

Mindfulness Training and the Cultivation of Secure, Satisfying Couple Relationships

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Conscious efforts to improve relationships may fall short because the skillful navigation of relationships depends as much on automatic internal processes that occur outside of awareness as it does on conscious intentional effort. A growing body of research suggests that a particular form of mental training, mindfulness meditation, may improve the way the brain automatically processes and organizes relationship-relevant cognition and behavior. Mindfulness training appears to promote structural and functional changes in neural circuits that mediate attention, regulate physiology and emotion, and enhance or inhibit the capacity for empathy. After reviewing behavioral benefits and neural changes associated with mindfulness training, studies investigating the relationship between mindfulness and intimate relationship satisfaction and stability are examined. Efforts to integrate elements of mindfulness training into educational programs and therapies for couples are then reviewed.

Keywords: mindfulness, meditation, neuroscience, couples, therapy

Thanks to a series of longitudinal studies over the past 30 years, the interpersonal habits that characterize partners who have satisfying long-term couple relationships are well-documented (Gottman, 2011). By measuring the relative presence/absence of these habits, researchers have been able to predict the fates of specific relationships—in some studies, with up to 94% accuracy (Gottman, 1999). Compared with partners who were headed toward relationship dissolution, successful partners were more able to avoid criticism, defensiveness, contempt, and stonewalling during conflict; “turn toward” and tune in to their partners in response to “bids” for connection (vs. ignoring or avoiding); avoid responding to their partners’ negative affect with their own negative affect (negative affect reciprocity); avoid the tendency to read negativity into neutral or positive statements or actions made by their partners; engage in at least five positive interactions for every negative in-

teraction with their partners; repair damage done during arguments; avoid distress-maintaining thoughts about their partners after arguments; recover quickly from physiological arousal during and after disagreements; help their partners recover from diffuse physiological arousal (DPA) during and after disagreements; accept influence from their partners (vs. being defensive and unwilling to compromise); bring up complaints without blame or criticism (soft startup); shift attention from frustrations to possibilities; and express fondness and admiration toward their partners on a regular basis (for a review, see Gottman, 2011).

Information from the studies predicting relationship success is valuable for those who are motivated to put effort into improving their relationships. However, the skillful navigation of relationships depends as much on automatic internal processes that occur outside of awareness as it does on conscious intentional effort (Adolphs, 2009). For example, people vary in their ability to accurately interpret the intentions and motivations of others. Some people effortlessly and skillfully pick up on meaningful cues, whereas others are oblivious to the same sort of cues (Davidson, 2012). Automatic internal processes such as those involved in social intuition are thought to be part of what makes up a person’s social aptitude or social intelligence

Special thanks to Eileen and Alan Walts for assistance with manuscript preparation.

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(Goleman, 2006). The brain does much of the work involved in social intelligence without conscious awareness. Each person's brain uniquely biases perception, generates emotion, releases stress-related hormones, mirrors the emotional states of others, and generates varying degrees of need to connect with others. The specific ways that automatic processes such as these operate in any individual appear to be partly genetically determined and partly shaped by experience. In either case, reflexive internal processes are central to a person's social aptitude. Intentional efforts to improve one's relationship can only take a person so far. Relationship improvement may at least partly hinge on changing the way the brain automatically selects what to pay attention to and what to ignore, regulates mood, and processes relationship-relevant experience and information (Goleman, 2006).

With new technologies for studying the brain, the neural mechanisms involved in social processing (both conscious and automatic) are increasingly apparent (Adolphs, 2009; Goleman, 2006). Crucial brain areas include the prefrontal cortex, anterior and posterior cingulate cortex, insula, amygdala, hippocampus, and temporoparietal junction, among others (Adolphs, 2009; Bar-on, Tranel, Denburg, & Bechara, 2003; Cozolino, 2010; Davidson, 2012; Lewis, Rezaie, Brown, Roberts, & Dunbar, 2011; Powell, Lewis, Dunbar, Garcia-Finana, & Roberts, 2010; Siegel, 2007). Many studies over the past few decades have established that the structure, health, and functionality of the brain can change in response to certain kinds of activity, a process known as *neuroplasticity* (Pascual-Leone, Amedi, Fregni, & Merabet, 2005; Pascual-Leone et al., 2011). The discovery of the brain's neuroplasticity has spurred a search for experiences and activities that can promote beneficial changes in the structure and functioning of the brain. Just as physical exercise promotes muscular growth and strength, there may be forms of mental exercise that can promote growth and strengthening of the brain (Davidson, 2012). Mental practices for strengthening brain circuits that process and regulate affect, social cognition, and social behavior could be especially significant for people who are in search of more satisfying couple relationships (Atkinson, 2005; Atkinson et al., 2005).

