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Mindful Parenting Decreases Aggression, Noncompliance, and Self-Injury in Children With Autism

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Parent-child transactions provide an important social context for the development of adaptive and problem behaviors in young children with autism. Teaching parents to develop alternative transactional pathways often leads to positive behavioral patterns in their children. We taught three parents the philosophy and practice of mindfulness in a 12-week course and assessed the outcome of the training on their children's behavior. In addition, the mothers rated satisfaction with their parenting skills and interactions with their children. Results showed that the mothers' mindful parenting decreased their children's aggression, noncompliance, and self-injury and increased the mothers' satisfaction with their parenting skills and interactions with their children. We speculated on the possible reasons for the efficacy of mindful parenting in decreasing the children's problem behaviors without the application of specific, programmed contingencies for the children's behavior.

Parents experience the birth of a child as a blessing. However, they may experience unique problems and stressors if their child begins to exhibit externalizing behaviors such as aggression, self-injury, pica, stereotypy, noncompliance, and property destruction. For example, about 5%–14% of preschoolers engage in moderate to severe problem behaviors (Lavigne et al., 1996), and more than half of these children continue to have significant behavioral difficulties up to 6 years later (Marakovitz & Campbell, 1998; Speltz, McClellan, DeKlyen, & Jones, 1999). Parents may experience further stressors if their child not only displays externalizing behaviors but also has a disability, such as autism (Hastings, 2002). Children with autism have impaired or limited social and communication skills, placing them at great risk for developing problem behaviors that lead to even

greater parental stress (Borthwick-Duffy, 1996). Research on parents of children with developmental disabilities suggests that group interventions using cognitive behavior therapy are effective in reducing parental stress and in improving parental mental health (Hastings & Beck, 2004). These group interventions, however, did not produce any reductions in the problem behaviors of the children.

A transactional analysis holds that parents and children are active participants in the development of the children, including their problem behaviors (Sameroff, 1995, 2004). Parental stress can be reduced by equipping parents with tools to change parent-child transactions that may provide the setting events or establishing operations for the development or maintenance of problem behaviors in their children. A number of structured parent training programs have been used for this purpose, including parent management training based on the work of Forehand and McMahon (1981) and Patterson (1982) and parent-child interaction therapy (Eyberg, 1988). Other approaches have taught parents very specific skills to deal with the target behaviors of their children. For example, parents of children with autism have been taught to implement explicit techniques for reducing problem behavior, increasing nonverbal and verbal communication skills, and enhancing play skills (Symon, 2001).

A meta-analysis of behavioral interventions used with children with mental retardation showed that at least 60 different techniques were reported in the literature published from 1968 to 1994 (Didden, Duker, & Korzilius, 1997). A more recent synthesis of research on problem behavior interventions for children with autism showed that studies conducted before

the 1990s focused predominantly on consequence-based procedures (Horner, Carr, Strain, Todd, & Reed, 2002). Following the advent of a positive behavior support philosophy, however, recent research has focused more on stimulus-based and instruction-based interventions (Horner et al., 2002). The emphasis is on preventing the development of problem behaviors (Reeve & Carr, 2000) and on understanding what occurs between episodes of problem behaviors to reduce or eliminate their occurrence (Carr, Langdon, & Yarbrough, 1999). Methods that have proven useful include the provision of choice, environmental modifications, changes in schedules and curricula, staff training in positive behavior supports, and changes in staffing ratios (Luiselli & Cameron, 1998). Furthermore, greater reductions in children's problem behavior were evidenced when the procedures were implemented by parents and teachers rather than by hospital staff and specialist therapists (Horner et al., 2002).

There is a long history of using parents as therapists for their own children (Briesmeister & Schaefer, 1998). However, most of the parent training literature has focused on teaching parents skills that will enable them to better manage their children's behavior. The training provided to parents has been very similar to that provided to staff and teachers for controlling or managing children's problem behavior. In contrast, Horner et al. (2002) suggested that the needs of both caregivers (e.g., families, teachers, staff) and children with autism would be better met with comprehensive behavioral interventions. They suggested that these "interventions (a) address all problem behaviors performed by a child, (b) are driven by the functional assessment outcomes, (c) are applied across all (or an extended part) of the child's day, (d) typically incorporate multiple intervention procedures, and (e) fit the context where they are implemented" (p. 425).

