

## Chapter 3

# Mindfulness Research Foundations

Much of the excitement about mindfulness relates to the quickly expanding research foundations that include not only clinical effectiveness, but also the neurological impact of mindfulness practice. This cross-discipline, multifaceted evidence base has quickly mainstreamed mindfulness practice, moving meditation from a fringe mental health activity to a highly respected treatment option in less than a decade. Although research on specific, manualized mindfulness-based treatments with couples and families is limited, the extant research on mindfulness and its effects provides sufficient support to consider mindfulness-informed therapy an emerging *evidence-based practice* (Patterson, Miller, Carnes, & Wilson, 2004).

The research base on mindfulness includes the effects of mindfulness on:

- Physical health
- Adult mental health
- Couples: distressed and nondistressed
- Children, adolescents, and families
- The brain

## Mindfulness and Physical Health

### *Mindfulness and Medical Disorders*

Jon Kabat-Zinn began studying mindfulness-based stress reduction (MBSR) in a medical hospital, working with patients whose physician referred them due to severe and chronic medical conditions that the physicians believed were stress-related. Over the past 30 years, mindfulness has been found to improve treatment outcomes for a wide range of physical conditions, including (Baer, 2003; Shapiro & Carlson, 2009):

- Chronic pain
- Cancer: psychological, biological, and sleep outcomes

- Cardiovascular disorders
- Epilepsy
- HIV/AIDS
- Psoriasis
- Rheumatoid arthritis
- Fibromyalgia
- Organ transplant
- Type II diabetes
- Multiple sclerosis
- Sleep disturbance
- Mixed medical diagnoses

Of these, the most extensive research has been on chronic pain, the original target population of MBSR, and cancer (Shapiro & Carlson, 2009). The majority of studies in the area of physical health have focused on outcomes similar to those in mental health, such as stress levels, anxiety, and depression related to the illness. A minority of these studies uses mindfulness to directly affect disease progression or pathology; these exceptions include chronic pain, psoriasis, epilepsy, and cancer. In a meta-analysis, mindfulness used for physical disorders had relatively strong and consistent effect sizes, suggesting that mindfulness may help coping with the distress of disability and severe illness (Grossman, Niemann, Schmidt, & Walach, 2004).

### ***Couple and Family Adjustment to Chronic Illness***

A handful of studies have considered the effects of mindfulness in helping partners and caretakers of persons with a chronic or severe medical condition. In the first study on MBSR examining the impact on couples, Birnie, Garland, and Carlson (2010a) found that cancer patients and their partners both improved in terms of mood, mindfulness, and stress after jointly participating in the program. Similarly, Minor, Carlson, Mackenzie, Zernicke, and Jones (2006) found that MBSR reduced stress and mood symptoms in parents caring for children with chronic health concerns. These are encouraging findings for couples and families manage the significant levels of ongoing stress associated with providing long-term care and coping with chronic illness.

### ***Effect on Physical Health in Healthy Adults***

A handful of studies have considered the physiological effects of mindfulness in healthy adults (Shapiro & Carlson, 2009). In sum, these studies found the following:

- *Increase in melatonin*: Associated with controlling the sleep cycle; also implicated in diseases such as cancer.
- *Increased parasympathetic cardiovascular activity*: Associated with the relaxation response.

- *Improved heart rate variability*: Associated with the relaxation response.
- *Improved gas exchange in lungs*: Associated with more efficient intake of oxygen and release of toxic gases.
- *Improved immune functioning*: Associated with the ability to resist pathogens.
- *Reduced blood pressure*: Lowers systolic blood pressure (Chiesa & Serretti, 2010).

## Mindfulness and Adult Mental Health

Mindfulness-based and mindfulness-informed treatments for mental health issues are quickly becoming standard, well respected, and frequently sought treatments for mild-to-severe mental health disorders. Mindfulness has been used to treat a wide range of mental health issues with adults, including:

- *Depression and depression relapse*: Mindfulness-based cognitive therapy (MBCT: Ma & Teasdale, 2004; Segal, Williams, & Teasdale, 2002) was initially designed to treat depression and prevent relapse and has a growing evidence-base documenting its effectiveness.
- *Bipolar disorder*: MBCT and DBT (dialectical behavior therapy) have been adapted for bipolar disorder (Weber et al., 2010).
- *Anxiety and panic*: ACT (acceptance and commitment therapy), MBCT, MBSR, as well as general mindfulness interventions have all been successfully used with anxiety and panic (Greeson & Brantley, 2009).
- *Substance abuse and addiction*: Patterned after MBCT, mindfulness-based relapse prevention is growing as an acceptable treatment for learning to manage cravings associated with addiction (Witkiewitz, Marlatt, & Walker, 2005).
- *Eating disorders*: The MBSR curriculum has been adapted to work with self-regulation related to binge eating, obesity, anorexia, and bulimia (Kristeller, Baer, & Quillian-Wolever, 2006; Kristeller & Wolever, 2011; Wolever & Best, 2009).
- *Borderline personality disorder*: DBT is a well-researched approach to treating borderline personality disorder that incorporates mindful awareness of emotion.
- *Attention deficit disorder*: Mindfulness has been used to help adults diagnosed with ADHD with self-regulation and self-directedness (Philipsen, et al., 2007; Smalley et al., 2009; Zylowska, Smalley, & Schwartz, 2009).
- *Trauma and PTSD*: Mindfulness is also being explored as a treatment for trauma, including experiential avoidance and other symptoms characteristic of trauma (Follette & Vijay, 2009).
- *Sexual abuse*: MBSR has recently also been adapted to work with adults abused as children with encouraging outcomes (Kimbrough, Magyari, Langenberg, Chesney, & Berman, 2010).
- *Psychosis*: Mindfulness has also been used to help increase a nonreactive acceptance of and response to psychotic symptoms as well as to decrease the sense of bodily fragmentation (Pinto, 2009).

