

# Developmental Psychology

## **Mindfulness Training Effects for Parents and Educators of Children With Special Needs**

Rita Benn, Tom Akiva, Sari Arel, and Robert W. Roeser

Online First Publication, March 12, 2012. doi: 10.1037/a0027537

### CITATION

Benn, R., Akiva, T., Arel, S., & Roeser, R. W. (2012, March 12). Mindfulness Training Effects for Parents and Educators of Children With Special Needs. *Developmental Psychology*. Advance online publication. doi: 10.1037/a0027537

# Mindfulness Training Effects for Parents and Educators of Children With Special Needs

Rita Benn, Tom Akiva, and Sari Arel  
University of Michigan

Robert W. Roeser  
Portland State University

Parents and teachers of children with special needs face unique social–emotional challenges in carrying out their caregiving roles. Stress associated with these roles impacts parents’ and special educators’ health and well-being, as well as the quality of their parenting and teaching. No rigorous studies have assessed whether mindfulness training (MT) might be an effective strategy to reduce stress and cultivate well-being and positive caregiving in these adults. This randomized controlled study assessed the efficacy of a 5-week MT program for parents and educators of children with special needs. Participants receiving MT showed significant reductions in stress and anxiety and increased mindfulness, self-compassion, and personal growth at program completion and at 2 months follow-up in contrast to waiting-list controls. Relational competence also showed significant positive changes, with medium-to-large effect sizes noted on measures of empathic concern and forgiveness. MT significantly influenced caregiving competence specific to teaching. Mindfulness changes at program completion mediated outcomes at follow-up, suggesting its importance in maintaining emotional balance and facilitating well-being in parents and teachers of children with developmental challenges.

*Keywords:* well-being, mental health, disabilities, mindfulness, intervention

*Supplemental materials:* <http://dx.doi.org/10.1037/a0027537.supp>

Children with developmental challenges and special learning needs constitute a substantial and vulnerable group of individuals in U.S. society. These children are often labeled by the educational system as having a disability and provided with ancillary services as mandated by federal law. Researchers have reported that 15% of the U.S. population below 18 years of age has been identified as having a physical, emotional, or behavioral disability (Newacheck, Inkelas, & Kim, 2004; Rosenberg, Zhang, & Robinson, 2008) and that 10% will later be diagnosed with a learning disability (Altarc & Saroha, 2007). Presently, 13% of the U.S. school-age population (ages 5–18) is identified as having a disability (U.S. Department of Education, 2009).

The quality of caregiving by parents and special educators is a critical factor for assuring the well-being and educational success of this special needs population (e.g., National Research Council, 2001). Studies consistently document the innumerable stresses faced by families raising children with disabilities (Newacheck et al., 2004; Sen & Yurtsever, 2007). These stresses continue throughout childhood and are often exacerbated during adolescence (Woolfson & Grant, 2006), influencing the stability and quality of family relationships (Hartley et al., 2010) and hence making appropriate and supportive parenting more difficult (e.g., Osborne, McHugh, Saunders, & Reed, 2008).

Similarly, research has suggested that the task of educating children with special needs poses significant professional and emotional concerns for special education teachers (Billingsley, 2003). Some of the unique stresses facing special education teachers include providing instruction that is individually responsive to each student’s developmental needs while maintaining order and high-quality student engagement in the classroom as well as open communication with these students’ families. Consequently, many teachers leave special education (Billingsley, 2003), and only 32% of general education teachers report that they are well prepared to address the emotional and instructional demands of students with disabilities who are mainstreamed into their classes (Parsad, Lewis, & Farris, 2001).

Interventions to help both parents and educators reduce stress and maintain well-being are needed so they can better fulfill their respective caregiving roles and maximize the educational skills of this high-need population. Because responding empathically and appropriately to the behavioral and learning needs of children with disabilities requires high levels of focused attention, cognitive flexibility, and emotion regulation on the part of caregivers, inter-

---

Rita Benn, Institute for Social Research and Department of Family Medicine, University of Michigan; Tom Akiva and Sari Arel, Combined Program in Education and Psychology and Institute for Social Research, University of Michigan; Robert W. Roeser, Department of Applied Psychology, Portland State University.

Training and research for this study were supported in part by the Fetzer Institute, the University of Michigan’s Office of Vice President for Research and Institute of Human Adjustment, the Impact Foundation, and the Ann Arbor Public School District. We are grateful to our study participants and the many personnel who contributed to the study. In particular, we thank Mary Spence, Margaret Cullen, Linda Wallace, Glenn Burdick, Libby Robinson, Lynn Sipher, Claire Weiner, Danielle Taubman, Courtney Kaplan, Marissa Lapedis, and Catherine Lee-Mills. A special thanks to Jacquelynn Eccles for her editorial suggestions.

Correspondence concerning this article should be addressed to Rita Benn, University of Michigan, Institute for Social Research, 426 Thompson Street, Room 5114, P.O. Box 1248, Ann Arbor, MI 48106-1248. E-mail: ritabenn@umich.edu

ventions that focus on developing these specific capacities could serve an important function. Mindfulness training (MT) is a strategy that may prove useful in this regard, as studies have linked MT to neural and behavioral changes in areas of the brain subserving attention and emotion regulation as well as to corresponding subjective changes in adults' reports of their mood and well-being (Davidson et al., 2003; Jha, Stanley, Kiyonaga, Wong, & Gelfand, 2010). Furthermore, there is considerable evidence that MT improves mental health in a variety of clinical populations (Grossman, Niemann, Schmidt, & Walach, 2004; Hofmann, Sawyer, Witt, & Oh, 2010).

Mindfulness is typically described as an attentive, nonjudgmental, and receptive awareness of present moment experience in terms of feelings, images, thoughts, and sensations/perceptions (e.g., Kabat-Zinn, 1990). According to Bishop et al. (2004), mindfulness has two main components: (a) the volitional regulation of attention and (b) the adoption of an orientation toward present-moment experience characterized by dispassionate curiosity, openness to what is occurring, and acceptance. Each of these components has implications for caregiving. Parenting and teaching are intensively emotional interpersonal and intrapersonal experiences; the degree to which emotions are activated, engaged, and managed can affect the trajectory and quality of parents' and teachers' relationships with their children and, hence, their sense of efficacy and well-being (Bögels, Lehtonen, & Restifo, 2010; Chang & Davis, 2009; Duncan, Coatsworth, & Greenberg, 2009; Siegel, 2010). MT may enhance emotion regulation and problem solving in educators and/or parents of children with special needs by facilitating the capacity of parents and teachers to listen more accurately to children's communications, to become more attune to their own internal reactions, and to reflect more carefully on situations, responding with greater skill and calm when confronted with ambiguous or emotionally charged events.

Duncan et al. (2009) suggest that in addition to listening, emotional awareness, and self-regulation, mindfulness in parenting involves two other dimensions that can influence parental perception of competence and well-being: (a) nonjudgmental acceptance of the traits, attributes, and behaviors of the self and the child, and (b) compassion for self and child, manifested in the display of empathetic concern for one's child and oneself as a parent. Within an educational context, nonjudgmental acceptance of one's strengths and limitations as a teacher and of children's classroom behaviors (teacher efficacy), as well as acting empathically to the demands of children with special needs, may similarly be conceptualized as aspects of mindful teaching. A mindful approach in parenting and teaching can serve as a potent psychological resource for both parents and educators, leading to more adaptive and flexible coping and appraisal of emotionally demanding situations, reduction in stress, greater psychological well-being, and ultimately, more positive relationships and interactions.