With the exception of (b)—that interventions are driven by the functional assessment outcomes—parents may be able to accomplish all the objectives of a comprehensive intervention for changing their children's behaviors by changing their own behaviors. Recent studies on mindfulness suggest that a transformational change in caregivers may produce positive changes in the behavior and well-being of those being cared for, without the application of planned antecedent or consequent contingencies. For example, when compared with baseline measures, increasing the mindfulness of caregivers produced a substantial increase in the levels of happiness displayed by individuals with profound multiple disabilities (Singh, Lancioni, et al., 2004). In another study, increasing the mindfulness of staff substantially decreased the use of physical restraints in response to aggression by individuals in three group homes, when compared to baseline and behavioral training conditions, and increased in the number of learning tasks mastered to competency by these individuals (Singh, Lancioni, et al., in press). In other studies, teaching mindfulness to staff resulted in positive changes in staff behavior during treatment team meetings (Singh, Singh, et al., in press; Singh, Wahler, et al., 2002; Singh, Wechsler, et al., 2002). Furthermore, teaching mindfulness to

individuals enabled them to gain their own control over behaviors that previously could not be managed with specific therapeutic interventions (Singh, Wahler, Adkins, Myers, & The Mindfulness Research Group, 2003; Singh, Wahler, Winton, Adkins, & The Mindfulness Research Group, 2004). In general, there is a growing body of evidence-based studies that show transformational change due to mindfulness training (for reviews see, for example, Baer, 2003; Germer, Siegel, & Fulton, 2005; Hayes, Follette, & Linehan, 2004; Salmon et al., 2004; Segal, Williams, & Teasdale, 2002).

Being mindful can be described as having a clear, calm mind that is focused on the present moment in a nonjudgmental way. Mindfulness allows an individual to consider alternative ways to perceive and respond to a situation, beyond what he or she previously realized (Kabat-Zinn, 1994). Thus, a mindful parent could respond to his or her child's problem behavior in many ways, including four of the five components of Horner et al.'s (2002) comprehensive interventions, by using alternatives that go beyond the rigid application of the antecedent and contingency management techniques that are typically taught in parent training programs.

Our aim was to determine whether parents of children with autism could reduce their child's problem behavior by changing their own behavior when they interacted with their child. Specifically, we were interested in assessing how mindfulness training and practice by mothers of children with autism affected the children's behavior and the mothers' satisfaction with their parenting skills and interactions with their children.

METHOD

Parent–Child Participants and Settings

Each mother, in three mother–child dyads, requested mindfulness training to improve her interactions with her child who had been diagnosed with autism. In the first dyad, the mother was 28 years old and had completed a college education. She had three children, with the third child being the participant in this study. The child was 4 years 5 months old, with an overall functioning ability of 10 to 18 months on the *Vineland Adaptive Behavior Scales* (Sparrow, Ball, & Cicchetti, 1984). In the second dyad, the mother was 24 years old and had 2 years of college education. She had only one child, who was 5 years 2 months old. He functioned overall between 13 to 20 months on the *Vineland*. In the third dyad, the mother was 33 years old and had formerly been a schoolteacher following completion of a college education. She had one child of 6 years 1 month, and he had been adopted from birth. The child had an overall functioning ability of 15 to 25 months on the *Vineland*. All three mothers were very dedicated to their children and were caring for them full time at home. They had attended various parent training programs, including programs in teaching language to their children, behavior management, sensory integration, and medication management. They sought training in mindfulness because they knew group home-care providers who had been

given this kind of training, and they had observed positive changes in these providers.

Definitions of Behaviors, Recording Procedures, and Reliability

Three behaviors were targeted for observation: aggression, noncompliance, and self-injury. All three children engaged in aggression. Two children also displayed substantial noncompliance, so this behavior was measured as well. The child in the third dyad did not display noncompliance at a high enough frequency to be of concern to his parents, but his self-injury was measured because it was similar in frequency to his aggression. Aggression included any of the following acts directed at the mother: hitting, biting, kicking, slapping, pushing, and shoving. Noncompliance was defined as refusing to carry out instructions or requests made by the mother. Self-injury was defined as biting himself on the arm, banging his head against hard surfaces, or slapping his own face.