The breadth of applications is impressive as is the growing research base, which suggests that mindfulness is a promising intervention for a surprising wide range of mental health issues. For example, in a meta-analytic study on mindfulness-based interventions, researchers found strong and robust effect sizes (0.97 and 0.95) for clients presenting with depression and/or anxiety (Hofmann, Sawyer, Witt, & Oh, 2010). Furthermore, in their study of MBSR, Carmody and Baer (2008) found that the time spent practicing mindfulness was positively related to clinical improvements, indicating that the practice of mindfulness leads to greater mindfulness, which in turn results in symptom reduction and enhanced well-being. Additionally, recent research on MBSR indicates that group dynamics account for approximately 7% of outcome variance, highlighting the importance of nurturing positive group dynamics in these approaches (Imel, Baldwin, Bonus, & MacCoon, 2008).

### *Mindfulness with Diverse Populations*

Most of the research on mindfulness has been conducted on populations diagnosed with specific disorders, either medical or psychological, with limited focus on the diversity variables. The notable exception to this is age: several studies have been conducted exploring applications with children, teens, and older adults (Semple, Lee, & Miller, 2006). The participants in most mindfulness research studies have been educated, middle or upper class, and Caucasian. However, MBSR has been used in a handful of studies with inner city, minority youth, and adults, including Spanish-speaking populations for whom the curriculum is translated (Liehr & Diaz, 2010; Roth & Calle-Mesa, 2006). Adaptations for this population included reduced emphasis on body-focused meditation due to histories of trauma, fewer handouts and written homework assignments were used due to education levels, and the all-day retreat was not included due to logistical difficulties. In addition, the sixth class was changed from focusing on interpersonal communication to managing anger and the seventh class had a focus on loving-kindness meditation. Furthermore, certificates were distributed at the end, which had great personality significance for many of the participants. Mindfulness has also been used in case studies with gay and intercultural couples to facilitate communication and empathy (Greenan, 2010; Ting-Toomey, 2009). Clearly, more work needs to be done in identifying best practices for using mindfulness with diverse populations.

### *Mechanism of Change*

Given the impressive range of disorders that seem to respond to mindfulness interventions, researchers have also begun trying to identify the mechanisms of change: what exactly does mindfulness do that promotes change with such a wide range of physical and emotional concerns (Baer, 2003)? The following factors

have been identified as significant in the change process in mindfulness-based and mindfulness-informed therapies:

- *Trait mindfulness*: People who practice mindfulness regularly report more trait mindfulness (Baer, 2006).
- *Emotional regulation*: Mindfulness increases emotional regulation by allowing people to experience negative emotions mindfully and then enable them to choose adaptive behaviors in response (Gratz & Tull, 2010).
- *Self-compassion*: Mindfulness practices also increase one's sense of self-compassion, which is correlated with overall well-being and psychological health (Baer, 2010).
- *Decentering relationship to thoughts*: Mindfulness practices help clients "decenter" in relationship to their thoughts, meaning that thoughts are seen as transitory phenomenon rather than reflecting an essential truth about themselves or something else (Sauer & Baer, 2010).
- *Psychological flexibility*: Primarily studied in the context of ACT, people who practice mindfulness techniques increase in their psychological flexibility, which includes greater willingness to experience unpleasant or unwanted internal stimuli, such as thoughts, emotions, or physical sensations (Ciarrochi, Bilich, & Godsell, 2010).
- *Values*: Many mindfulness-informed approaches include identifying personal values and becoming more mindful of how one's choices support their values or not (Wilson, Sandoz, Flynn, Slater, & DuFrene, 2010).
- *Spirituality*: Although intentionally separated from their spiritual origin, mindfulness-based practices nonetheless seem to help people connect with their sense of spirituality, which is correlated with improved psychological functioning (Kristeller, 2010).
- *Working memory*: Mindfulness practice appears to improve working memory capacity, which in turn increases one's capacity to regulate negative affect (Jha, Stanley, & Baime, 2010).
- *Neurological changes*: Neurological studies also indicate that mindfulness has measurable effects on the brain and its structures (Treadway & Lazar, 2010; see section "Mindfulness and the Brain").