To date, few rigorous studies have examined the effects of MT on caregiving and/or mental health in parents and/or educators of children with special needs. One clinical study found significant reductions in mood symptoms after MT with mothers who had children with a chronic illness and/or disability (Minor, Carlson, Mackenzie, Zernicke, & Jones, 2006). This study did not include a control group, however. Recent investigations using clinical case studies found that behavioral problems decreased in children with developmental disabilities after individualized instruction in mind-

fulness to parents (e.g., Singh et al., 2007). These results, although promising, are preliminary. We are not aware of any published research using a randomized study design to investigate the influence of MT on well-being or dimensions of caregiving with educators and parents of children with disabilities.

The National Research Council (2001) suggests that coordinating parent and teacher interventions is an important strategy for optimizing child outcomes. In light of the time demands placed on parents and educators in caring for and teaching children with special needs, we believe that offering MT through the school system may be a very effective approach for reaching these populations. In the present study, we used a randomized control design to investigate whether a short-term, intensive, school-based MT intervention is feasible for parents and educators and hypothesized that MT would prove efficacious with regard to fostering positive changes in mindfulness, reductions in stress and distress, increases in well-being, and positive changes in relational and caregiving competence. Furthermore, we proposed that changes in mindfulness from baseline to program completion would mediate long-term changes in stress, distress, and well-being. With greater attention to internalized processes that precipitate behavior, it is likely that both parents and educators will learn to modify their cognitions and responses in ways that support more optimal mental functioning and caregiving competence.

## Method

### Participants

Seventy participants (32 parents, 38 educators) were recruited through the special education services office of a school district in a small Midwestern city. Most participating educators were involved in the district's special education 5-week (4 half-days per week) summer extension program, and many study parents had children enrolled in this program. These children varied in age and disability status. For the educators, study participation fulfilled a district requirement of attending a minimum of 10 hr of professional development. All participants were paid \$25 for completion of study assessments at each of three time points. Recruited parents and educators were randomly assigned by a computerized random number generator to receive MT over the summer (treatment group) or later in the fall (waiting-list control group). Following randomization, 60 participants remained in the study. Tables 1 and 2 describe the demographic and family characteristics of this

Table 1  
*Sample Description*

Participant characteristics	Educators ( <i>n</i> = 35)	Parents ( <i>n</i> = 25)
<b>Demographics</b>		
Age at study entry (years)	45.6 (26–60)	47 (27–55)
Gender		
Female	32	23
Male	3	2
Education (college degree or higher)	32 (91%)	18 (72%)
Minority status	2 (6%)	5 (20%)
Previous meditation experience	4 (11%)	1 (4%)

Table 2  
*Family Characteristics of Children With Disabilities*

Family characteristics	Tx ( <i>N</i> = 12)	C ( <i>N</i> = 16)
Family composition		
Married parents	7	13
Two or more children in family	11	12
Two children in SE	3	2
Age range of children		
Age in years of child in SE <sup>a</sup>	5–19	9–23
Elementary versus middle/high school	6:6	6:10
Primary disability label <sup>b</sup>		
Autism spectrum disorder	4	8
Attention-deficit/learning disability	3	5
Cognitive or health impairment	4	2

*Note.* There were no statistical differences in family composition, age range, or categorical impairments across experimental conditions. Tx = treatment group; C = control group; SE = special education.

<sup>a</sup> Age is calculated on youngest child in family who is receiving special education services. <sup>b</sup> *n* = 11 and 15, respectively; a diagnosis was not available for one participant in the treatment group and one participant in the control group.

sample. Statistical analysis indicated that participants did not differ in these characteristics across experimental conditions.

## Measures

Participants completed surveys at three time points: baseline (1 week pre-MT), program completion (1 week post-MT), and follow-up (2 months post-MT). Measures were drawn from established instruments that represented a broad spectrum of typical indicators of mental health quality, teacher competence, and parental efficacy and indicators that, in the literature, are often associated with more optimal caregiving and positive social-emotional development in children. The first measure assessed mindfulness, and the remaining measures assessed negative and positive aspects of psychological well-being as well as relational and caregiving competence.

**Mindfulness.** We used the Five Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), a 39-item validated scale to assess mindfulness. The measure includes the five subscales of mindfulness dimensions: Observation of Sensation, Feeling, and Thought; Noting and Describing Experience With Words; Nonjudgment of Experience; Nonreactivity to Experience; and Acting With Awareness. Examples of items on these scales include, “I deliberately notice the sensations of my body moving” and “I criticize myself for having irrational or inappropriate emotions.” Participants rate items on a 5-point scale (1 = *never or very rarely true*, 5 = *very often or always true*). The summary measure of mindfulness is based on averaging all subscale items.

**Stress.** We used S. Cohen, Kamarck, and Mermelstein’s (1983) Perceived Stress Scale to measure stress. The 14 items inquire about the degree to which situations in one’s life are appraised as stressful. Individuals indicate how often they felt or thought a certain way (0 = *never*, 4 = *very often*).

**Anxiety.** Participants completed the State subscale of the State-Trait Anxiety Inventory (STAI) for Adults (Kendall, Finch, Auerbach, Hooke, & Mikulka, 1976). Participants rate the 20 items

using four response choices, resulting in a range of scores from 20 to 80, with higher scores indicating greater anxiety.

**Depression.** Depressive symptomatology was assessed through the Center for Epidemiological Studies Depression (CES-D) Scale, a 20-item self-report scale on which participants rate items on a 4-point Likert scale (0 = *rarely*, 3 = *most of the time*; Radloff, 1977).

**Positive and negative affect.** We used Watson, Clark, and Tellegen’s (1988) 20-item, Positive and Negative Affect Schedule (PANAS) to measure positive and negative mood. Ten descriptors are included in each of two subscales, Positive Affect and Negative Affect. Participants rate items on a 5-point scale (1 = *very slightly*, 5 = *extremely*) to indicate the extent to which they felt this way in the past week.

**Personal growth.** Personal growth represents one of the six factors of subjective well-being derived from Ryff and Keyes’s (1995) Psychological Well-Being Scale. We used the three items representing this factor from their 18-item version of this scale. The response format for these items comprised six ordered categories labeled from *disagree strongly* to *agree strongly*.

**Self-compassion.** We used a 26-item scale validated by Neff (2003) to measure this construct. The scale provides a summary score based on participant responses to items measuring self-kindness, self-judgment, common humanity, isolation, mindfulness, and overidentification. Sample items include, “I’m disapproving and judgmental about my own flaws and inadequacies” and “I try to see my failings as part of the human condition.” Participants rate items on a 5-point scale (1 = *almost never*, 5 = *almost always*).

**Forgiveness.** Participants completed a state forgiveness questionnaire (Brown & Phillips, 2005). Participants were asked to recall an incident where they felt mistreated or offended and to complete a set of seven items using a 5-point rating scale (1 = *not true at all*, 5 = *very true*). The following are example items: “I have forgiven this person” and “I hope this person gets what’s coming to them for what they did to me.”

**Empathic concern.** Empathic concern was assessed for all participants with a seven-item subscale of the Interpersonal Reactivity Index (Davis, 1983). Items reflect the degree to which individuals express concern for the feelings of another person. Participants indicate how likely the items are to describe them, using a 7-point range (1 = *not at all true of me*, 7 = *very true of me*).