Data were collected during the waking hours of each child when at home with mother, typically between 8 hr and 14 hr each day. Using an event recording procedure, each child's mother recorded the occurrence of each target behavior, in real time, on a Palm personal digital assistant (PDA).

Fathers, who served as reliability observers, collected data on a separate Palm PDA for 5 hr to 10 hr each week, typically in the evenings and on weekends. An agreement was defined as both the mother and father recording an occurrence of the same target behavior at about the same time (i.e., within ± 2 min). Percentage interobserver agreement was calculated for each week by dividing the total number of agreements by the total number of observations made by primary observer (the mother) and multiplying by 100. Across the three parent-child dyads, the interobserver reliability across all observations with both parents present ranged from 82% to 100%, with a mean of 96%.

Subjective Measures

Each mother was required to complete three subjective measures, two of satisfaction and one on her use of mindfulness and other interventions when dealing with her child's maladaptive behaviors.

Subjective Units of Parenting Satisfaction (SUPS). This scale measured, in subjective units, the degree of satisfaction the mothers had with their own parenting skills. They rated themselves each week on a 0 to 100 scale, with 0 indicating *total dissatisfaction* and 100 indicating *total satisfaction*. The SUPS and the two scales described below (SUIS and SUUM) follow the general principle of the Subjective Units of Discomfort Scale (SUDS; Stanley & Averill, 1998), which has a long history of being used to quantify subjective experience of discomfort.

Subjective Units of Interaction Satisfaction (SUIS). This scale measured, in subjective units, the degree of satisfac-

tion the mothers had with their mother-child interactions. They rated mother-child interactions each week on a 0 to 100 scale, with 0 indicating *total dissatisfaction* and 100 indicating *total satisfaction*.

Subjective Units of Use of Mindfulness (SUUM). This scale measured, in subjective units, the mothers' use of mindfulness in parenting their children. They rated their perceived use of mindfulness each week on a 0 to 100 scale, with 0 indicating *no use* and 100 indicating *total use*.

Experimental Design and Procedures

We used a multiple-baseline across subjects (parent-child dyads) design. Baseline was followed by mindfulness training, which was followed by mindfulness practice.

Baseline. Baseline was run in the absence of any programmed intervention for 5, 12, and 15 weeks across the three parent-child dyads. The mothers were not given any instructions on child management techniques and were asked to simply continue with whatever management techniques they were using prior to the initiation of the study. Throughout this and later phases, the mothers were required to collect data on their child's behaviors and rate their satisfaction with their own parenting, their mother-child interactions, and their use of mindfulness.

Mindfulness Training Phase. Immediately following baseline, the training phase began. An initial session was given at the start of this phase, followed by three further training sessions (Monday, Wednesday, and Friday) in Weeks 3, 6, 9, and 12. Formal training ended after the 12th week. Throughout this phase as soon as they were taught an exercise, the mothers were requested to apply it, and to use the mindfulness skills they had been previously taught, in the interactions with their children. They were not requested to stop using any other child management procedures that they wanted to use.

Mindfulness Practice Phase. This phase immediately followed the mindfulness training phase and lasted 52 weeks. The mothers were requested to continue with all the mindfulness exercises and to use all their mindfulness skills in interactions with their children but were given no further instructions. Again, they were not requested to stop using any other child management procedures that they wanted to use.

Content of Training in Mindfulness. Training was conducted with each mother separately. In the initial session, the senior investigator explained the details of the training and the philosophy of mindfulness. Each mother was given a copy of *Everyday Blessings: The Inner Work of Mindful Parenting* by Myla Kabat-Zinn and Jon Kabat-Zinn (1997) to be read as preparation for the rest of the mindfulness parent training program. Each of the later training sessions was scheduled for a 2-hr period and involved one-on-one training by the senior investi-

gator. The mothers were taught meditation methods to enhance their mindfulness and exercises to help them practice mindfulness during their interactions with their children. The 12-session mindfulness training program and the structure of each training session are presented in the Appendix.