## Mindfulness for Couples

Numerous couples therapists have begun exploring the potentials of mindfulness and related Buddhist principles to help both distressed and nondistressed couples (Carson, Carson, Gil, & Baucom, 2004; Christensen, Sevier, Simpson, & Gattis, 2004; Gale, 2009; Gehart, 2004; Gehart & Coffey, 2004; Gehart & McCollum, 2007; Gehart & Pare, 2009; McCollum & Gehart, 2010; Peterson, Eifert, Feingold, & Davidson, 2009; Ting-Toomey, 2009). In comparison with treatments for other adult mental health issues, the most notable difference in these mindfulness-based

approaches are (a) the use of loving-kindness and compassion-based exercises, and (b) the emphasis on acceptance. In addition, researchers have also begun examining the clinical implications of the relationship between adult attachment styles and mindfulness (Shaver, Lavy, Saron, & Mikulincer, 2007; Walsh, Balint, Smolira, Fredricksen, & Madsen, 2009).

### ***Loving-Kindness Meditation***

Loving-kindness meditation is derived from the later Mahayana and Vajrayana (Tibetan) Buddhist traditions, which emphasize the *bodhisattva* ideal, which is to delay one's own enlightenment out of compassion for others (Dalai Lama, 1996). With compassion as their primary if not sole motivating force, the bodhisattva chooses to accept rebirth (and the suffering it entails) in order to help all beings achieve enlightenment, which has several parallels with the Christ in Christian traditions. Loving-kindness meditation allows practitioners to develop bodhisattva-like compassion for all beings: other humans, living creatures, spiritual beings, and the most difficult, oneself.

Loving-kindness meditation typically involves sending well wishes to various others ("May all beings be free of suffering, safe, happy, and well..."; Hahn, 1997). Alternatively or in addition, it may involve breathing *in* the suffering of others and breathing *out* healing and blessings to others based on the idea that the practitioner (following the lead of bodhisattvas) transforms the negative energy into positive energy, a practice which differs significantly from many similar behavioral stress-relieving exercises in which the mediator breathes *out* the negative and takes *in* the positive. Research on loving-kindness meditations indicates that its practitioners experience an increase in daily positive emotions over time as well as increased mindfulness, sense of life purpose, social support, and overall physical health (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). Loving-kindness meditation has clear implications for both distressed and nondistressed couples to help them develop greater compassion and goodwill toward each other.

Encouraged in many mindfulness-based approaches to working with couples (Carson et al., 2004; Gale, 2009; Gehart & McCollum, 2007), loving-kindness meditation is one of the central features of mindfulness-based relationship enhancement (MBRE). The only mindfulness-based couple approach that has been researched in a randomized trial (Carson et al., 2004; Carson, Carson, Gil, & Baucom, 2006, 2007), MBRE is directly modeled after the MBSR group format, including eight weekly 2.5 hour meetings and one full-day (7 hour) weekend retreat during the sixth week. Similar to other couple enrichment programs such as the Premarital Relationship Enhancement Program or the Minnesota Couples Communication Program, MBRE was designed to strengthen relatively happy and satisfying relationships rather than treat couples in distress and is based on the assumption that it is easier to prevent marital problems through education than fix them (Halford, Markman, Kline, & Stanley, 2002). MBRE distinguishes itself from existing couple enrichment programs by emphasizing stress coping skills in addition to communication and intimacy.

MBRE has several features to enhance couple intimacy that distinguishes it from MBSR:

- Emphasis on loving-kindness and compassion meditations
- Mindful communication skills
- Partner versions of yoga exercises
- Mindful touch (backrub exercise)
- Eye-gazing exercise
- Mindful attention to *shared* pleasant and unpleasant activities

Carson et al. (2006) suggest that mindfulness can be helpful to couples in four specific ways:

1. Bringing nonjudgmental awareness to one's experience generates insights that are applicable to interpersonal relationships.
2. The practice of mindfulness involves acceptance of oneself as is, which facilitates acceptance with others.
3. Although not its primary goal, mindfulness induces relaxation and reduces the stress-state, which can translate to a calmer approach to difficulties in the relationship.
4. As many mindfulness practitioners report an expansion of self, this translates to a greater sense of trust, love for others, and connectedness with a greater whole.

In their 2007 analysis of data from their 2004 study, Carson et al. found that joint participation in self-expanding activities was the primary variable response for positive outcomes in MBRE, accounting for more change than acceptance and relaxation. Although these findings are preliminary, they indicate that therapists may want to emphasize shared couple activities, such as mindfulness-based yoga and meditations, that are novel and arousing, which have been correlated with positive marital satisfaction (Aron & Aron, 1997).

### ***Acceptance-Based Couples Approaches***

Two behavioral approaches emphasize promoting acceptance when working with distressed couples: integrative behavioral couples therapy (Christensen & Jacobson, 2000; Christensen et al., 2004) and acceptance and commitment therapy for couples (Harris, 2009; Peterson et al., 2009). Both approaches integrate acceptance into behavior therapy for couples, with ACT also including mindfulness-based principles. Andrew Christensen added an emphasis of acceptance of partner behavior to his and Jacobson's Behavioral Couples Therapy in the hopes of increasing long-term effectiveness of the approach, which it did, resulting in integrative behavioral couple therapy, one of the best researched couple approaches. Recent studies (South, Doss, & Christensen, 2010) found that acceptance is distinct from relationship satisfaction and mediates the link between one's partner's behavior and both (a) one's relationship satisfaction and (b) one's own behavior. As acceptance was



not identified in the MBRE study with nondistressed couples, it is likely that acceptance may be a more significant issue for distressed couples.