Mindfulness

In the past decade, dozens of studies have emerged suggesting the effectiveness of a particular type of mental practice for promoting changes in the brain's social circuitry (Hölzel et al., 2011b). Variations of this method share the goal of cultivating a state (and an enduring trait) of *mindfulness*. Mindfulness involves a state of mind that is purposeful, nonreactive, nonjudgmental, and attuned to the present moment (Baer, 2003; Bishop et al., 2004; Carmody, 2009; Kabat-Zinn, 1990). It has shown to be cultivated and strengthened through a process known as mindfulness training (Baer, 2011). The most well-known and well-researched form of mindfulness training is Mindfulness-Based Stress Reduction (MBSR), an 8-week program of systematic training in meditation as a self-regulatory approach to stress reduction and emotion management (Kabat-Zinn, 1990). However, many other mindfulness training courses exist across the country, including self-guided programs accompanied by audio-guided meditations (Salzberg, 2011; Williams & Penman, 2011). Elements of mindfulness have been incorporated into evidence-based treatment models such as Acceptance and Commitment Therapy for a wide range of psychological problems (Hayes, Luoma, Bond, Masuda, & Lillis, 2006) and Dialectical Behavior Therapy for the treatment of borderline personality disorder (Linehan, 1993).

Nearly all mindfulness training programs rely heavily on specific forms of meditation. In fact, the terms "mindfulness training" and "mindfulness meditation" are often used interchangeably, although many mindfulness training programs also include exercises that do not involve formal meditation. Meditation has been used in Buddhist practice for >2,500 years, in part because of its perceived value in promoting self-regulation, self-awareness, empathy, compassion, and other qualities that are now understood to be elements of social and emotional intelligence (Goleman, 1995, 2006). Contemporary mindfulness practices draw inspiration to varying degrees from the historical Buddhist methods, but they are practiced with a secular mindset and their effectiveness is evaluated with scientific tools (including brain imaging technologies such as functional magnetic resonance imaging [fMRI] and positron emission

tomography). Three types of meditation are used most often in mindfulness training (Vago & Silbersweig, 2012). *Focused attention* meditation involves adopting the intention to keep one's focus of attention on a particular object, such as the breath, a visualized image, or sensations in the body. When the mind wanders, the practitioner avoids self-judgment and simply brings attention back to the chosen object of focus. *Open monitoring* meditation involves monitoring the content of one's experience from moment-to-moment, attending fully to whatever is present (sensations, thoughts, feelings, etc.) in an accepting and a nonjudgmental way. The third type of meditation involves focusing one's attention in a way that cultivates empathy and compassion for self and others. Known as *compassion* or *loving-kindness meditation*, this practice has been brought to secular society largely through the writings of the Dalai Lama (2001). It focuses on challenging one's unexamined thoughts and emotions toward other people, and developing feelings of empathy and love for people, beginning with oneself and extending, eventually, to those with whom one has conflicts and/or dislikes.

Considerable research has documented the beneficial effects of meditation in treating a variety of clinical disorders, including anxiety, depression, eating disorders, substance abuse, and chronic pain (Davis & Hayes, 2011; Davis & Kurzban, 2012; Grossman, Niemann, Schmidt, & Walach, 2004; Hofmann, Sawyer, Witt, & Oh, 2010; Keng, Smoski, & Robins, 2011; Klainin-Yobas, Cho, & Creedy, 2012). Mindfulness meditation has also been shown to positively influence physical health (Kok, Waugh, & Fredrickson, 2013)—reducing blood pressure and cortisol levels (Carlson, Speca, Faris, & Patel, 2007), improving immune function (Carlson et al., 2007; Davidson et al., 2003), promoting resolution of psoriatic lesions in patients with psoriasis (Kabat-Zinn et al., 1998), and increasing telomerase activity (Jacobs et al., 2011). Mindfulness increases psychological well-being in healthy participants (Carmody & Baer, 2008; Chiesa & Serretti, 2009), enhances cognitive functioning (Jha, Krompinger, & Baime, 2007; Ortner, Kilner, & Zelazo, 2007; Pagnoni & Cekic, 2007; Slagter et al., 2007; Vago & Silbersweig, 2012), and improves relationship satisfaction (Davis & Hayes, 2011).