RESULTS

The total weekly number of target maladaptive behaviors of each child in the three parent-child dyads during baseline, mindfulness training, and mindfulness practice is shown in Figure 1. The frequencies of the children's maladaptive behaviors were different at the beginning of the study, both between behaviors and across dyads. During baseline, the child in the first dyad displayed moderate levels of aggression and very high rates of noncompliance. With the child in second dyad, both aggression and noncompliance occurred at high, but variable, rates. The child in the third dyad displayed low, variable rates of both aggression and self-injury.

With the first parent-child dyad, the child's mean number of aggressive behaviors per week decreased by 16% from baseline (8.8) to training (7.4) but showed an 88% decrease from training to practice (0.9). The mean number of noncompliance behaviors per week decreased by 33% from baseline (53.6) to training (35.7) and showed a 68% decrease from training to practice (11.2). With the second dyad, the child's mean number of aggressive behaviors per week decreased by 6% from baseline (17.1) to training (16.0) and 70% from training to practice (4.9). The mean number of noncompliance behaviors per week decreased 11% from baseline (37.2) to training (32.9) and decreased 64% from training to practice (11.8). With the third dyad, the child's mean number of aggressive behaviors per week decreased 10% from baseline (8.0) to training (7.2) and 85% from training to practice (1.1). The mean number of self-injurious behaviors per week decreased 17% from baseline (10.4) to training (8.7) and 51% from training to practice (4.2).

The subjective ratings of the mothers on their satisfaction with their parenting, with their mother-child interactions, and