Based on ACT (Hayes, Strosahl, & Wilson, 1999), ACT practitioners have recently begun adapting this approach for couples (Harris, 2009; Peterson et al., 2009). Among other things, interventions in ACT help clients (a) reduce their avoidance of distressing thoughts and emotions, (b) become less attached and identified with their thoughts (thought defusion), and (c) increase their commitment toward valued life directions; all of which are useful for improving distressed couple relations where partners often avoid distressing issues and/or become convinced of negative stereotyping of their partner. A preliminary case study with two couples (Peterson et al., 2009) indicates that ACT may be a useful approach for helping couples increase marital satisfaction and adjustment as well as reduce interpersonal and psychological distress.

The use of acceptance in ACT differs from IBCT (Peterson et al., 2009). In IBCT, couples are encouraged to increase their acceptance of their partner and decrease the desire to change him/her; thus, acceptance is focused *on one's partner*. On the other hand, ACT targets *one's own private reactions*. ACT encourages couples to mindfully accept their internal reactions to their partner while simultaneously recognizing that their negative internal evaluations are thoughts that may not be accurate and need not be acted upon. ACT also uses acceptance of one's internal reaction to help clients not become fused with these thoughts to increase their response flexibility.

### ***Adult Attachment and Mindfulness***

In addition to research on acceptance and couples therapy, a handful of studies have begun to explore the relationship between adult attachment patterns and mindfulness. In a study of 70 attendees of a 3-month meditation retreat, Shaver et al. found that mindfulness was negatively correlated with anxious and avoidant attachment styles. More specifically, those with anxious attachment styles had greater difficulty with the *nonjudgmental* aspects of mindfulness and those with *avoidant* attachment styles struggled more with being in the present moment compared to participants with secure attachment styles (Shaver et al., 2007).

In a study of trait mindfulness, Walsh et al. (2009) found that attachment anxiety and attachment avoidance were both negatively correlated with trait mindfulness. The authors of this study suggested that mindfulness might be useful for helping adults form more secure relationships. Similarly, Saavedra, Chapman, and Rogge (2010) found that high levels of trait mindfulness buffered relationships from the effects of high levels of attachment anxiety. These findings related to attachment and mindfulness may be of particular relevance for therapists using emotionally focused therapy (EFT; Johnson, 2004), an evidence-based couples model that integrates attachment, systems, and experiential theories. Mindfulness may be an additional resource for EFT therapists helping couples to develop more secure attachment styles and improved relations (Gambrel & Keeling, 2010).



## **Mindfulness with Children, Adolescents, and Parents**

Jon Kabat-Zinn and his wife Myla (1997) were the first to describe how the tenants of MBSR could be translated to parenting and family life. As interest in mindfulness has grown, increasing numbers of practitioners have been eager to adapt mindfulness for working with children as young as 7, teens, and their parents (Thompson & Gauntlett-Gilbert, 2008). Although research on mindfulness-based interventions with children and adolescents is in its early stages, the current evidence provides support for the feasibility and acceptability of the approach with these populations (Burke, 2010). Furthermore, a recent analysis of 16 studies on sitting meditation with youth found only slightly smaller effect sizes than those compared to adults, ranging from 0.27 to 0.70 for behavioral/psychosocial outcomes and 0.16–0.29 for physiological outcomes (Black, Milam, & Sussman, 2009).

Work with children and their families has focused on the following issues and populations:

- (a) Adapting mindfulness for work with children and adolescents
- (b) Mindfulness for parents
- (c) Mindfulness for children with ADHD
- (d) Mindfulness for adolescents with conduct and substance abuse issues

### ***Adapting Mindfulness for Children***

One of the more recent developments in mindfulness, adapting mindfulness practices for young children and adolescents is a rapidly growing area of interest, primarily because of the potential to help with attention and behavioral issues without medication. Pioneers in this area, Goodman and Greenland (2009; Goodman, 2005; Greenland, 2010) have developed creative mindfulness practices for young children that emphasize labeling emotions, metaphor, visualization, and mindfulness-based games and playful activity. In addition, four influential mindfulness-based approaches—MBSR, MBCT, DBT, and ACT—have been adapted for use with children and adolescents (Greco & Hayes, 2008; Semple et al., 2006). In other contexts, school-based mindfulness programs have also been successfully piloted for feasibility and acceptability as well as for appropriateness with ethnically diverse children (Liehr & Diaz, 2010; Mendelson et al., 2010).

Mindfulness programs for children are taught in child-only and parent–child formats. In all cases, mindfulness practices are taught in child-friendly ways, such as mindful eating, walking, speaking, listening, body scans, and guided breathing. The group sessions are generally much shorter than with adults, 45–60 minutes, and the homework is also very brief and anchored to CD recordings and worksheets.