**Teaching self-efficacy.** We assessed teachers’ beliefs about their ability to effectively motivate and teach all of their students using 10 items drawn from the work of Midgley et al. (2000). Sample items included, “If I really try hard, I can get through to even the most unmotivated students” and “There is little I can do to ensure that all my students make significant progress this year.” A 5-point response format (1 = *strongly disagree*, 5 = *strongly agree*) was applied.

**Emotion regulation self-efficacy.** We assessed teachers’ ability to regulate their emotions, using the Emotion Regulation at Work Self-Efficacy Scale (Roeser et al., 2011). This scale was based on previous research that examined adolescents’ efficacy beliefs about affective self-regulation (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003) and adult cancer patients with respect to their disease (Han et al., 2005). Items were derived to reflect the affective context of teaching students, such as, “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 in the classroom?” and “How confident are you in your abilities to *not* feel dejected when you feel your students aren’t learning what you are trying to teach?” This scale resulted in eight items rated on a 5-point scale (1 = *not at all confident*, 5 = *totally confident*). The scale exhibited good internal consistency ( $\alpha = .79$ ) and was normally distributed (skewness =  $-.12$ ).

**Parenting self-efficacy.** The measure of parenting self-efficacy was derived from the Everyday Parenting Scale (Dunst & Masiello, 2002). This 24-item scale assesses how individuals see their abilities to meet the demands of parenting as well as different things parents do or might think about every day. Examples include, “I get little pleasure in being a parent” and “My children are more difficult to care for than most.” Parents whose children had special needs rated the items using a 7-point scale (0 = *never*, and 6 = *always*).

**Quality of parent–child interaction.** We used a set of items from Abidin’s (1990) Parenting Stress Index (Zaidman-Zait et al., 2010), which were focused specifically on how positively a parent views his or her interactions with the child. Parents rated items with a 5-point scale (1 = *strongly agree*, 5 = *strongly disagree*) that were then summed. Example items include, “My child rarely does things for me that make me feel good” and “I expected to have closer and warmer feelings for my children than I do and it bothers me.”

**Scale reliability.** We found high reliability, with Cronbach’s alphas of at least .75 on all scales. In most cases, alphas were above .85.

## Program Intervention

The MT we implemented was the SMART-in-Education (Stress Management and Relaxation Techniques) program, a fully manualized instructional curriculum developed by the Impact Foundation (Cullen & Wallace, 2010). The curriculum represents approximately 70% of the same components and practices as the mindfulness-based stress reduction (MBSR) program developed by Kabat-Zinn and includes additional content focused on emotion theory and regulation, forgiveness, kindness and compassion, and the application of mindfulness to parenting and teaching. The MT involves 36 hr of didactic and group discussion activities, mindfulness practices, and homework assignments delivered over nine 2.5-hr sessions and 2 full days. The mindfulness practices include specific mental training exercises, such as concentration on thoughts or the breath, and homework practices, such as assignments of daily sitting practices and monitoring emotional and behavioral responses. A typical session consists of question-and-answer periods, didactic lectures and group discussions, modeling of mindfulness practices, and actual group mindfulness practice. Table 3 presents an overview of the covered topics and activities in the curriculum.

Parents and educators participated in MT sessions twice a week over a 5-week period. Parents and educators met separately in their own groups for all training sessions during roughly the same time period (different days of the week). Two different pairs of instructors facilitated each MT group. Instructors had formal professional training in MBSR or mindfulness-based cognitive therapy (a variation of MBSR). In addition, they received 3 days of training in the

Table 3  
*Summary of Sessions, Topics, and Activities in Mindfulness Training Curriculum*

Session	Topic	Activities
1	Introduction	Mindfulness introduction; guided visualization; written reflection; raisin exercise.
2	Perceptions	Setting intentions, moods and thoughts exercise; stress didactic and discussion; body scan; silent eating; emotions didactic; mindful stretching; breath awareness.
3	Responding versus reacting	Mindful stretching; body scan; stress reaction cycle and coping didactic and discussion.
4	Pleasant, unpleasant, and neutral affect	Breath awareness and awareness of sound; events calendar charting and discussion.
5	Exploring forgiveness	Mindful stretching; awareness of breath, sounds, and physical sensations; forgiveness didactic and dyad exercise; guided visualization.
6	Working with conflict	Mindful stretching; awareness of breath and thoughts; aikido of communication role play.
7	Compassion and kindness	Mindful stretching; awareness of breath, sounds, sensations, thoughts, emotions and mental states; kindness and compassion discussion; eyes on exercise; kindness meditation.
8	Working with anger	Choiceless awareness meditation; anger didactic; relived anger exercise; anger triggers/dyads and discussion, anger profiles.
9	Silent retreat	Awareness of the breath and choiceless awareness; mindful stretching; body scan; walking meditation; guided visualization; mindful eating; mindful movement to music; sitting meditation; walking meditation; kindness meditation; walking meditation with kindness on the go.
10	Working with fear	Mindful stretching; breath awareness and choiceless awareness; working with fear didactic and discussion; relived fear exercise; fear dyads.
11	Beginnings and endings	Body scan; guided visualization; mindful stretching; community resources and discussion of continuation of practice; personal reflections.

Note. All sessions were 2.5 hr long except for Sessions 2 and 9, which were 6 hr long.

SMART curriculum by the curriculum developers, with ongoing supervision and consultation as needed.

To assess program feasibility and fidelity, we measured program completion rates, MT session attendance, and reported estimates of frequency of home practice. We also examined participants' responses to open-ended questions on individual session evaluations and ratings of overall instructor quality at the conclusion of the program. A research assistant participated in each of the MT groups to observe the experience of participants and provide qualitative feedback on program fidelity during weekly research meetings.

## Results

### Group Equivalence and Attrition

Following randomization, results showed that treatment and control participants did not significantly differ on any baseline measures. Of the study sample, 14% declined participation after randomization (see Table 4). One treatment participant dropped out of the study after the intervention training began. Analysis of participants who completed both the preintervention and postintervention assessments ( $n = 52$ ) with those who completed only the baseline assessment revealed significant differences on two of our outcome measures at baseline. Participants who did not complete the postintervention assessments initially reported significantly higher depression ( $M = 40.8$  vs.  $M = 34.7$ ),  $t(67) = -2.2$ ,  $p = .035$ , and negative affect ( $M = 2.3$  vs.  $M = 1.9$ ),  $t(53) = 2.05$ ,  $p = .045$ .

At follow-up, further participant attrition occurred, leaving 43 participants (20 parents and 23 educators) in our sample. Participants who did not complete the follow-up measures differed from those who completed all assessments, showing lower levels of baseline mindfulness ( $M = 3.16$  vs.  $M = 3.45$ ),  $t(55) = 2.09$ ,  $p = .04$ , positive affect,  $M = 2.93$  vs.  $M = 3.37$ ),  $t(55) = 2.05$ ,  $p = .045$ , and personal growth ( $M = 4.62$  vs.  $M = 5.25$ ),  $t(55) = 2.80$ ,  $p = .007$ , and higher levels of stress ( $M = 2.69$  vs.  $M = 2.31$ ),  $t(55) = -2.26$ ,  $p = .028$ , and anxiety ( $M = 45.80$  vs.  $M = 39.48$ ),  $t(55) = 2.05$ ,  $p = .045$ .