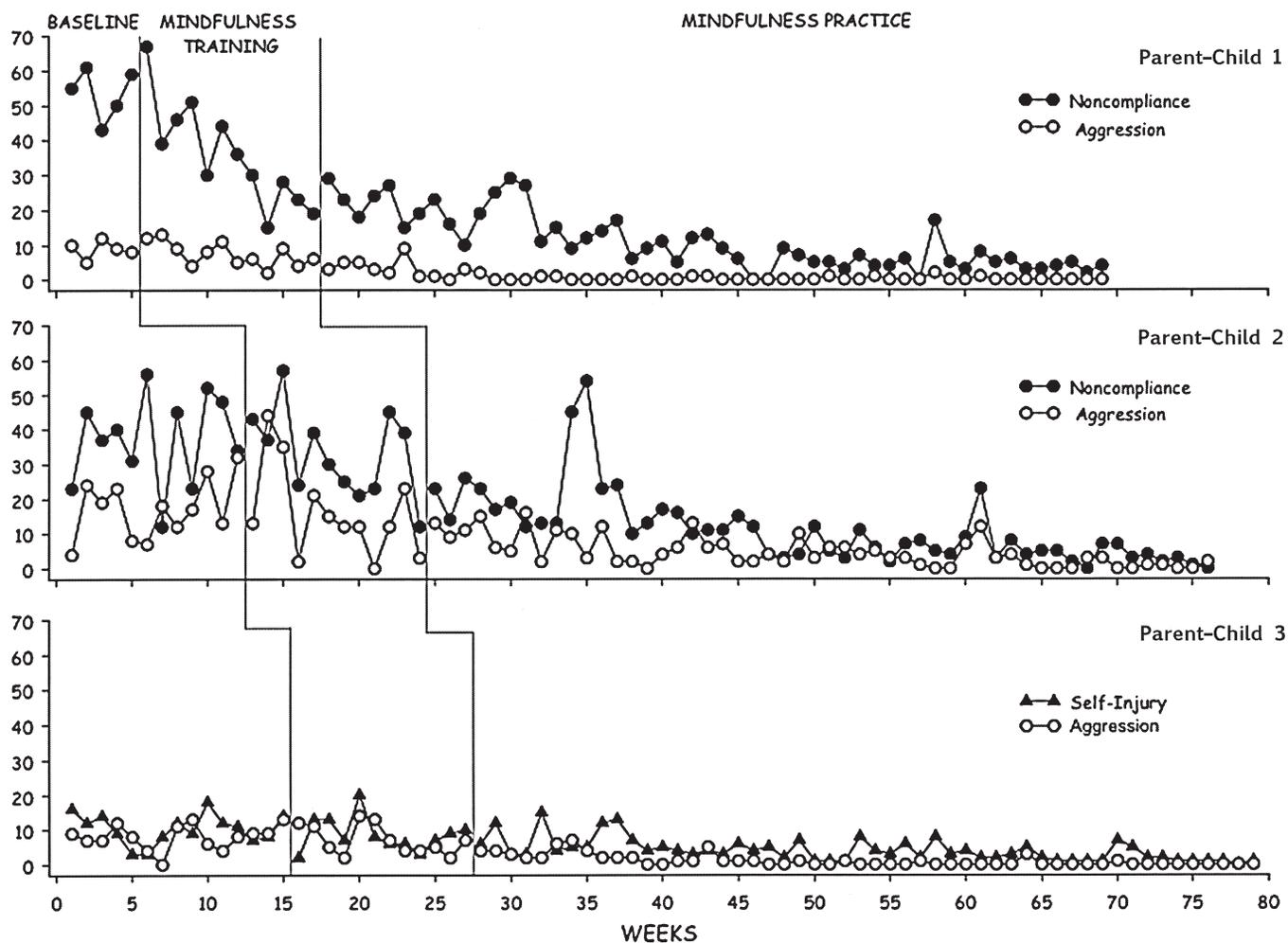


FIGURE 1. Number of events (aggression, noncompliance, and self-injury) per week during experimental conditions across parent-child dyads.

with their use of mindfulness are presented in Figure 2. For all three mothers, self-ratings on parenting satisfaction were low during baseline, increased during mindfulness training, and reached much higher levels during the practice follow-up (averages 25%, 43%, and 80%, respectively). The self-ratings of their mother–child interaction satisfaction showed a similar pattern (averages 55%, 67%, and 87%, respectively). On their use of mindfulness the mothers rated themselves as engaging in mindful parenting, on average, about 72% of the time during

baseline, 42% during the training phase, and 80% during the last phase.

DISCUSSION

Our data show that, in comparison to baseline, the children’s levels of aggression as well as other maladaptive behavior decreased during and following the mindfulness training provided to their mothers. By the end of the study, all three children en-