Research on these approaches is in its infancy, but is promising. For example, a randomized clinical trial of MBCT for children (MBCT-C; Semple et al., 2006, Semple, Lee, Rosa, & Miller, 2010) found that all children who completed the

program showed significant improvements in attention and those who initially had elevated anxiety showed a reduction in anxiety and behavior symptoms as well.

Several guidelines have been proposed for using mindfulness with young children (Goodman, 2005; Goodman & Greenland, 2009; Semple et al., 2006; Thompson & Gauntlett-Gilbert, 2008):

- *Keep it fun*: To engage young children, the activities must be fun and can include adaptations of familiar childhood games and activities, such as blowing bubbles, listening to birds, or eating an apple.
- *Serve as a role model*: Even more critical with children, adults must “walk their talk,” which in this case involves providing a role model for how to practice mindfulness and inspiration for doing so.
- *Include real world practices*: Traditional mindfulness practices are adapted for children and adolescents by making them more active, real world, and hands-on (e.g., having children mark down on paper each time they hear a bell ring or, or adolescents, “mindful texting”).
- *Label emotions*: Mindful activities help children learn, notice, and label emotions; they can also be encouraged to see them as “visitors” rather than part of their identity.
- *Use metaphors*: Child-friendly metaphors, such as the “non-judgment” used when training a puppy, are used to help teach concepts.
- *Reinforce learning with repetition*: Even more than with adults, children benefit from repetition, such as repeating a lesson in various ways within a session and beginning each session with a review of the last.
- *Include breath awareness*: As with adults, breath awareness can be readily used in everyday life and should be included in work with children.
- *Encourage kindness meditations*: Loving-kindness meditations are a highly relevant and practical activity for children; the visualization element may make it easier for children than breath meditation.
- *Offer more explanation*: More, simpler, and entertaining explanations for mindfulness practices help engage and motivate children and adolescents to learn (e.g., habits of mindless eating).
- *Provide variety*: Child programs must balance enough variety to keep children’s attention with sufficient repetition to build skills.
- *Involve parents*: Parents should be educated and involved as much as possible, especially when working with young children.
- *Adapt for classrooms*: When conducting sessions in nonclinical classroom setting, avoid practices that encourage deep states of meditation or introspection.
- *Length of practice and activities*: Rather than 25 minutes or more of practice, child programs typically use homework assignments that are 3–5 minutes long. Similarly, in-session activities should be short enough to maintain children’s attention.
- *Smaller group size*: Groups of 6–8 children with two facilitators are used in MBCT-C.

### ***Mindful Parenting***

Mindfulness has been used to help parents improve their parenting both in group and family modalities. Three different structured group programs have been created by integrating mindfulness into existing, well-established behavioral parenting programs: mindful parenting, mindfulness-based parent training, and mindfulness-based childbirth and parent education. In addition, case studies with parents receiving individual mindfulness interventions offer promising directions for helping families work together to help children with developmental and externalizing behaviors.

*Mindful parenting.* In their Mindful Parenting program based on the behavioral Strengthening Family Program, Duncan, Coatsworth, and Greenberg (2009a, 2009b) integrate mindfulness to help parents increase their ability to intentionally bring moment-to-moment awareness to interactions with their children. The program is designed to help parents increase their emotional awareness, improve their abilities to regulate their own emotions, and bring greater acceptance and compassion to their parenting relationships. In a recent randomized pilot study, Coatsworth, Duncan, Greenberg, and Nix (2010) found that parents and youth in this program had comparable effects on child management practices and stronger effects on the parent–child relationship, which were mediated by increased parental mindfulness. These findings highlight the importance of parental emotional self-regulation and awareness in improving the parent–child relationship.

*Mindfulness-based parent training.* Integrating mindfulness into a traditional Behavioral Parenting Training Program (BPTP), Dumas (2005) developed Mindfulness-Based Parent Training to reduce the automatic and rigid behavior patterns that typically characterized problematic parent–child relationships. Unlike traditional behavioral parenting programs based on operant conditioning, Dumas’s model assumes that the problem interactions develop through repetitive, mindless interactions that become habitual. In this program, parents learn to become mindful of these, disengage themselves through awareness, and choose more effective strategies for relating to their children.

*Mindfulness-based childbirth and parenting.* Based on the MBSR format, mindfulness-based childbirth and parenting is designed for pregnant women in their third trimester to help them through pregnancy, childbirth, and the transition to becoming a parent parenting (Duncan & Bardacke, 2010). This 9-week group program with a retreat and reunion (with babies) introduces a mindfulness awareness body scan (which should not be confused with progressive relaxation in which participants *try* to relax their bodies) as the first formal meditation practice to help participants more skillfully relate to the physical discomfort of the third trimester as well as develop skills for the birthing process. The course emphasizes the mind-body connection in the birthing process and how psychological stress can negatively affect labor. The program also includes mindful yoga and a pain meditation, in which participants meditate on the physical pain sensations of holding ice to

learn how to skillfully work with the pain of labor. The initial pilot study on this program showed large effect sizes ( $>0.70$ ) with increased mindfulness and positive affect and decreased maternal anxiety, depression, and negative effect.