### Program Feasibility and Fidelity

Results showed that all participants, except for one individual (a parent), completed the MT program, and all attended most of the

sessions ( $M = 9.9$  sessions, range = 7–11 sessions). Participants reported, on average, 10 min of formal mindfulness home practice per day. Participants indicated high levels of satisfaction with the program, in terms of quality of instruction, content, and structure. All participants expressed they would recommend the training to their peers and rated the level of instruction as either a 4 or 5 on a 5-point Likert scale. Over 80% perceived that the overall program length of the MT was appropriate. Qualitative reports by research assistants during the course of the training suggested high-quality instructor adherence to the format, content, and process of curriculum delivery.

### Effects of MT

We tested the effects of MT with a series of analyses of covariance by condition (treatment vs. control) and group (educator vs. parent), and covariates typically found in research to influence outcomes (i.e., age, gender, education level) as well as individuals' history of past meditation experience and baseline scores. Each covariate demonstrated statistically significant effects for at least one test with our outcomes post-MT, so all four were included in our models.<sup>1</sup> We then computed effect sizes, using Cohen's  $d$  with covariate adjusted means using the following formula:

$$d = \frac{\text{difference in adjusted means/pooled within-group standard deviation of unadjusted means.}}$$

With relatively small samples, effect sizes provide a better estimate of the impact than statistical significance (Thompson, 1996). An effect size of .2 to .3 is typically considered small, .5 medium, and .8 or greater, large (J. Cohen, 1988).

**Well-being.** At post-MT, all measures favored the treatment condition. As shown in Table 5, our core outcome measure, mindfulness, and several measures of positive and negative well-being demonstrated medium effect sizes. These included stress, anxiety, depression, personal growth, and self-compassion. MT showed a small effect size for negative affect and little effect on positive affect. At the 2-month follow-up, all measures continued to favor the treatment condition. Although significant effects of MT on depressive symptoms faded, several outcomes exhibited larger effect sizes. These included mindfulness, stress, anxiety, and all of the positive well-being indicators—positive affect, personal growth, and self-compassion. Perceived stress and negative affect showed statistically significant effects at follow-up that were not significant at post-MT.

### Relational and Caregiving Competence

All study participants completed two relational competence indicators, empathic concern and forgiveness, and both showed significant differences in favor of the treatment group (see Table

Table 4  
*Flow of Participants Through the Study*

Study phase	No. of participants			
	Educators		Parents	
	Tx	C	Tx	C
Randomization ( $n = 70$ )	19	19	16	16
Baseline assessment ( $n = 60$ )	19	16	12	13
Post-MT assessment ( $n = 52$ )	19	9	11	13
Follow-up assessment ( $n = 43$ )	14	9	9	11

Note. Tx = treatment group; C = control group; MT = mindfulness training.

<sup>1</sup> Effects of covariates were significant at post-MT in the following tests: education with perceived stress,  $F = 4.25$ ,  $p < .05$ ; age with positive affect,  $F = 6.84$ ,  $p < .01$ ; previous meditation experience with negative affect,  $F = 5.58$ ,  $p < .05$ ; previous meditation experience with parenting self-efficacy,  $F = 6.79$ ,  $p < .01$ ; and gender with personal growth,  $F = 3.40$ ,  $p < .07$ . No covariates contributed significant effects at follow-up.

Table 5  
*Effects of Mindfulness Training (MT) on Well-Being*

Measure (response range)	Unadjusted <i>M</i> ( <i>SD</i> ) for Tx	Unadjusted <i>M</i> ( <i>SD</i> ) for C	<i>F</i> <sup>a</sup>	<i>d</i>
Core MT skill				
Mindfulness (1–5)				
Baseline	3.43 (0.10)	3.30 (0.10)		
Post-MT	3.61 (0.08)	3.33 (0.07)	6.55**	0.52
Follow-up	3.70 (0.06)	3.43 (0.07)	8.53**	0.57
Negative well-being				
Stress (0–4)				
Baseline	2.37 (0.55)	2.46 (0.59)		
Post-MT	1.97 (0.58)	2.25 (0.55)	3.01†	–0.40
Follow-up	2.04 (0.45)	2.42 (0.56)	7.81**	–0.79
Anxiety (20–80)				
Baseline	40.10 (9.82)	42.14 (11.16)		
Post-MT	33.48 (8.57)	40.24 (12.23)	6.21*	–0.52
Follow-up	35.54 (9.80)	41.95 (11.11)	5.02*	–0.75
Depression (0–60)				
Baseline	33.18 (8.48)	36.22 (9.20)		
Post-MT	30.03 (8.03)	36.69 (10.46)	4.25*	–0.51
Follow-up	30.82 (9.10)	35.51 (9.83)	0.77	–0.27
Negative affect (1–5)				
Baseline	1.89 (0.49)	2.04 (0.54)		
Post-MT	1.48 (0.45)	1.87 (0.74)	3.09†	–0.36
Follow-up	1.53 (0.38)	1.99 (0.64)	5.11*	–0.48
Positive well-being				
Positive affect (1–5)				
Baseline	3.29 (0.73)	3.20 (0.70)		
Post-MT	3.35 (0.77)	3.18 (0.75)	0.34	0.13
Follow-up	3.56 (0.78)	3.26 (0.80)	1.88	0.40
Personal growth (1–6)				
Baseline	5.14 (0.80)	5.01 (0.80)		
Post-MT	5.41 (0.60)	5.05 (0.68)	5.56*	0.48
Follow-up	5.49 (0.53)	4.98 (0.85)	8.66**	0.64
Self-compassion (1–5)				
Baseline	2.96 (0.46)	3.02 (0.40)		
Post-MT	3.17 (0.44)	3.07 (0.45)	4.67*	0.40
Follow-up	3.32 (0.43)	3.10 (0.49)	2.13†	0.37

Note. Post-MT sample sizes: for Tx,  $n = 30$ , and for C,  $n = 29$ ; follow-up sample sizes: for Tx,  $n = 24$ , and for C,  $n = 19$ . Tx = treatment group; C = control group.

<sup>a</sup> Statistical tests included the following covariates: baseline scores, age, sex, years of education, and history of previous meditation experience.

†  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ .

6). Empathic concern showed a positive, medium effect size for the intervention group at both time points. Self-reported dispositions to forgive showed a statistically significant difference at follow-up that was not significant at post-MT.

Effects of MT on teacher- and parent-specific caregiving competencies showed differential impact. Self-efficacy beliefs about teaching as well as self-regulation of emotions while teaching showed a medium effect size at post-MT (sample size limitations of waiting-list controls prevented statistical analysis at follow-up). For parents, changes in parenting self-efficacy and quality of interaction with their child showed little difference between treatment and control participants at either time point.