The Neurobiology of Mindfulness

Evidence from controlled studies suggests that mindfulness training promotes growth and development in specific areas of the brain that are known to be involved in processing and organizing social/emotional experience and behavior (Davidson, 2012; Siegel, 2007). Across 17 different studies, meditators have been found to have increased volume, density, and/or gyrification in socially relevant areas of the brain when compared with nonmeditating controls (Grant, Courtemanche, Duerden, Duncan, & Rainville, 2010; Grant et al., 2013; Hölzel et al., 2008, 2010, 2011a; Kang et al., 2013; Lazar et al., 2005; Leung et al., 2013; Luders, Clark, Narr, & Toga, 2011; Luders, Toga, Lepore, & Gaser, 2009; Luders et al., 2012a, 2012b, in press; Pagnoni & Cekic, 2007; Tang et al., 2010; Tang, Lu, Fan, Yang, & Posner, 2012; Vestergaard-Poulsen et al., 2009). Dozens of additional studies (reviewed by Cahn & Polich, 2006; Chiesa & Serretti, 2010; Edwards, Peres, Monti, & Newberg, 2012; Hölzel et al., 2011b; Rubia, 2009; Vago & Silbergberg, 2012) document functional and connective changes within and between brain regions in response to mindfulness meditation. Most of the studies have compared the brains of experienced meditators with matched nonmeditator controls. However, several recent studies have used randomized controlled clinical trials to examine the effect of short-term periods of meditation on the brain. In eight separate randomized studies (Allen et al., 2012; Mascaró, Rilling, Negi, & Raision, 2013; Moore, Gruger, Derose, & Malinowski, 2012; Rosenkranz et al., 2013; Tang et al., 2007, 2009, 2010, 2012), researchers found that short-term meditation caused structural or functional changes in the brain. In two studies, changes in brain functioning were found after as little as 3 hr of meditation training (Tang et al., 2007, 2009). The most widely cited brain areas of gross morphological change during and in response to both focused awareness and open monitoring meditation training are the dorsolateral prefrontal cortex, the anterior cingulate cortex (ACC), and the insula (Vago & Silbersweig, 2012). As data accumulate, researchers are finding that they can recognize the characteristic changes often found in meditators' brains. In one study using multivariate pattern recognition (a prominent tool for analyzing neuroimaging

data) along with automated morphometric analysis to examine brain structure, researchers were able to distinguish regular meditators from nonmeditators with 94.87% accuracy (Sato et al., 2012).

The structures and processes of the brain that appear to be strengthened most by mindfulness meditation are considered part of the social brain circuitry—areas of the brain that mediate (1) open awareness and attention regulation, (2) the regulation of physiological arousal and emotion, and (3) empathy. In the following sections, studies relevant to each of these processes are examined.

Open Awareness and Attention Regulation

Abilities related to awareness and attention regulation are considered to be core features of both social and emotional intelligence (Goleman, 1995, 2006). People vary considerably in the degree to which they naturally pay attention to the details of their moment-to-moment surroundings. Some people notice small changes, whereas others are only vaguely aware of things that surround them—often being occupied instead with the execution of specific tasks, or with thoughts about the past or future. The degree of attentiveness that partners give to the details of their lives together has been found to predict relationship satisfaction and stability (Gottman, 2011). Researchers have found that people who are satisfied with their relationships notice and acknowledge each other's positive actions and qualities at higher rates than those who are dissatisfied with their relationships. In contrast, people who are in relationships headed for failure overlook positive actions and qualities in their mates. In one study, researchers found that distressed partners underestimate the frequency of positive comments or gestures made by their partners by 50% compared with objective raters (Gottman, 1999). Satisfied partners are considerably more attentive to the details of each other's internal psychological worlds. Their responses are more accurate when asked for details regarding their partners' preferences, they know more about their partners' worries and stresses on a daily basis, they are better at noticing things that make their partners feel good, and they are more aware of moments when their partners are making bids for attention (Gottman, 2011).

While the advantages of natural attentiveness in relationships seem clear, the ability to consciously regulate and focus attention may be just as important. During disagreements, most partners have a natural tendency to focus on the flaws in their mates' logic. Studies suggest that successful partners are more able to overcome this attentional bias, noticing positive behaviors of their partners during arguments and acknowledging understandable aspects of their partners' reasoning—even though they may not agree with their partners' conclusions (Gottman, 1999). Successful partners are also more able to avoid ruminating over negative events in their relationships than unsuccessful partners who tend to get caught in distress-maintaining thoughts (Gottman, 2011).

Studies using established measures of attention suggest that mindfulness meditation may improve abilities related to both *open awareness* (the automatic inclination and ability to notice details of moment-to-moment experience) and *attention regulation* (the ability to consciously direct one's attention in specific ways) (Hölzel et al., 2011b; Vago & Silbersweig, 2012). One of the areas of the brain most directly involved in attention regulation, the ACC (VanVeen & Carter, 2002), appears to be consistently strengthened through mindfulness training (Allen et al., 2012; Brewer et al., 2011; Cahn & Polich, 2006; Chiesa & Serretti, 2010; Farb, Anderson, & Segal, 2012; Hölzel et al., 2007; Ives-Deliperi, Solms, & Meintjes, 2011; Tang et al., 2009; Westbrook et al., 2013). Numerous studies document changes in ACC activity levels during meditation; one study found greater cortical thickness in the dorsal ACC in experienced meditators when compared with control subjects (Grant et al., 2010), and in two randomized clinical trials, an increase in white matter integrity involving the ACC was found in short-term meditators, whereas no comparable increase was found in the control subjects (Tang et al., 2010, 2012). During meditation, the repetitive process of (1) focusing attention, (2) noticing that attention has been pulled in another direction, and then (3) bringing attention back to the original focus is thought to be the central mechanism that promotes brain growth. Neuroscientist Richard Davidson (cited in Lucas, 2012) suggests that the repetitious processes of "noticing and bringing back" may

be the mental equivalent to physical weightlifting “reps” for strengthening the body.