*Mindfulness case studies with parents.* In studies with parents with clinical issues, Singh et al. (2007a, 2007b, 2010) have conducted studies with mothers of children diagnosed with developmental disabilities and ADHD. In both studies, the children's symptoms, such as aggressive behavior, social skills, and compliance, improved as a result of the mother's mindfulness parent training. In the study with ADHD, the children were taught mindfulness in the second half of the study, which resulted in further improvements. Similarly, MBSR has been found to significantly reduce stress symptoms in mothers of chronically ill children (Minor et al., 2006). Considered along with Siegel's interpersonal neurobiology and mindfulness work (see below), these findings suggest that parental ability to be mindfully in the present moment and self-regulate may be an important factor when working with childhood attentional and externalizing symptoms.

### ***Children and Adolescents with ADHD***

As mindfulness is a practice that involves sustained attention and is known to increase self-regulation, clinicians have logically begun exploring its applicability to treat ADHD, a disorder that is characterized by a lack of these abilities (Zylowska et al., 2008, 2009). Furthermore, as ADHD often involves the underfunctioning of the prefrontal cortex functions such as attention, working memory, and inhibition, then the potential for mindfulness to strengthen its functioning provides a hopeful new approach to its treatment. In fact, researchers are exploring the possibility that it may not only remediate ADHD symptoms but actually provide a potential for rehabilitation and correction (Zylowska et al., 2009). Consistent mindfulness training appears to automatize present-moment awareness, thus reducing the potential for daydreaming or spacing behaviors that are associated with ADHD. Furthermore, emerging research indicates that affect regulation is a significant issue in ADHD, thus providing additional reasons to explore the use of mindfulness for persons diagnosed with this disorder.

A handful of studies have examined the possibility of using mindfulness-based training programs based on MBSR with preteens (Singh et al., 2010) and teens (Zylowska et al., 2008). Singh et al.'s (2010) small study with two 10–12-year-olds involved teaching mother's mindfulness first, which resulted in improved child compliance to parental requests without intervention directly with the children; in the second phase of the study, the children were then taught mindfulness, which resulted in further improvement in the child's compliance, providing preliminary support for involving both parents and children. In a feasibility study that included adults and teens diagnosed with ADHD, Zylowska et al. (2008) found prepost improvements in self-reported ADHD symptoms as well as improvements on tests that measured attention, cognitive inhibition, depression, and anxiety.

### ***Children and Adolescents with Conduct Issues***

Mindfulness has also been used with children and adolescents with conduct issues to help them use awareness to increase their ability to regulate their emotions and behaviors. For example, in a small case study of three adolescents in danger of expulsion, Singh et al. (2007a, 2007b) used mindfulness to successfully enable all three to significantly decrease their aggressiveness to socially acceptable levels that enabled them to graduate. Similarly, ACT has been specifically adapted to youth with externalizing disorders, teaching them to accept their emotions, defuse (cognitively detach) from their emotions, and choose action based on personal values (Twohig, Hayes, & Berlin, 2008). Additionally, MBCT-C has been adapted for work with externalizing and internalizing disorders (e.g., depression, anxiety, etc.) in children and was successfully piloted in a feasibility and acceptability trial (Lee, Semple, Rosa, & Miller, 2008).

In the Netherlands, Bögels, Hoogstad, van Dun, de Schutter, and Restifo (2008) developed an 8-week mindfulness program for children and adolescents diagnosed with externalizing disorders (e.g., behavior and conduct issues) and simultaneously had their parents attend a mindfulness parenting training. After treatment, the children performed better than wait-list controls on sustained attention tasks and reported significant reductions in externalizing and internalizing symptoms and greater levels of happiness; their parental reports suggested similar changes. These preliminary studies suggest that mindfulness may be helpful for helping youth with severe conduct issues learn to improve their awareness of emotion, increase their ability to self-regulate, and significantly reduce their aggressive behaviors.

## **Mindfulness and the Brain**

### ***Studies on the Neurological Effects of Mindfulness and Meditation***

Recent advances in neuroscience have allowed researchers to study the effects of mindfulness practice on brain structures and processes. In the first study of its kind, Davidson et al. (2003) found that nonclinical participants in a 8-week MBSR program had significantly increased left-sided anterior activation, a brain pattern associated with positive dispositional affect (a happy temperament and resilience under stress), as well as improved immune functioning.

Similarly, in a study of brain structure, Hölzel et al. (2010) found that nonclinical participants in an 8-week MBSR program not only reported a subjective experience of less stress but also had a decrease in right basolateral amygdala gray matter density, an area of the brain associated with the stress response. Similarly, Hölzel et al. (2011) found that MBSR participants had an increase in gray matter concentration within the left hippocampus, a region involved in learning and memory processes, emotion regulation, self-referential processing, and perspective taking. Together,

these studies provide preliminary evidence that mindfulness training may improve both brain process and structures to promote greater well-being.