**Group effects.** A few significant effects between participant groups (parents vs. educators) occurred on our outcome measures at post-MT. Parents reported higher levels of stress,  $F(1, 49) = 6.41, p < .05, d = -0.60$ , more depressive symptoms,  $F(1, 48) = 6.42, p < .05, d = -0.56$ , lower positive affect,  $F(1, 49) = 7.90, p < .01, d = 0.63$ , and less self-compassion,  $F(1, 48) = 4.88, p <$

$.05, d = 0.41$ , than educators. At follow-up, except for self-compassion,  $F(1, 42) = 4.76, p < .05, d = 0.55$ , group differences were no longer evident. Parents continued to demonstrate significantly lower levels of self-compassion than educators ( $M = 3.05$  for parents vs.  $M = 3.37$  for educators). A new significant group effect for mindfulness emerged at follow-up,  $F(1, 34) = 5.19, p < .05, d = 0.48$ , with educators demonstrating higher mean levels than parents ( $M = 3.76, M = 3.36$ , respectively). In addition, one significant Group  $\times$  Interaction effect also occurred. We found that change in forgiveness in the treatment group observed at follow-up was moderated by whether the participant was a parent or an educator,  $F(1, 24) = 9.36, p < .01$ . Treatment parents significantly increased their level of forgiveness from baseline to follow-up, whereas educators showed a return to baseline levels (see Figure 1). Although not statistically significant, we see that stress and anxiety began to increase for educators and for waiting-list control parents; personal growth and empathic concern trended upward for treatment groups at both time points (see Figure 1).

Table 6  
Effects of Mindfulness Training (MT) on Caregiving Competence

Measure	Unadjusted <i>M</i> ( <i>SD</i> ) for Tx	Unadjusted <i>M</i> ( <i>SD</i> ) for C	<i>F</i> <sup>a</sup>	<i>d</i>
Combined participants				
Forgiveness (1–7)				
Baseline	3.60 (0.84)	3.44 (0.96)		
Post-MT	4.10 (0.69)	3.90 (0.96)	0.36	0.18
Follow-up	3.83 (0.53)	3.39 (0.76)	10.01**	1.23 <sup>b</sup>
Empathic concern (1–7)				
Baseline	6.01 (0.53)	5.80 (0.78)		
Post-MT	6.14 (0.70)	5.66 (0.79)	5.19*	0.56
Follow-up	6.30 (0.62)	5.70 (0.93)	3.92*	0.49
Teachers only				
Teaching self-efficacy (1–5)				
Baseline	3.84 (0.55)	3.80 (0.52)		
Post-MT	4.06 (0.55)	3.64 (0.43)	1.80	0.45
Follow-up	4.28 (0.56)	3.33 (0.90)	—	—
Teacher emotion regulation (1–5)				
Baseline	3.41 (0.74)	3.42 (0.52)		
Post-MT	3.70 (0.65)	3.40 (0.39)	3.82 <sup>†</sup>	0.55
Follow-up	3.71 (0.72)	3.78 (1.02)	—	—
Parents only				
Parenting self-efficacy (0–6)				
Baseline	4.08 (0.55)	3.68 (0.96)		
Post-MT	4.20 (0.53)	3.63 (1.01)	1.35	0.19
Follow-up	5.19 (0.60)	4.54 (0.94)	0.28	0.14
Quality of parent–child interaction (12–60)				
Baseline	44.81 (8.22)	39.27 (11.19)		
Post-MT	44.80 (7.55)	40.36 (10.59)	0.38	0.14
Follow-up	45.11 (9.05)	40.09 (12.12)	0.03	–0.05

Note. Sample sizes: for combined participants, at post-MT  $n = 59$  (Tx = 30, C = 29), and at follow-up  $n = 43$  (Tx = 24; C = 19); for teachers, at post-MT  $n = 25$  (Tx = 16, C = 9), and at follow-up  $n = 17$  (Tx = 13, C = 4); for parents, at post-MT  $n = 23$  (Tx = 11, C = 13), and at follow-up  $n = 19$  (Tx = 9, C = 11). Dashes indicate that teacher-only effects at follow-up are not presented in the table because sample size was too small to assure validity in results. Tx = treatment group; C = control group.

<sup>a</sup> Statistical tests included the following covariates: baseline scores, age, sex, years of education, and history of previous meditation experience. <sup>b</sup> Our  $N$  is reduced for analysis of forgiveness at follow-up because of greater missing data for this measure (Tx = 19, C = 14).

<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ .

## Mediation Analysis

To test the hypothesis that MT increases mindfulness, which in turn leads to improvements in well-being, we conducted mediation analysis using bootstrapping procedures described by Preacher and Hayes (2008). This nonparametric approach is said to provide greater statistical power and lower likelihood for Type I error than the more commonly used causal steps approach (MacKinnon, Lockwood, & Williams, 2004). As a mediator should temporally precede the dependent variable (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001), we specifically tested whether mindfulness at post-MT would mediate the effects of the training on well-being outcomes at follow-up. We also tested the counterhypothesis that self-compassion mediated these effects. Since Pearson correlations performed on our outcomes variables revealed a significant and strong relationship between mindfulness and self-compassion at baseline ( $r = .65, p < .01$ , see table on bivariate correlations in the supplemental materials), self-compassion met the aforementioned criteria for mediation analysis. Conceptually, we might also argue that self-compassion could have a meditating influence on well-being (Van Dam, Sheppard, Forsyth, & Earleywine, 2011).

Our analysis found strong support for mindfulness as a significant mediator (see Table 7). Mindfulness at post-MT mediated the treatment effect on stress, anxiety, negative affect, and personal growth at follow-up. In contrast, mediation effect estimates for self-compassion were close to 0, and all confidence intervals contained 0, suggesting that self-compassion did not serve this mediation role.

## Discussion

The results from this study demonstrate that intensive MT conducted over a 5-week period significantly increased participants' self-reported mindfulness in terms of their being (a) more aware and present to their surroundings, physical sensations, and internal mental processes; (b) less judgmental; and (c) more descriptive of their moment-to-moment experiences. These core competencies of mindfulness, in turn, were found to mediate the influence of the training on reductions in participants' stress and distress, with program effects persisting and growing larger by the follow-up assessment 2 months later. Parents and educators who participated in MT reported not just a reduction in distress but also