In addition to strengthening brain processes involved in attention regulation, mindfulness meditation may change neural processes that facilitate open awareness. Studies show that meditators are better than controls at avoiding getting so preoccupied with some tasks or details that they are inattentive to others (Hölzel et al., 2011b; Slagter et al., 2007). Open awareness meditation appears to promote phase-locking of brain waves in a way that makes the meditator more receptive to outside information (Lutz, Greischar, Perlman, & Davidson, 2009). Although attention abilities tend to decline with age, one study found that older subjects who were experienced meditators showed rates of attentiveness that were comparable with younger subjects who had no meditation experience (van Leeuwen, Muller, & Melloni, 2009).

It is not difficult to see how the focused attention process in mindfulness meditation could strengthen the ability to be attentive to one’s partner. Partners in ailing relationships can often be heard saying things like, “You never listen to me!” Partners who have trouble being attentive when their mates are talking may be well-intended, but simply unable to prevent their minds from wandering or being sidetracked by reactions they have to what their partners are saying. Exercising the ability to notice when the mind has wandered or become sidetracked and then bringing attention back to the original focus is practiced through focused attention meditation, over and over again.

The potential benefits of open monitoring meditation for relationships are also clear. The simple act of noticing that your partner is wearing new clothes, or that he changed the cat litter, can have a cumulative positive effect on a relationship.¹ People who are inattentive to their partners’ moods, routines, or physical appearance often are not deliberately trying to ignore their partners. Their brains may simply be unaccustomed to paying attention to the details of their surroundings. In the open monitoring process, the meditator exercises the ability to tune into the details of her surroundings, paying attention to even small changes as they happen while avoiding getting so occupied with any particular aspect of experience that other important aspects are missed.

Regulation of Physiological Arousal and Emotion

The ability to regulate negative emotion during and after conflict has been consistently associated with relationship stability and satisfaction (Gottman, 2011). Especially important is the ability to avoid “negative affect reciprocity”—the tendency to respond to one’s partners’ expression of negative affect with one’s own negative affect. Negative affect reciprocity is the strongest and most consistent correlate of relationship dissatisfaction that has been identified across research laboratories worldwide (Gottman, 1999). Partners in ailing relationships demonstrate higher levels of “flooding”—a “state of feeling overwhelmed by one’s partner’s negative emotions and one’s own emotions as the partner brings up issues” (Gottman, 2011, p. 131). Flooding often involves DPA—the activation of the body’s alarm response, which includes an increased heart rate, an increase in how hard the heart contracts, an increase in constriction of the arteries, increased blood volume, reduced oxygen concentration in the blood, decreased blood supply to the gut and kidneys, secretion of adrenaline and cortisol, increased amygdala activation, decreased frontal lobe activation, and immunosuppression (Gottman, 2011). DPA begins when a heart rate climbs above 100 beats per minute. Researchers have found clear associations between DPA and relationship satisfaction (Kiecolt-Glaser, Bane, Glaser, & Malarkey, 2003; Kiecolt-Glaser et al., 2005; Levenson & Gottman, 1983, 1985). Gottman (2011) summarizes “The faster partners’ hearts were beating, the faster their blood was flowing, the more their hands were sweating, and the more they jiggled around in their uncomfortable chairs, the more their marital happiness declined in the next 3 years. The calmer they were, the more their marital happiness increased” (p. 127). One study found that in marriages headed for eventual divorce, husbands had heart rates that were an average of 17 beats per minute higher than those who were in stable marriages (Levenson & Gottman, 1985). Emotional flooding and DPA have been found to inhibit the use of humor,

¹ Gender pronouns are alternated throughout this article to avoid the cumbersome alternative of repeatedly using “him/her,” “hers or his,” etc.

creativity, creative problem-solving, empathy, and nondefensive listening (Gottman, 2011).

The positive effects of mindfulness meditation on physical and emotional regulation are well-documented (Hölzel et al., 2011b). People trained in mindfulness meditation show less reflexive emotional interference and physiological reactivity when completing tasks, decreased negative mood states, faster decrease in skin conductance response after aversive stimuli, less startle response in reaction to aversive stimuli, and less distractive and ruminative thoughts and behaviors. Mindfulness practices have been shown to increase parasympathetic tone and decrease sympathetic activity, resulting in decreased heart rates, blood pressure, cortisol levels, breathing rates, muscle tension, and lowered oxygen and carbon dioxide consumption (Hölzel et al., 2011b).

During emotion regulation, prefrontal control systems often modulate arousal of the amygdala, which detects emotionally significant stimuli (Beauregard, Levesque, & Bourgouin, 2001; Harenski & Hamann, 2006; Ochsner & Gross, 2005; Schaefer et al., 2002). The prefrontal cortex enables cognitive reappraisal—a process whereby initial negative appraisals are recast as being less negative. The reassuring information offsets the amygdala's alarm response, reducing amygdala activation (Ochsner, Bunge, Gross, & Gabrieli, 2002; Ochsner et al., 2004; Phan et al., 2005).