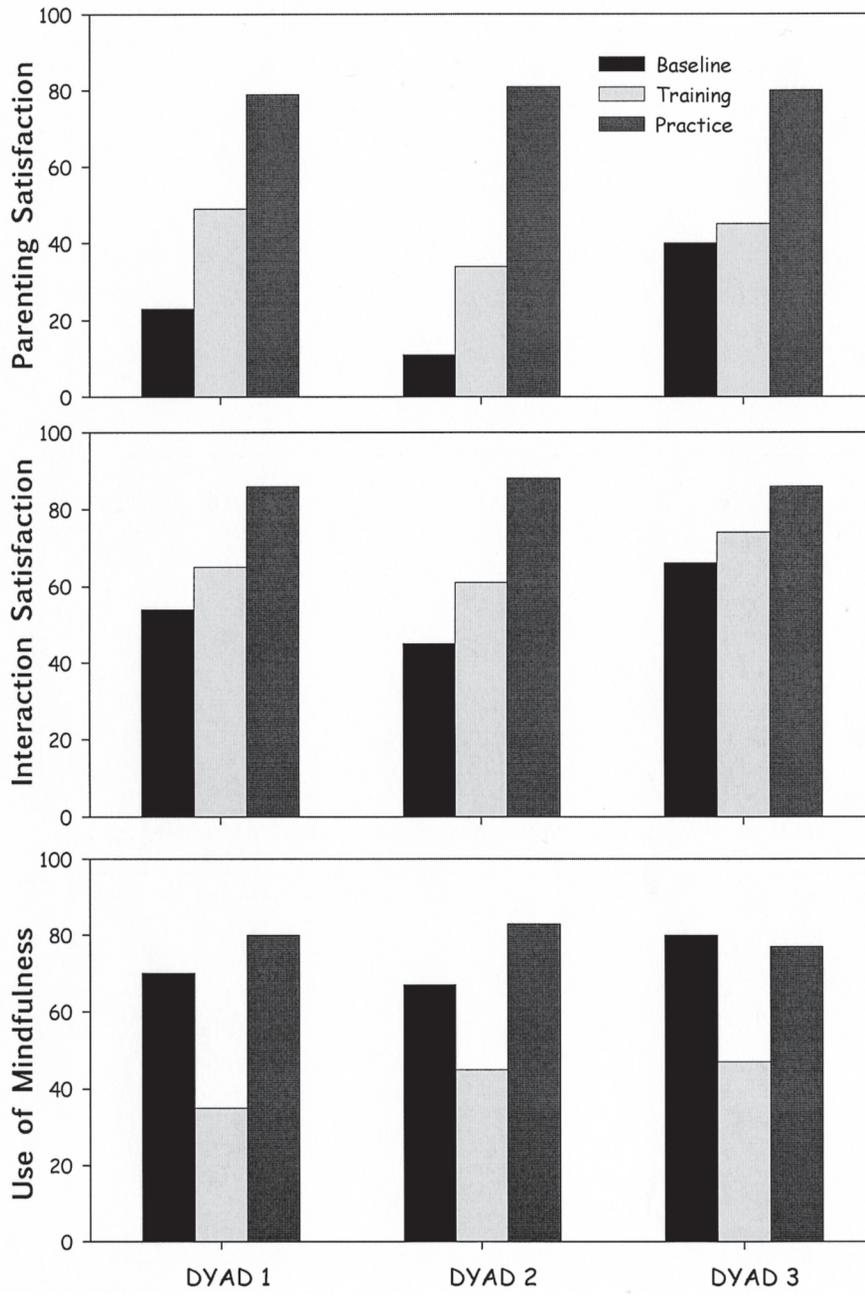


FIGURE 2. Self-ratings by mothers of satisfaction with their parenting, satisfaction with their mother–child interactions, and their use of mindfulness.

gaged in aggression only very occasionally, or not at all. Furthermore, children in the first two dyads were noncompliant on only a few occasions each day, and the child in the third dyad engaged in self-injury only once a day. It is important to note that although noncompliance may seem to be less serious than self-injury, treatment is essential because noncompliance is on a developmental trajectory that may lead to aggression (Loeber, Green, Lahey, Christ, & Frick, 1992).

During mindfulness training, the mothers' satisfaction with their parenting skills and their interactions with their children increased from baseline levels, reaching the highest levels when they began using mindfulness routinely on a daily basis. Each mother's rating of her use of mindfulness was very high during baseline, decreased during mindfulness training, and then rose markedly during mindfulness practice. At the end of the study, however, the mothers noted in hindsight that they had rated themselves highly on being mindful during baseline, without really understanding what it truly meant to be mindful in successive moments with a child who had autism. They commented that only after intense practice of the meditation exercises and the gradual application of mindfulness in daily life were they truly able to appreciate what being mindful entails.

These findings support the hypothesis that mindfulness practice by caregivers is effective in reducing problem behaviors of individuals in their care, while increasing their own satisfaction in their interactions with them (Singh, Lancioni, et al., in press). Furthermore, they support a previous finding that staff can change the quality of life of individuals with developmental disabilities by interacting mindfully with them (Singh, Lancioni, et al., 2004).

We found positive changes in the children's behavior without their parents' actively focusing on specific contingencies that might govern the behavior. In an earlier study, when staff members in group homes were trained to be more mindful, substantial positive changes were reported in the behavior of the individuals in their care (Singh, Lancioni, et al., in press). Mindful parenting aims to change the nature of the mother's behavior and, as a result, the interactions with her children. Unlike behavioral and other parent training methodologies, where awareness of contingencies is heightened and behavioral intervention is taught, mindfulness transforms the individual's view of self and others as the basis for behavior change (Germer et al., 2005; Singh, Wahler, et al., 2004).

