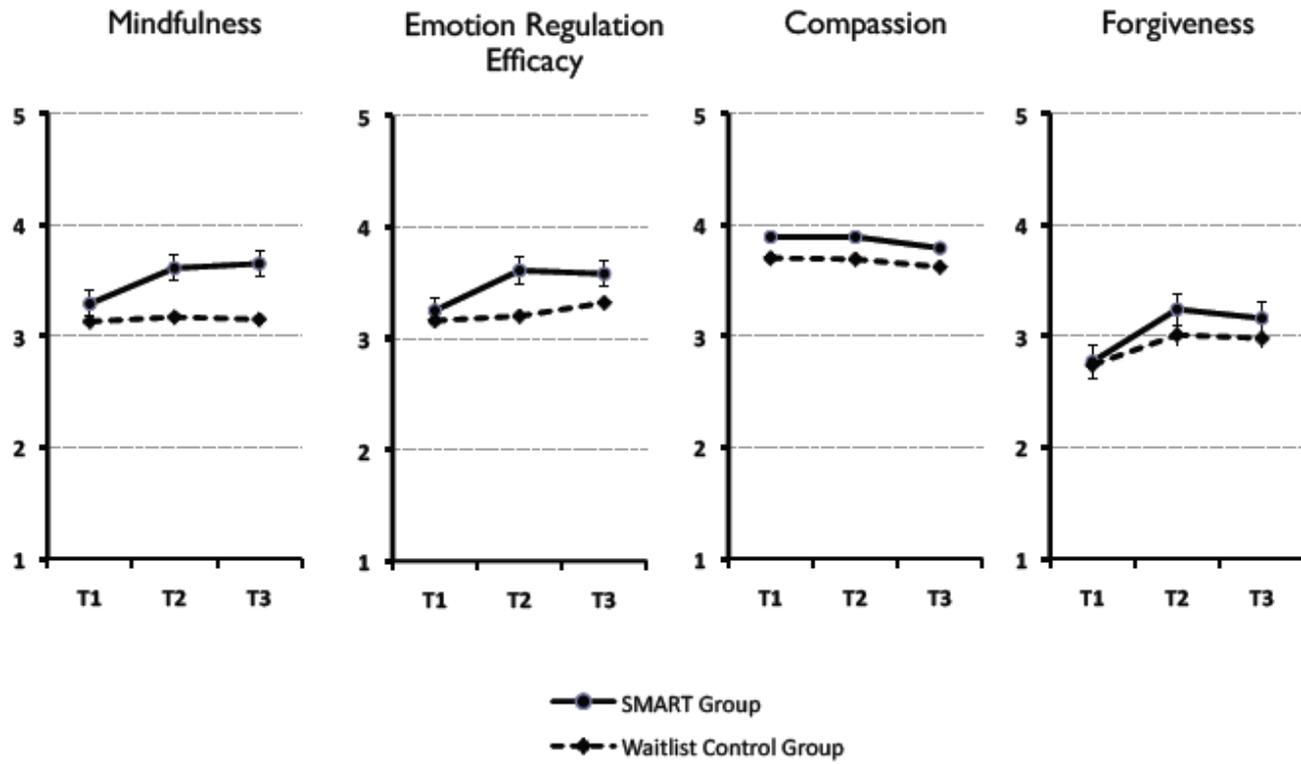
+ p< .10. * p < .05. ** p < .01

Figures

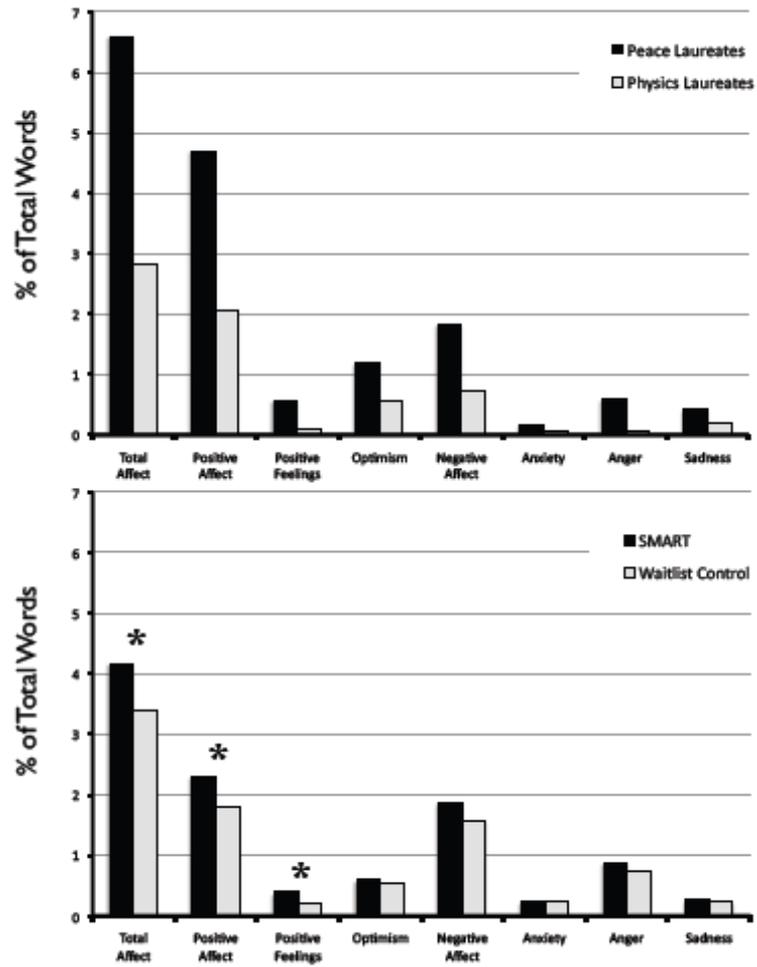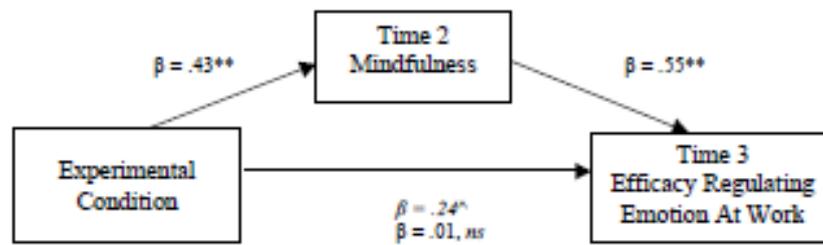**Figure 1**
SMART Program Logic Model
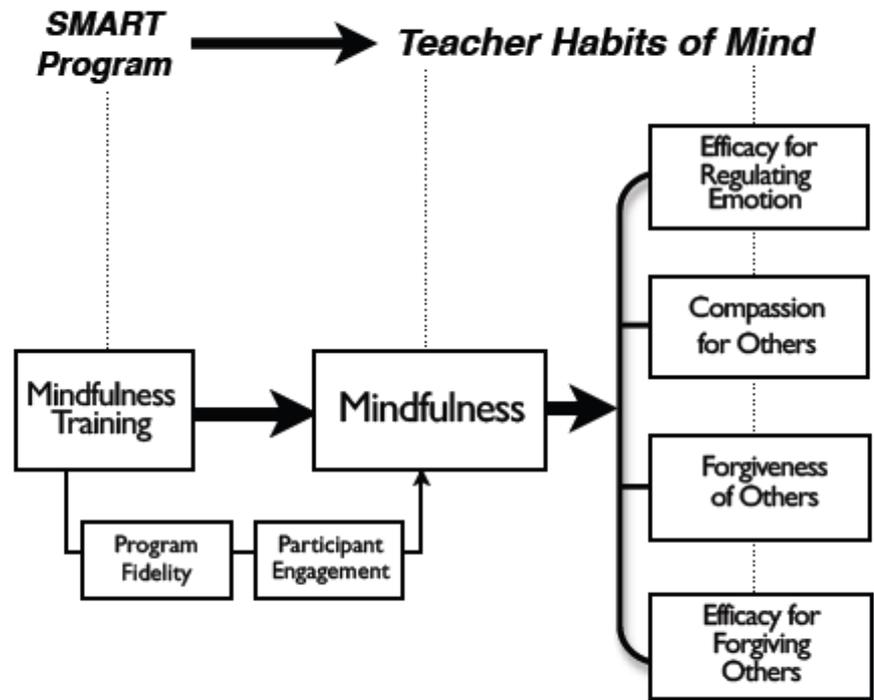
Figure 2

Trends in Unadjusted Means (SE) of Mindfulness, Emotion Regulation Efficacy, Compassion and Forgiveness by Condition (experimental/control) and Time (baseline/post/follow-up)
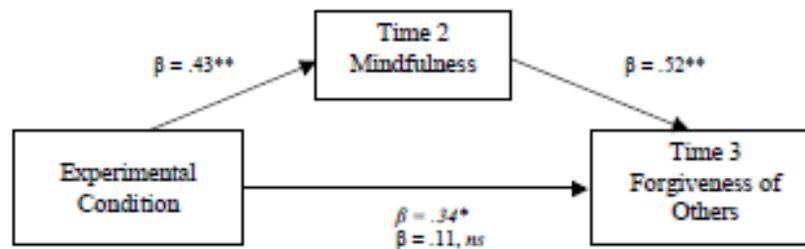
Figure 3

Linguistic Inquiry and Word Count (LIWC) Results Comparing Nobel Peace and Physics Laureates and Teachers by Condition on Emotional Processes Words
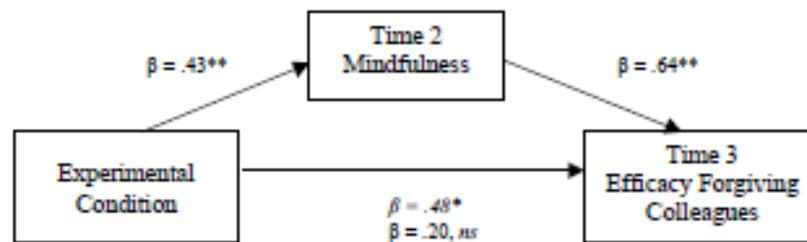
Figure 4. Test for mediation of experimental condition on teachers' efficacy for regulating emotion at work at follow-up (T3) by teachers' mindfulness at post-intervention (T2). ^$p = .07$, *$p < .05$, **$p < .01$

Figure 5. Test for mediation of experimental condition on teachers' dispositional forgiveness of others at follow-up (T3) by teachers' mindfulness at post-intervention (T2). *$p < .05$, **$p < .01$

Figure 6. Test for mediation of experimental condition on teachers' efficacy for forgiving a colleague who had hurt or offended them at follow-up (T3) by teachers' mindfulness at post-intervention (T2). *$p < .05$, **$p < .01$, ***$p < .001$.