Studies have consistently found that mindfulness practice decreases amygdala activation (Brefczynski-Lewis, Lutz, Schaefer, Levinson, & Davidson, 2007; Creswell, Way, Eisenberger, & Lieberman, 2007; Desbordes et al., 2012; Goldin & Gross, 2010; Herwig, Kaffenbergre, Jancke, & Bruhl, 2010; Hölzel et al., 2010). However, with a few exceptions (Creswell et al., 2007; Hölzel et al., 2007; Modinos, Ormel, & Aleman, 2010), mindfulness-based reduction in amygdala activity occurs without the usual increase in middle prefrontal activity associated with cognitive reappraisal (Farb et al., 2007, 2010; Goldin, McRae, Ramel, & Gross, 2008). In fact, most studies have found that mindfulness *decreases* activity in the middle prefrontal structures (Farb et al., 2012; Hölzel et al., 2011b). Instead, mindfulness training seems to promote the recruitment of nonevaluative sensory pathways involving the thalamus, insula, and primary sensory regions (Farb et al.,

2012; Hölzel et al., 2011b). During mindfulness meditation, practitioners bring attention and acceptance to physical sensations associated with emotions while deliberately suspending evaluative processes (Salzberg, 2011; Williams & Penman, 2011).

The process of calming negative affect by turning toward and accepting the unpleasant physical sensations that accompany it appears to draw on neural mechanisms known to be involved in *exposure* and *extinction*. Mindfulness practitioners turn toward (expose themselves to) physical sensations involved in unpleasant emotions while disengaging from the habitual interpretative and evaluative responses that often restimulate further negative affect. As practitioners learn to (1) uncouple negative emotions from the cognitive associations that restimulate them while (2) engaging in processes that promote physiological soothing, they discover that emotions are transitory and need not be feared. The neural mechanisms mediating exposure and extinction are well-known, involving the ventromedial prefrontal cortex and hippocampus (Hölzel et al., 2011b). Both of these brain areas have shown structural changes (increased gray matter) after mindfulness meditation training (Hölzel et al., 2008, 2011a; Luders et al., 2009).

Given the clear relationship between emotional regulation and relationship satisfaction, studies documenting the effectiveness of mindfulness training in increasing emotional regulation abilities should be of interest to all who are concerned about relationship health. The ability to calm oneself despite real or perceived provocation from one's partner could help lessen negative affect reciprocity. The emphasis in mindfulness training on uncoupling negative emotions from the cognitive associations that restimulate them could reduce the tendency of partners to engage in distress-maintaining thoughts in the aftermath of conflicts.

Empathy

Many studies have shown empathy to be positively correlated with couple satisfaction and stability (Cohen, Schulz, & Weiss, 2012). Empathic accuracy enables partners to provide instrumental and emotional support to one another (Simpson, Orina, & Ickes, 2003; Verhofstadt, Buysse, Ickes, Davis, & Devoldre, 2008).

Empathic attunement during conflict appears to be especially important, and has been shown to moderate marital tension and conflict escalation (Carrère, Buehlman, Gottman, Coan, & Ruckstuhl, 2000). Partners who are more trusting of their mates' empathic motivations have been found to behave less cautiously and challenge their partners less during conflict (Rempel, Ross, & Holmes, 2001). Gottman (2011) found that the degree of empathy evidenced by partners in their interactions predicted whether a couple would stay together or eventually break up.

In the past decade, numerous studies suggest that mindfulness training may increase empathy (Beddoe & Murphy, 2004; Birnie, Speca, & Carlson, 2010; Block-Lerner, Adair, Plumb, Rhatigan, & Orsillo, 2007; Hutcherson, Seppala, & Gross, 2008; Krasner et al., 2009; Leiberg, Klimecki, & Singer, 2011). Mindfulness training appears to foster empathy by strengthening empathy-related brain processes. The neural mechanisms underlying empathy are well-known (Zaki & Ochsner, 2012). Relying mainly on fMRI, the majority of studies suggest that empathy is dependent on *experience sharing*—the vicarious experiencing of another person's emotion through activation of the same emotion in oneself (Bernhardt & Singer, 2012). For example, in one study, Avenanti, Buetti, Galati, and Aglioti (2005) demonstrated that watching a video of a needle pricking a specific hand muscle reduced motor excitability of the equivalent muscle in the observer, similar to the freezing response that would occur if pain was directly administered. Brain structures known to mediate experience sharing include the insula, ACC, superior temporal sulcus, inferior parietal lobule, and the premotor cortex (Zaki & Ochsner, 2012). In addition to experience sharing, the ability to infer the beliefs and desires of another person (*mentalizing*) is thought to contribute to empathy. Brain structures involved in mentalizing include the temporoparietal junction, temporal pole, precuneus, posterior cingulate cortex, and medial prefrontal cortex (Zaki & Ochsner, 2012).