There is growing evidence that mindfulness training has many positive effects on those practicing it and, in addition, has positive spillover effects on individuals who are important in their lives. The changes to the mindful person appear to improve the overall quality of life for both the person and others with whom he or she is involved (Gunaratana, 1991; McLeod, 2001). These positive changes seem to result from a transformation in the way the mindful person relates to events in his or her environment, rather than from learning a set of skills to specifically change behaviors. Although the exact ways in which mindfulness training produces these transformational effects can be de-

termined definitively only with further studies, a number of possibilities can be considered.

Mindfulness practice stresses the need for unconditional acceptance. This includes the acceptance of each person, including oneself, as an individual. It also includes the nonjudgmental acceptance of the behaviors of that person. This does not mean that problem behaviors are not identified, but the focus is not on directly altering these behaviors or even trying to replace them with more acceptable behavior. Rather, the unconditional acceptance of each person changes the therapeutic milieu into something that encourages positive changes in behaviors without actually focusing on specific behaviors (Singh, Winton, et al., in press)

An important feature of a mother's unconditional acceptance of her child is that this will reduce attempts by the mother to impose her will on her child and, instead, will generate a harmony that supports both individuals. She will recognize that both she and her child have important and valid needs that, even when different and in conflict, are interdependent (Kabat-Zinn & Kabat-Zinn, 1997). This will reduce negative interactions between parent and child and promote positive exchanges.

Mindfulness practice can lead to an emptying of one's mind of limitations imposed by past conditioning. It can give the mindful mother a "beginner's mind" (Suzuki, 1970), allowing her to spontaneously intuit possibilities she had not envisaged previously. It reduces the tendency of parents to respond to their children based on habits formed over the course of bringing them up and on the parenting they themselves received as children.

In mindfulness training, the parents were taught to focus their attention on one thing at a time. Parents often respond to their children without focusing on the here and now. With practice, mindfulness assists parents in bringing their minds back to the present moment instantaneously and without thought. In this context, mindfulness is the application of "bare attention" (Nyanaponika Thera, 1992) to what one's children do and to one's spontaneous response to their behavior.

Recent research suggests that mindfulness training produces transformational change in both the behavior and the neurophysiology of practitioners (Davidson et al., 2003; Schwartz & Begley, 2002). For example, Schwartz and Begley reported studies showing that mindfulness can be responsible for changing one's neural networks, with new neural networks eventually overriding older ones. They showed that many individuals who suffer from obsessive-compulsive behavior can change their neural networks by mindfully replacing obsessive-compulsive behaviors with socially acceptable behaviors of their choosing. If this is so, then it makes sense that training the mind to control the mind is a mental as well as a neurophysiological process.

In this study, we found that, although changes in the children's behavior began soon after their mothers began mindfulness training, clear and specific effects emerged only after the mothers had engaged in substantial mindfulness practice. Per-

haps the reason it takes some time for the effects of mindfulness to show clear clinical changes in the mothers' behavior, and consequently in that of their children, is that it takes time to lay down and firm up new neural networks. This is in contrast to parenting methodologies that focus on teaching rule-governed behaviors that parents can apply almost immediately, but that do not produce transformational change in the parents. With mindfulness, the changes are slower but internalized, and they change the very nature of the individual (e.g., demand for compliance changes to compassion and love; the fear of their child's engaging in aggression changes to courage to face aggression with loving kindness). Mindful parenting opens up a developmental pathway that produces positive, bidirectional parent-child transactions (Curtis & Cicchetti, 2003; Sameroff, 1995). Although only the mothers received mindfulness training during this study, positive outcomes were clearly evident in their children. It would be instructive to assess differential outcomes for mothers and their children when mindfulness training is given to both mothers and their children, only to the mothers, or only to the children.

Mindfulness is a new area of research, and the research methodology is not well established. For example, because mindfulness training teaches internalized methods of self-management and overt responses based on a state of mindfulness, we needed to develop a method to quantify their responses; we improvised a method based on earlier research on anxiety disorders. Future research will need to validate our approach to quantifying subjective experiences. However, the findings were robust in terms of reductions in observable child behaviors that were clearly in response to changes in the parents' behaviors. These data indicate that training in mindfulness may provide a useful addition to the existing psychosocial parent training literature.