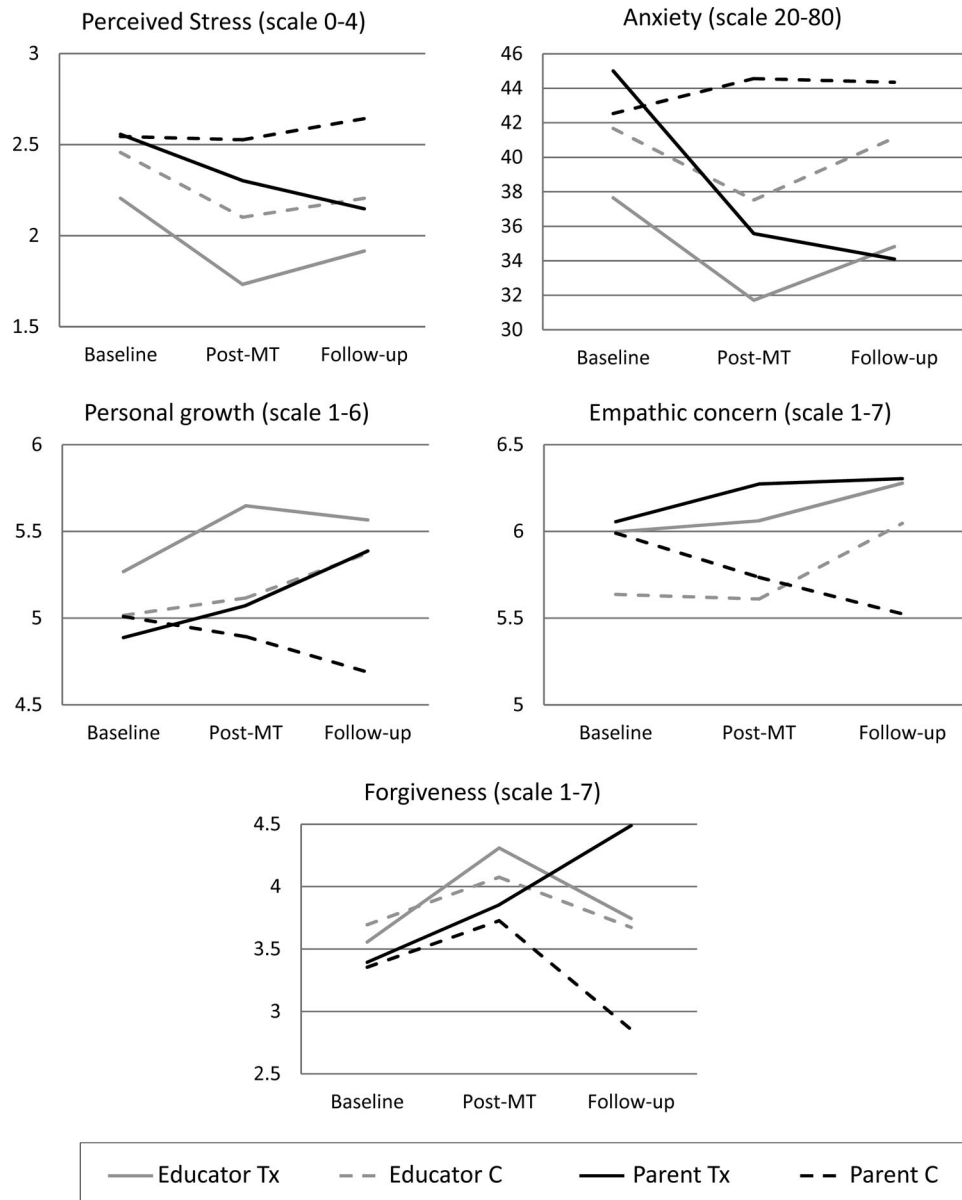


Figure 1. Adjusted means by group and condition for selected outcomes. MT = mindfulness training; Tx = treatment group; C = control group.

an enhancement of positive psychological functioning, as reflected in greater self-compassion and personal growth over time, as well as in enhanced relational competence, evidenced by more empathic concern and forgiveness of others.

Our hypothesis that mindfulness would explain reported changes at follow-up was supported. Drawing on previous studies of MT and emotion regulation (e.g., Davidson et al., 2003; Jha et al., 2010), it seems reasonable to infer that as participants practiced mindfulness, they (a) became more aware and reflective of their typical response to salient emotional triggers (antecedent-focused strategies) and (b) learned how to disengage and recover more quickly from stressful encounters, using new techniques from MT, such as labeling and noting (a response-focused strategy). The use

of these kinds of mindful antecedent- and response-focused emotion-regulation strategies may be a key mechanism by which MT supports individuals to reduce their stress and experience greater psychological well-being and equilibrium (Baer, 2003; Chambers, Gullone, & Allen, 2009; Wallace & Shapiro, 2006).

A second and related mechanism by which stress may be reduced and well-being enhanced with MT involves the cultivation of positive self-directed attitudes. As participants learn to become more aware of their mental processes, including their habitual emotional, behavioral, and cognitive tendencies, they are able to let go of negative self-judgments and absorption in ruminative tendencies (Jain et al., 2007; Segal, Williams, & Teasdale, 2002). Shapiro, Carlson, Astin, and Freedman (2006) described this pro-

Table 7  
*Post-MT Mediation Effects on Well-Being at Follow-Up: Unstandardized Betas and 95% Confidence Intervals (CIs)*

Dependent variable	Unstandardized $\beta$	SE	CI
Mindfulness as mediator			
Perceived stress	-0.19	0.10	[-0.42, -0.02]
Anxiety	-3.04	1.91	[-8.28, -0.18]
Negative affect	-0.18	0.11	[-0.47, -0.02]
Personal growth	0.24	0.16	[0.02, 0.72]
Self-compassion as mediator			
Perceived stress	-0.05	0.07	[-0.22, 0.08]
Anxiety	-0.70	1.11	[-3.89, 1.05]
Negative affect	-0.05	0.07	[-0.22, 0.07]
Personal growth	0.05	0.13	[-0.21, 0.32]

*Note.* The unstandardized  $\beta$  column presents the mean of the estimates for the indirect effect (product of coefficients) in 1,000 bootstrap resamples in the scale of these variables. The CI column presents confidence intervals from the bootstrapped distribution of indirect effect. MT = mindfulness training.

cess as re-perceiving, where there is a fundamental shift in one's relationship to experiences and which is hypothesized to help alter automatic processes and conditioned connections between thoughts, feelings, and behaviors.

As a result, individuals may be more likely to practice forgiveness and compassion toward themselves and others. Because two MT sessions of SMART were focused on forgiveness and compassion, we would also expect that MT would increase these capacities. Research suggests that as individuals engage in loving kindness and forgiveness practices, they attain greater emotional well-being (Cohn & Frederickson, 2010; Luskin, 2002).

In addition to enhanced self-compassion and forgiveness, our results show that MT was also associated with an increase in participants' self-perceptions of empathic concern. Increased mindfulness affords the opportunity for more clearly perceiving the other without the veil of clouded judgments and, as such, may encourage individuals to become kinder and more sensitive to the needs of others. Indeed, one educator commented about such a change when reflecting on how MT impacted her professionally: "It has made me more aware of my students and their needs." Another indicated, "I view others differently now. I was able to step back & realize the summer school kids with behavior problems were working very hard to make it through the day." By enhancing individuals' capacity for self-awareness, empathic concern, and emotional regulation, mindfulness sets the stage for enhancing relational competence of parents and educators. A logical next step for future research is to see whether such changes in self-reported empathic concern correspond to observed changes in relationships between the child and their teachers and parents and improved social, emotional, and behavioral responses.

We found that MT positively influenced teachers' self-efficacy beliefs. With increased mindfulness, educators perceived that they could more effectively gauge and regulate their reactions to stressful situations in the classroom and feel more efficacious in their teaching competence. "I now know different ways to deal with things and will be able to have mindfulness in the classroom," commented one educator. We would expect that this change would positively benefit classroom climate and student learning.

In contrast, we were surprised to see that MT did not significantly influence parents' beliefs about their own caregiving com-

petence. Toward the end of the training, parents often spoke of their increased patience and emotional self-regulation when parenting. For example, one parent said, "It has helped me gain perspective about my emotions and tone them down a lot with my son." Nonetheless, it may be that the 5-week structure for the MT did not provide parents with sufficient time to consistently integrate mindfulness into their parental actions such that they were able to feel and internalize a distinct change in their overall parenting competence. Singh et al. (2007) observed the short- and long-term effects of 12 weeks of individualized MT on parental interaction and perceived competence in three parent-child dyads where the children had developmental disabilities. Substantial change was evident only at the 52-week assessment point and not at program completion. It may be that more time and intensity of instruction is needed for individuals to experience a significant shift in parenting, especially when parents have children with higher behavioral and emotional demands. The empirical and rigorous study of mindfulness in parenting is in its infancy (Sawyer Cohen & Semple, 2010) and poses many interesting research questions to explore.