Several related studies conducted on experienced meditators and persons with higher levels of trait mindfulness (a person's default tendency to spontaneously engage in mindfulness) have also considered brain functioning. Vestergaard-Poulsen et al. (2009) found that experienced meditators had higher gray matter density in the lower brainstem in regions associated with cardiorespiratory control, which may account for the parasympathetic (relaxation) effects of meditation as well as some of the cognitive and emotional effects. Similarly, van den Hurk, Gionmi, Gielen, Speckens, and Barendregt (2010) found that experienced meditators had more efficient attentional processing, including faster responses and fewer errors, than control subjects. In a study considering the correlation of trait mindfulness and brain activity, Modinos, Ormel, and Aleman (2010) found that persons with higher trait mindfulness had increased dorsomedial prefrontal cortex activation and decreased amygdala response to negative scenarios. These findings suggest that dispositional mindfulness may help us to exert more cognitive control over negative emotion. Researchers in China have conducted a series of studies indicating that meditation increases activity in the anterior cingulate cortex, which is believed to govern self-regulation (Fan, Tang, Ma, & Posner, 2010; Tang et al., 2007, 2010, 2009).

In sum, these neurological studies indicated that mindfulness and meditation might affect the brain to produce the following effects:

- Improved physiological ability to regulate one's stress response and emotions
- Increased brain patterns associated with a happy disposition
- Better memory and attention
- Greater ability to consider alternative perspectives

### ***Siegel's Theory of Neural Integration and Mindfulness***

Seminal interpersonal neurobiology theorist and mindfulness researcher, Siegel's (1999, 2010b) neurological models provide exciting new insight into the interconnections of mindfulness, relationships, and the brain. Siegel (2009) proposes that mindfulness promotes positive changes in the brain by increasing *neural integration* in the middle prefrontal cortex. Neural integration is a brain pattern associated with a sense of well-being: "an integrated state enables the most flexible, adaptive, and stable states to be created within a dynamical, complex system" (Siegel, 2007, p. 198). He argues that neural integration characterizes wellness and that lack of integration (either rigidity, chaos, or both) is virtually synonymous with mental disorders (Siegel, 2009). In sum, integrative brain states are described as being flexible, adaptive, coherent, energized, and stable (FACES). In addition, secure parent-child and intimate relationships are also characterized by neural integration, and Siegel proposes that future research will find that "secure adult attachment and mindfulness traits go hand-in-hand" (p. 144); indeed, emerging research is bearing this out (see section "Adult Attachment and Mindfulness").

Based on his research, Siegel (2009) identifies nine characteristics of neural integration that are also correlated with secure attachment and mindfulness practice:

1. *Body regulation*: Regulation of the sympathetic and parasympathetic nervous systems that respectively regulate the stress and relaxation responses.
2. *Attuned communication*: Communication between two people in which they become part of a resonating whole, a characteristic of secure attachment.
3. *Emotional balance*: Maintaining an optimal flow of arousal that results in a sense of emotional balance and regulation.
4. *Fear modulation*: The ability to modify a fear once an experience triggers a response, thus unlearning the anxiety and choosing a more appropriate response.
5. *Response flexibility*: The ability to pause and choose a response rather than mindlessly reacting to a situation out of habit.
6. *Insight*: An increased awareness and understanding of the self, in relation to the past, present, and future.
7. *Empathy*: The ability to accurately imagine the perspective, emotions, and inner reality of another. Combining the processes of insight and empathy, Siegel (2010a) describes the ability to map one's own and another's mental world as *mindsight*.
8. *Morality*: Identifying and choosing action for the greater relational and social good.
9. *Intuition*: Nonverbal processing of experience that is able to come into awareness.

### **Secure Attachment to Self and Other: Inter- and Intrapersonal Attunement**

Secure attachments are characterized by integrative neural patterns. Siegel (1999) describes how parent–infant attachment in the first 3 years of life significantly affects brain development; infants need securely attached relationships with their parents in order for their brains to develop optimally. When this does not occur, children have more chaotic neural patterns and may develop emotional and behavioral disorders, such as attention deficit disorder, learning disabilities, and mood disorders. Thankfully, these childhood attachment patterns are not a life sentence. Once in a secure relationship, typically in an adult intimate relationship, the person can learn to develop a more secure attachment pattern.

*Interpersonal attunement*. Often correlated with secure attachment, Siegel (2009) describes how brains can become attuned with one another, resulting in changes in both parties' physiological, affective, and intentional states. Highly specialized in their functioning, *mirror neurons* map the internal states of another and provide a biological foundation for empathy. Although it is likely that mirror neurons originally developed to promote survival by identifying enemies, these neurons also enable humans to create and sustain intimate relationships.

Furthermore, mirror neurons enable a person to experience “what before may have been unbearable states of affective and bodily activation” (Siegel, 2006, p. 255).



Thus, in therapy, when a therapist and client are in relational attunement, the client is able to tolerate and “work through” difficult emotions and insights that otherwise result in emotional dysregulation. Clients can thereby increase their physiological capacity for affective and behavioral regulation.

*Intrapersonal attunement.* Siegel (2007) suggests that by encouraging a person to nonjudgmentally and compassionately observe one’s own mental processes, mindfulness practice enables a person to develop *intrapersonal attunement*, attunement with the self, using mechanisms similar to those associated with interpersonal attunement. This self-attunement can also be characterized as having a *secure attachment with the self*. Thus, mindfulness can also be understood as one of the few concrete and specific means for increasing self-compassion and acceptance.