Studies examining vicarious responses to emotional states such as social exclusion, disgust, and anxiety suggest that the ACC and insula are especially important in the shared experiencing process (Bernhardt & Singer, 2012). These structures are thought to be crucial

parts of the brain's resonance circuit—interconnected neural regions that enable a person to tune into or align their internal states with those of another person (Siegel, 2012). Both the insula and ACC are prominently involved in the process of interoception—awareness of the interior of the body. Whereas empathy is often equated with the ability to tune into another person, neuroscience discoveries suggest that the ability to tune into oneself may be just as important. Awareness of the subtleties of one's own emotional fluctuations from moment-to-moment in response to the emotions of others may be necessary to know experientially what others are feeling (Siegel, 2012).

Brain structures that mediate interoception are among the most frequently identified in neuroscientific studies of mindfulness, with 21 studies showing changes in the insula and/or ACC in response to mindfulness training (Allen et al., 2012; Brewer et al., 2011; Brown & Jones, 2010; Farb, Segal, & Anderson, 2013; Farb et al., 2007; Grant et al., 2010; Hanson et al., 2012; Hölzel et al., 2007, 2008; Ives-Deliperi et al., 2011; Lazar et al., 2005; Luders et al., 2012a; Lutz, Brefczynski-Lewis, Johnstone, & Davidson, 2008; Lutz et al., 2009; Lutz, McFarlin, Perlman, Salomons, & Davidson, 2013; Manna et al., 2010; Murakami et al., 2012; Paul, Stanton, Greeson, Smoski, & Wang, 2013; Tang et al., 2009, 2010, 2012). In one study using fMRI scans during compassion meditation (Lutz et al., 2008), the brains of experienced Tibetan monks with >10,000 hr of meditation experience were compared with those of novices. Researchers played various sounds while participants were in the magnetic resonance imaging tube: neutral (sounds in a restaurant), pleasant (a cooing baby), and distressing (a screaming woman). In monk after monk, the strength of insula activation in response to a woman's screams was greater during compassion meditation than in the resting state—and greater than the response of the novice meditators. The monks also showed greater activation than the novices in medial prefrontal cortex, the temporoparietal junction, the posterior superior temporal sulcus, and the posterior cingulate cortex—all areas that have been linked to reading other people's emotional and mental states (Davidson, 2012). In a follow-up study, Lutz et al. again found that compassion meditation experts had more activity in the ACC, insula, left somatosensory cortex, and

inferior parietal lobe in response to emotional sounds (2009). Similar brain effects have been found in meditators with considerably less experience (Klimecki, Leiberg, Lamm, & Singer, 2012).

A more recent study used a randomized, controlled, longitudinal design to investigate the effect of a cognitive-based compassion training (CBCT) on empathic accuracy (Mascaro et al., 2013). Healthy participants received fMRI scans while completing an empathic accuracy task (Reading the Mind in the Eyes Test [RMET]), both before and after completion of either CBCT or a health discussion control group. The RMET consists of black-and-white photographs that show just the eye region of people making various expressions. Those being tested had to judge what the person in the photograph was thinking or feeling. Participants randomized to CBCT were significantly more likely than control subjects to have increased scores on the RMET and increased neural activity in empathy-related brain areas. In a similar study examining neural processing while viewing expressions of emotion, experienced practitioners of both loving-kindness meditation and focused attention meditation showed differences in empathy-related brain activity compared with novices (Lee et al., 2012).

The link between experience sharing and empathy can be seen clearly in Levenson and Reuff's 1992 study of couple relationships. While measures of physiology (cardiac, vascular, electrodermal, and somatic muscle) were continuously taken, married partners watched videos of previous conversations they had engaged in with their mates. As they watched, they were asked to rate their perceptions of their partners' feelings at various points in the conversation. Raters' perceptions of their partners' feelings were most accurate when the raters' physiologies most closely matched the physiologies of their partners.

Given (1) the prominent role of the insula and ACC in experience sharing, (2) the link between experience sharing and empathy, (3) studies suggesting that mindfulness training increases behavioral indices of empathy and activity in the insula and ACC, and (4) the well-established associations between empathy and relationship satisfaction, mindfulness training may be an important means to improve couple relationships.

Mindfulness and Relationships

A goal of mindfulness training is to cultivate a state of mind that endures beyond moments of focused meditation. Researchers have devoted considerable energy to measuring the enduring trait of mindfulness (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Numerous studies have found associations between trait mindfulness and relationship quality/satisfaction (Kozlowski, 2012). Mindfulness has been positively correlated with marital satisfaction, empathic concern, and perspective taking (Wachs & Cordova, 2007); effective communication and adaptive response skills when faced with relational stress (Barnes, Brown, Krusemark, Campbell and Rogge, 2007); and greater consideration of one's partner's point of view (Burpee & Langer, 2005). Barnes et al. (2007) found that mindfulness may help to inoculate partners against relational stress.