It is interesting to note that parents and educators differed from each other in terms of their well-being. Throughout the study period, parents reported higher levels of stress and depression and less positive affect and self-compassion than educators, irrespective of their study group assignment. This is not too surprising, as without full-time schooling during the summer months, parents have little respite from the emotional demands of child rearing. Previous research consistently reports that the stress of caretaking is ongoing for parents of children with special needs and comorbid with depression (e.g., Singer, 2006). Educators in this study in contrast are working a half-day schedule and anticipating a month's reprieve until the new school year begins.

Irrespective of these differences, for both parents and educators, MT significantly improved stress and anxiety levels, increased self-compassion, and decreased negative mood states. The change in mindfulness resulting from the intervention at program completion significantly contributes to the changes in reduction of anxiety and stress observed at follow-up. Whereas self-compassion definitely contributed to these effects, mindfulness as defined by attentional dimensions (observation of sensation, feeling, and

thought; noting and describing experience with words; nonjudgment of experience; nonreactivity to experience; and acting with awareness) appeared to be the more salient mediator of these outcomes. We can conclude that, as a result of MT, participants now have strategies available for stress reduction that can be applied to their caregiving, be that teaching in the classroom or parenting at home.

Several limitations to our research study are noted. First, findings are based on self-report data. Although we cannot rule out the impact of social desirability on these measures, the consistency of between-group differences in effects and corroboration with previous research findings (e.g., Hofmann et al., 2010) suggests that MT has a positive benefit on stress reduction and well-being for parents and teachers of children with special needs. Second, having a passive waiting-list control group is another limitation. We cannot rule out that having the opportunity to meet together in a forum that provides peer support as well as guidance from skilled and caring group leaders can be very beneficial to well-being (Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011). To understand the contribution of this effect, it would be helpful for future MT study designs to include an active control group.

Third, we experienced declines in study participation after randomization because of last minute unanticipated changes in summer plans and life circumstances of several participants, and these declines resulted in a smaller than desired sample size. Given that we found medium-to-large effect sizes on most of our measures, we would expect to still see this same direction of influence with a larger study sample. However, because we found that nonparticipants were initially more depressed than those who did participate in our study, it may be worthwhile to consider a different format for MT. Although all MT participants maintained a high level of commitment during the training, a 5-week program structure with biweekly sessions may feel too burdensome and overwhelming for those suffering from more intense depressive symptoms. Previous trainings of mindfulness with clinical populations who have a history of depression report successful results with interventions that typically occur once rather than twice a week over an 8-week period of time (e.g., Segal et al., 2010). It is noteworthy that the size of effects that we observed in our results may have been even larger had these severely depressed participants not declined participation, due to the potential for larger gains in improvement.

In conclusion, the findings of this study provide preliminary evidence for the benefits of MT in reducing stress and anxiety and spurring psychological growth in parents and teachers of children with unique emotional, cognitive and behavioral needs. This study is the first randomized control study to show that a group-based MT with this population is feasible and efficacious over time. Our findings lay the groundwork for future research to replicate and extend these findings with a richer array of observational, biological, behavioral, and self-report measures. Key to this work will be an assessment of how and when MT affects observable behavior in family and classroom settings and what effects, if any, such changes have on children's academic, social, and emotional development. Positive outcomes from this line of research would have significant implications for a new generation of mindfulness-based, school-delivered programs to support parents and teachers of special needs children.

## References

- Abidin, R. R. (1990). *Parenting Stress Index clinical manual*. Charlottesville, VA: Pediatric Psychology Press.
- Altarc, M., & Saroha, E. (2007). Lifetime prevalence of learning disabilities among US Children. *Pediatrics*, *119*, S77–S83. doi:10.1542/peds.2006-2089L
- Baer, R. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice*, *10*, 125–143. doi:10.1093/clipsy.bpg015
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, *13*, 27–45. doi:10.1177/1073191105283504
- Bandura, A., Caprara, G. V., Barbaranelli, C., Gerbino, M., & Pastorelli, C. (2003). Role of affective self-regulatory efficacy in diverse spheres of psychosocial functioning. *Child Development*, *74*, 769–782. doi:10.1111/1467-8624.00567
- Billingsley, B. S. (2003). *Special education teacher retention and attrition: A critical analysis of the literature* (COPSSE Document No. RS-2). Gainesville, FL: University of Florida, Center on Personnel Studies in Special Education.
- Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N., Carmody, J., . . . Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, *11*, 230–241. doi:10.1093/clipsy.bph077
- Bögels, S. M., Lehtonen, A., & Restifo, K. (2010). Mindful parenting in mental health care. *Mindfulness*, *1*, 107–120. doi:10.1007/s12671-010-0014-5
- Brown, R. P., & Phillips, A. (2005). Letting bygones be bygones: Further evidence for the validity of the Tendency to Forgive Scale. *Personality and Individual Differences*, *38*, 627–638. doi:10.1016/j.paid.2004.05.017
- Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. *Clinical Psychology Review*, *29*, 560–572. doi:10.1016/j.cpr.2009.06.005
- Chang, M. L., & Davis, H. A. (2009). Understanding the role of teacher appraisals in shaping the dynamics of their relationships with students: Deconstructing teachers' judgments of disruptive behavior/students. In P. A. Schutz & M. Zembylas (Eds.), *Advances in teacher emotion research: The impact on teachers' lives* (pp. 95–127). New York, NY: Springer. doi:10.1007/978-1-4419-0564-2\_6
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*, 385–396. doi:10.2307/2136404
- Cohn, M. A., & Frederickson, B. L. (2010). In search of durable positive psychology interventions: Predictors and consequences of long-term positive behavior change. *Journal of Positive Psychology*, *5*, 355–366. doi:10.1080/17439760.2010.508883
- Cullen, M., & Wallace, L. (2010). *Stress Management and Relaxation Techniques in Education (SMART) training manual*. Unpublished manual, Impact Foundation: Aurora, Colorado.
- Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F., . . . Sheridan, J. F. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine*, *65*, 564–570. doi:10.1097/101.psy.0000077505.67574.E3
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, *44*, 113–126. doi:0022-3514/83/4401-0113\$00.75
- Duncan, L. G., Coatsworth, J. D., & Greenberg, M. T. (2009). A model of mindful parenting: Implications for parent-child relationships and prevention research. *Clinical Child and Family Psychology Review*, *12*, 255–270. doi:10.1007/s10567-009-0046-3