### **Not Knowing and Nonjudging: Bottom-Up Processing**

Of particular interest to family therapists, Siegel (2007, 2009) suggests that many of the relational and psychological benefits of mindfulness result from an increase in *bottom-up processing*, a brain process that correlates to the *not knowing* stance frequently cited in family therapy literature (Anderson, 1997). Referring to when the bottom three cortical layers are used, *bottom-up processing* involves using one’s immediate lived experience to generate new understandings, categories, and stories for what is happening; bottom-up processing, like mindfulness, embraces uncertainty with curiosity and ease. In contrast, *top-down processing* refers when the top three layers of the cortex dominate mental processes and preexisting labels are used to interpret experience in a habitual way. Although necessary for coordinating the numerous routines of daily life, top-down processing reduces response flexibility and adaptability, and thus can lead to rigidity and eventually relational and mental health problems. The bottom-up processing encourages openness, growth, and flexibility, which are required to successfully adapt to new challenges and contexts. Furthermore, bottom-up processing allows people to redefine and reshape their personal identities with new experiences rather than remain enslaved to identity narratives that no longer serve them and/or are no longer accurate. Mindfulness is essentially an intense bottom-up processing practice, in which practitioners train the mind to focus on directly experiencing the moment with minimal top-down labeling to enable fresh, new experience.

### **Trauma and Integration**

As most therapists are well aware, trauma often results in extensive physiological, psychological, and relational problems, which Siegel theorizes is due to trauma impairing neural integration: “unresolved trauma makes a mind incoherent” (2010b, p. 190). In his model, posttraumatic stress disorder and similar trauma responses result from the brain separating implicit and explicit memory to cope with the

overwhelming event. When a person experiences an extreme trauma, the stress response is triggered, impairing the ability of the hippocampus to develop *explicit memories*. Explicit memories require conscious attention for encoding so that they can then be pulled up as a coherent, past “memory.” The stress response also activates the amygdala, which “sears” into implicit memory the traumatic event. Thus, traumatic events are stored primarily as *implicit memories*, which do not have the sensation of being from the past and often feel as though they are in the present; they are automatic and shape our here-and-now subjective experiences. These implicit memories result in chaotic and rigid patterns, impairing a person’s brain from entering integrated neural states associated with wellness. Resolving trauma requires that the focused attention of the hippocampus to pull together the various puzzle pieces of implicit memories related to the trauma into a coherent narrative. The positive effects of mindfulness on memory, attention, and emotional regulation have the potential to facilitate this process of trauma recovery.

## **Reflecting on Research**

Although still relatively new, the evidence base for mindfulness and its effects on physical, neurological, mental, and relational health is impressive and quickly growing. Few, if any, interventions commonly used in mental health cover such breadth or have similarly clear neurological explanations and evidence. Although much work is left to be done to better understand mindfulness and acceptance, the possibilities for more efficient and direct mechanisms of change are exciting. Mindfulness and acceptance have the potential to be highly teachable and pragmatic approaches for helping individuals, couples, and families improve their relationships by increasing their compassion for one another, developing secure attachments, becoming less reactive, and tolerating greater levels of intimacy.

# Part II

## The Practice of Mindfully Oriented Couple and Family Therapy

### Introduction to Part II

The existing evidence base for family therapy and mindfulness-related therapies provides the foundation for a comprehensive theory of love and well-being. Therapists can use this theory when working with couples and families as well as individuals presenting with relational concerns. This model is based on the assumption that satisfying relationships and a general sense of well-being involve three core relationships that can be developed through mindfulness and acceptance practices:

1. *Self*: An accepting relationship with oneself that includes an ability to regulate difficult emotions and thoughts.
2. *Other*: The ability to develop and sustain emotionally safe and satisfying intimate relationships with partners, parents, children, and significant persons in one's life.
3. *Life*: A sense of connection with life (e.g., God, the universe) that is characterized by a sense of safety, cohesion, and benevolence (or at least non-malevolence).

Mindfulness and acceptance practices can be used to help clients develop secure and safe relationships and overall well-being at each of these levels to promote optimal functioning, from the neurological level to the spiritual. These levels work in concert: the better one functions at one level the better that person can function at another.

The following chapters provide therapists with a flexible approach for helping clients improve their relationships with themselves and others based on emerging research on the mindfulness, relationships, and brain development, as well as what works in therapy. This approach includes the following:

- *A therapeutic relationship* based on mindfulness (Chap. 4).
- *A case conceptualization* approach that integrates mindfulness, acceptance, Buddhist psychology, and family therapy principles (Chap. 5).

- *Goal setting and treatment planning* based on research findings and Buddhist psychology principles (Chap. 5).
- Interventions for *teaching mindfulness* to individuals, couples, and families in everyday therapy settings (Chap. 6).
- Mindfulness- and acceptance-informed *intervention practices and principles* (Chap. 7).
- *Specific interventions* for special issues with couples and families (Chap. 8).