A number of studies have examined the relationship between meditation experience and relationship quality. Haimerl and Valentine (2001) found that advanced meditators scored higher on the interpersonal cooperativeness scale (measuring social acceptance vs. intolerance, empathy vs. social disinterest, helpfulness vs. unhelpfulness, compassion vs. revengefulness, and pureheartedness vs. selfishness) than those who had less meditation experience. In a qualitative study (Pruitt & McCollum, 2010), experienced meditators reported less reactivity in relationships, greater freedom and safety in relationships, and a new understanding of the nature of connection between people. This finding was corroborated by Tloczynski and Tanriella (1998), who found that participants randomly assigned to meditation training, versus relaxation training, reported significant decreases in interpersonal problems 6 weeks later.

One of few experimental studies related to mindfulness and relationship quality was completed by Carson, Carson, Gil, and Baucom (2004). Adapting the MBSR program for non-distressed couples, Carson et al. created Mindfulness-Based Relationship Enhancement (MBRE). Couples participated in an 8-week MBRE course that included 30–45 min of daily practice six times a week and a single day-long mindfulness session. Mindfulness practice was facilitated through partner yoga poses, loving-kindness meditation, and mindful touch exer-

cises. Relative to wait-list controls, couples who participated in MBRE had significantly greater relationship satisfaction, autonomy, partner acceptance, and lower personal and relationship distress at posttest as well as at a 3-month follow-up. In a subsequent analysis of their data, Carson, Carson, Gil, and Baucom (2007) found that participation in self-expanding activities like mindful yoga was the primary variable responsible for positive outcomes.

Mindfulness and Sexuality

Meditation experience has been associated with increased sexual satisfaction as well as relationship satisfaction. In a qualitative study conducted by Brotto and Heiman (2007), experienced female meditators reported that mindfulness allowed them to be more aware and present during sex. Several reported a heightened awareness of arousal and believed that they had a greater understanding of their sexuality since beginning meditation practice. Inspired by these reports, Brotto et al. developed a mindfulness-based program for women experiencing sexual difficulties after gynecologic cancer (Brotto & Heiman, 2007; Brotto et al., 2008b). The program positively impacted sexual desire, arousal, orgasm, satisfaction, sexual distress, depression, and overall well-being, and facilitated a trend toward significantly improved physiological genital arousal and perceived genital arousal. Similar results have been found with a program for women with sexual disorders unrelated to cancer (Brotto, Basson, & Luria, 2008a) and women experiencing sexual difficulties related to a history of childhood sexual abuse (Brotto, Seal, & Rellini, 2012). Recent corroborating studies (Lazaridou & Kalogianni, in press; McCreary & Alderson, in press) along with a series of individual reports detailing the use of mindfulness methods in promoting promote increased sexual fulfillment (Goldmeier, 2013; McCarthy & Wald, 2013; Rosenbaum, in press; Sommers, 2013) suggest that interest in the mindfulness/sexuality connection may be on the rise.

Mindfulness and Attachment

There has been increasing discussion about the common features of mindfulness and the

state of mind found to be characteristic of adults who foster secure attachments with children and adult partners (Ryan, Brown, & Creswell, 2007; Shaver, Lavy, Saron, & Mikulincer, 2007; Siegel, 2007; Snyder, Shapiro, & Treleaven, 2012). Mindfulness promotes a reflective ability, allowing one to “step back” from thoughts, feelings, and interactions, freeing one from automatic or habitual responses. A similar “reflective function” ability in young children is facilitated by caregivers who have mindful qualities (Ryan et al., 2007). It may be no coincidence that both mindfulness and attachment security have been shown to promote increased relationship quality and satisfaction (Ryan et al., 2007; Shaver et al., 2007).

Many studies have found mindfulness to be positively related to secure attachment (Cordon & Finney, 2008; Goodall, Trejnowska, & Darling, 2012; Jones, Welton, Oliver, & Thoburn, 2011; Pepping, O'Donovan, & Davis, in press; Saavedra, Chapman, & Rogge, 2010; Walsh, Balint, Smolira, Fredericksen, & Madsen, 2009). Of particular note is a recently published report from what has been labeled the “Shamatha Project” (Sahdra et al., 2011). Participants, 30 in each group, were randomly assigned either to receive intensive meditation training first or to serve as wait-list controls who would receive training during a later 3-month retreat. The meditation group trained for 6 to 10 hr per day for 3 months at an isolated retreat setting. The training included practices that cultivated mindfulness of breathing, awareness of awareness, loving-kindness, compassion, empathic joy, and equanimity. The meditation group, compared with the wait-list group, showed decreases in both attachment anxiety and avoidance. Decreases were sustained in follow-up assessments conducted approximately 5 months after the training.

Siegel (2007) has proposed that internal attunement (as promoted in mindfulness training) and interpersonal attunement (which forms the basis for secure interpersonal attachments) may share the same neural processes. If this is true, mindfulness training may be a way for those with insecure attachment histories to strengthen their brains in the same ways as those who have had the benefit of caregivers who were attuned to them (Snyder et al., 2012). Preliminary studies of the neural mechanisms that mediate attachment provide confirmation of a significant

overlap between the brain processes involved in secure attachment and those known to be strengthened through mindfulness training (Vrticka & Vuilleumier, 2012).