- Dunst, C. J., & Masiello, T. L. (2002). *Everyday Parenting Scale*. Unpublished scale, Orelena Hawks Puckett Institute, Asheville, North Carolina.
- Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits: A meta-analysis. *Journal of Psychosomatic Research, 57*, 35–43. doi:10.1016/S0022-3999(03)00573-7
- Han, W. T., Collic, K., Koopman, C., Azarow, J., Classen, C., Morrow, G. R., . . . Spiegel, D. (2005). Breast cancer and problems with medical interactions: Relationships with traumatic stress, emotional self-efficacy, and social support. *Psycho-Oncology, 14*, 318–330. doi:10.1002/pon.852
- Hartley, S. L., Barker, E. T., Seltzer, M. M., Floyd, F., Greenberg, J., Orsmond, G., & Bolt, D. (2010). The relative risk and timing of divorce in families of children with an autism spectrum disorder. *Journal of Family Psychology, 24*, 449–457. doi:10.1037/a0019847
- Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 78*, 169–183. doi:10.1037/a0018555
- Jain, S., Shapiro, S. L., Swanick, S., Roesch, S. C., Mills, P. J., Bell, I., & Schwartz, G. E. R. (2007). A randomized controlled trial of mindfulness meditation versus relaxation training: Effects on distress, positive states of mind, rumination, and distraction. *Annals of Behavioral Medicine, 33*, 11–21. doi:10.1207/s15324796abm3301\_2
- Jha, A. P., Stanley, E. A., Kiyonaga, A., Wong, L., & Gelfand, L. (2010). Examining the protective effects of mindfulness training on working memory and affective experience. *Emotion, 10*, 54–64. doi:10.1037/a0018438
- Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. New York, NY: Bantam Doubleday Dell.
- Kendall, P. C., Finch, A. J., Auerbach, S. M., Hooke, J. F., & Mikulka, P. J. (1976). The State-Trait Anxiety Inventory: A systematic evaluation. *Journal of Consulting and Clinical Psychology, 44*, 406–412. doi:10.1037/0022-006X.44.3.406
- Kraemer, H. C., Stice, E., Kazdin, A., Offord, D., & Kupfer, D. (2001). How do risk factors work together? Mediators, moderators, and independent, overlapping, and proxy risk factors. *American Journal of Psychiatry, 158*, 848–856. doi:10.1176/appi.ajp.158.6.848
- Luskin, F. (2002). *Forgive for good*. New York, NY: HarperCollins.
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research, 39*, 99–128. doi:10.1207/s15327906mbr3901\_4
- Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E., Anderman, L., Freeman, K. E., . . . Urdan, T. (2000). *Manual for the Patterns of Adaptive Learning Scales (PALS)*. Ann Arbor, MI: University of Michigan.
- Minor, H. G., Carlson, L. E., Mackenzie, M. J., Zernicke, K., & Jones, L. (2006). Evaluation of a mindfulness-based stress reduction (MBSR) program for caregivers of children with chronic conditions. *Social Work in Health Care, 43*, 91–109. doi:10.1300/J010v43n01\_06
- National Research Council. (2001). *Educating children with autism*. Washington, DC: National Academy Press.
- Neff, K. D. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*, 223–250. doi:10.1080/15298860309027
- Newacheck, P. W., Inkelas, M., & Kim, S. E. (2004). Health services use and health care expenditures for children with disabilities. *Pediatrics, 114*, 79–85. doi:10.1542/peds.114.1.79
- Osborne, L. A., McHugh, L., Saunders, J., & Reed, P. (2008). Parenting stress reduces the effectiveness of early teaching interventions for autistic spectrum disorders. *Journal of Autism and Developmental Disorders, 38*, 1092–1103. doi:10.1007/s10803-007-0497-7
- Parsad, B., Lewis, L., & Farris, E. (2001). *Teacher preparation and professional development: 2000* (NCES 2001–088). Washington, DC: U.S. Department of Education, National Center for Education Statistics.
- Pfeiffer, P. N., Heisler, M., Piette, J. D., Rogers, M., & Valenstein, M. (2011). Efficacy of peer support interventions for depression: A meta-analysis. *General Hospital Psychiatry, 33*, 29–36. doi:10.1016/j.genhosppsych.2010.10.002
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*, 879–891. doi:10.3758/BRM.40.3.879
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401. doi:10.1177/014662167700100306
- Roeser, R. W., Cullen, M. M., Schonert-Reichl, K., Jha, A., Wallace, L., & Wilensky, R. (2011). *Cultivating mindfulness-based stress-reduction, rest and resilience among public school teachers in Canada and the United States: Results from two waitlist randomized trials*. Unpublished manuscript.
- Rosenberg, S. A., Zhang, D., & Robinson, C. C. (2008). Prevalence of developmental delays and participation in early intervention services for children. *Pediatrics, 121*, 1503–1509. doi:10.1542/peds.2007-1680
- Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology, 69*, 719–727. doi:10.1037/0022-3514.69.4.719
- Sawyer Cohen, J. A. S., & Semple, R. J. (2010). Mindful parenting: A call for research. *Journal of Child and Family Studies, 19*, 145–151. doi:10.1007/s10826-009-9285-7
- Segal, Z. V., Bieling, P., Young, T., MacQueen, G., Cooke, R., Martin, L., . . . Levitan, R. D. (2010). Antidepressant monotherapy vs sequential pharmacotherapy and mindfulness-based cognitive therapy, or placebo, for relapse prophylaxis in recurrent depression. *Archives of General Psychiatry, 67*, 1256–1264. doi:10.1001/archgenpsychiatry.2010.168
- Segal, Z. V., Williams, M. G., & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach for preventing relapse*. New York, NY: Guilford Press.
- Sen, E., & Yurtsever, S. (2007). Difficulties experienced by families with disabled children. *Journal for Specialists in Pediatric Nursing, 12*, 238–252. doi:10.1111/j.1744-6155.2007.00119.x
- Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology, 62*, 373–386. doi:10.1002/jclp.20237
- Siegel, D. (2010). *Mindsight. The science of personal transformation*. New York, NY: Random House.
- Singer, G. H. S. (2006). Meta-analysis of comparative studies of depression in mothers of children with and without developmental disabilities. *American Journal of Mental Retardation, 111*, 155–169. doi:10.1352/0895-8017(2006)111[155:MOCSOD]2.0.CO;2
- Singh, N. N., Lancioni, G. E., Winton, A. S. W., Singh, J., Curtis, J., Wahler, R. G., & McAleavey, K. M. (2007). Mindful parenting decreases aggression and increases social behavior in children with developmental disabilities. *Behavior Modification, 31*, 749–771. doi:10.1177/0145445507300924
- Thompson, B. (1996). AERA editorial policies regarding statistical significance testing: Three suggested reforms. *Educational Researcher, 25*, 26–30. doi:10.3102/0013189X025002026
- U.S. Department of Education, Office of Special Education Programs. (2009). *Individuals With Disabilities Education Act (IDEA) data: Part B data and notes*. Retrieved from <http://www.ideadata.org/PartBdata.asp>
- Van Dam, N. T., Sheppard, S. C., Forsyth, J. P., & Earleywine, M. (2011). Self-compassion is a better predictor than mindfulness of symptom severity and quality of life in mixed anxiety and depression. *Journal of Anxiety Disorders, 25*, 123–130. doi:10.1016/j.janxdis.2010.08.011
- Wallace, B. A., & Shapiro, S. L. (2006). Mental balance and well-being:

- Building bridges between Buddhism and Western psychology. *American Psychologist*, *61*, 690–701. doi:10.1037/0003-066X.61.7.690
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology*, *54*, 1063–1070. doi:10.1037/0022-3514.54.6.1063
- Woolfson, L., & Grant, E. (2006). Authoritative parenting and parental stress in parents of pre-school and older children with developmental disabilities. *Child: Care, Health and Development*, *32*, 177–184. doi:10.1111/j.1365-2214.2006.00603.x
- Zaidman-Zait, A., Mirenda, P., Zumbo, B. D., Wellington, S., Dua, V., & Kalynchuk, K. (2010). An item response theory analysis of the Parenting Stress Index–Short Form with parents of children with autism spectrum disorders. *Journal of Child Psychology and Psychiatry*, *51*, 1269–1277. doi:10.1111/j.1469-7610.2010.02266.x

Received April 28, 2011

Revision received December 22, 2011

Accepted January 5, 2012 ■