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APPENDIX
OUTLINE OF THE 12-SESSION MINDFULNESS PARENT TRAINING PROGRAM

1. General introduction to mindfulness parent training program
 - a. Discussion of mother–child positive and negative interactions
 - b. Discussion of parent and/or child training programs that mother has previously participated in
 - c. Mother’s experiences with previous parent training programs
 - d. Discussion of mother’s expected outcomes from a parent training program
 - e. Discussion of the aims of the mindfulness parent training program
 - f. Review of program requirements: reading, meditation practice, application of mindfulness, and data collection
 - g. Maintaining a practice journal
 - h. Set homework practice
2. Knowing your mind
 - a. Interactive review of homework
 - b. Review of mindfulness and mindlessness
 - c. Identification of instances of mindfulness and mindlessness during mother–child interactions
 - d. Basic meditation techniques for sitting and walking meditation
 - e. Meditation practice on *Observing Your Mind*
 - f. Discussion of practice on *Observing Your Mind* and its applications in mother–child interactions
 - g. Set homework practice
3. Focused attention
 - a. Interactive review of homework
 - b. Review of focused attention
 - c. Breathing as focused attention or awareness
 - d. Meditation practice on *Breathing*
 - e. Discussion of practice on *Breathing* and its applications in mother–child interactions
 - f. Set homework practice
4. Focused attention on arousal states
 - a. Interactive review of homework
 - b. Review of arousal states that precede and follow mother–child interactions
 - c. Meditation practice on *Arousal*
 - d. Discussion of practice on *Arousal* and its applications in mother–child interactions
 - e. Set homework practice
5. Being in the present moment
 - a. Interactive review of homework
 - b. Review of being in the present moment in the midst of chaos
 - c. Meditation practice on *Being in the Present Moment*
 - d. Discussion of practice on *Being in the Present Moment* and its applications in mother–child interactions
 - e. Set homework practice
6. Beginner’s mind
 - a. Interactive review of homework
 - b. Review of premature cognitive commitment; bounded vs. unbounded reality
 - c. Meditation practice on *Beginner’s Mind*
 - d. Discussion of practice on *Beginner’s Mind* and its applications in mother–child interactions
 - e. Set homework practice
7. Being your child
 - a. Interactive review of homework
 - b. Review of being in the “zone” or having a “peak experience”; being one with your child
 - c. Meditation practice on *Being Your Child*
 - d. Discussion of practice on *Being Your Child* and its applications in mother–child interactions
 - e. Set homework practice
8. Nonjudgmental acceptance
 - a. Interactive review of homework
 - b. Review of acceptance and nonjudging; nonjudgmental acceptance of your child
 - c. Meditation practice on *Nonjudgmental Acceptance*
 - d. Discussion of practice on *Nonjudgmental Acceptance* and its applications in mother–child interactions
 - e. Set homework practice
9. Letting go
 - a. Interactive review of homework
 - b. Review of doing one’s part and letting go of everything else
 - c. Meditation practice on *Letting Go*
 - d. Discussion of practice on *Letting Go* and its applications in mother–child interactions
 - e. Set homework practice
10. Loving kindness
 - a. Interactive review of homework
 - b. Review of acting with compassion
 - c. Meditation practice on *Loving Kindness*
 - d. Discussion of practice on *Loving Kindness* and its applications in mother–child interactions
 - e. Set homework practice
11. Problem solving
 - a. Interactive review of homework
 - b. Review the nature of problems and solutions
 - c. Meditation practice on *Problem Solving*
 - d. Discussion of practice on *Problem Solving* and its applications in mother–child interactions
 - e. Set homework practice
12. Using mindfulness in daily interactions
 - a. Interactive review of homework; data collection
 - b. Putting it all together; review of meditation exercises and applications
 - c. Meeting mother’s expectations; mother–child interactions then vs. now
 - d. Discussion on mindfulness in daily interactions
 - e. Plans for follow-up, keeping in touch, and long-term practice