Mindfulness-Based Educational Programs and Therapies for Couples

Mindfulness methods are among an array of neuroscience-inspired processes for helping couples improve their relationships that have recently emerged (Atkinson, 1998, 2005, 2010a; Atkinson et al., 2005; Fishbane, 2007, in press; Solomon & Tatkin, 2011). Guidance for therapists who wish to bring mindfulness into couples therapy can be found in the book, *Mindfulness and Acceptance in Couple and Family Therapy* (Gehart, 2012). This book provides a variety of suggestions for weaving principles of mindfulness into case conceptualization, treatment planning, and designing/implementing interventions in couples therapy. Gehart notes that most couples therapy clients are not sufficiently motivated to meditate and cautions therapists against attempting to routinely engage couples in mindfulness training. She recommends formal meditation only for clients who are highly motivated and for whom daily practice will not be too stressful. Gehart summarizes:

With many clients, mindfully oriented therapists will never whisper the word mindfulness or meditation. Nor will they ask them to practice meditation at home or encourage them to do anything that looks much different than most other forms of therapy. But something will be noticeably different. Because mindfulness and acceptance practices are far more than a set of meditation techniques: they are a philosophy, attitude, and stance toward life and the challenges it presents (Gehart 134).

According to Gehart, a mindful therapist's stance embodies and encourages acceptance, equanimity, and in-session mindful experiencing. Beckerman and Sarracoe (2011) bring such a mindful stance to Emotionally Focused Therapy for Couples; Harris (2009) and Peterson, Eifert, Feingold, and Davidson (2009) bring a mindful stance in applying Acceptance and Commitment Therapy to couples; Fruzzetti and Iverson (2004) encourage mindfulness in their adaptations of Dialectical Behavior Therapy for couples; and Gambrel and Keeling (2010) have suggested ways that mindfulness can be in-

tegrated into a variety of experientially-oriented couple and family therapies.

Whereas each of the aforementioned approaches encourages and facilitates increased mindful awareness, none of them routinely engage partners in formal mindfulness training. Some other programs do. Proponents of using formal mindfulness training to help couples improve their relationships point out that most of the studies documenting benefits of mindfulness involved formal daily meditation. For example, a prerequisite for enrollment in the highly researched MBSR program (Kabat-Zinn, 1990) was that participants were willing to engage in a daily minimum of 30–40 min of mindfulness activity in which they diligently focused attention on the present moment and continually redirected their minds when they wandered from moment-to-moment experiencing. This process is thought to be ideally suited for reconditioning the brain due to the highly repetitive and frequent mental tasks involved. During a 20-min focused meditation, a practitioner might redirect his or her mind up to 50 times or more. With each redirection, the practitioner exercises the ability to “not go along with” the mind's conditioned tendencies. As this process is practiced daily, over a period of weeks, the brain begins to relax, learns to let go of evaluative activity more easily, and becomes conditioned to attune to self and others nonjudgmentally. While clients will undoubtedly benefit from engaging in mindful activities that do not require daily meditative practice, a shift in the brain's tendency toward mindful awareness will most likely occur if the client engages in focused, sustained, and daily meditative activity (Atkinson, in press).

There are two couples therapy/education approaches cited in the professional literature that incorporate formal meditation as a standard part of the relationship improvement process: Mindfulness-Based Relationship Enhancement and Mindfulness-Based Relationship Enhancement. MBRE is a program for nondistressed couples who want to enhance their relationships. MBRE is modeled on the MBSR program (Kabat-Zinn, 1990) in terms of format, teaching style, sequence of techniques, mindfulness practices, and homework assignments. The difference between MBSR and MBRE is that MBRE also includes (a) more emphasis on loving-kindness meditations that are particularly focused toward

one's partner; (b) use of partner yoga, in which partners assist each other's engagement in various yoga postures; (c) mindful touch exercises, in which each partner mindfully gives and receives a gentle back rub; (d) an eye-gazing exercise, in which partners acknowledge and welcome deep-down goodness in each other; (e) mindful consideration of relationship difficulties; and (f) a focus on increasing mindfulness during shared pleasant activities, unpleasant activities, and stressful interactions.

Pragmatic/Experiential Therapy for Couples (PET-C) is a clinical method that integrates empirical findings about factors that are predictive of relationship success with methods for increasing emotional and social intelligence (Atkinson, 2005, 2010a, 2012b). Early formulations of PET-C included mindfulness-informed exercises (Atkinson, 1998), and as the body of research documenting the effectiveness of mindfulness meditation grew, mindfulness training became formally integrated into the treatment model (Atkinson, *in press*).

Developed at the Couples Clinic and Research Institute in Geneva, Illinois, PET-C draws on studies that have identified what people who succeed in intimate relationships do differently than those who fail (Gottman, 2011). The skills that predict relationship success are relatively easy to understand but are often difficult for distressed partners to develop because they require a high level of self-regulatory and empathic ability. Just as a person who has never engaged in weight training cannot bench press 400 pounds at will, a distressed partner who has not engaged in mental training may be unable to implement interpersonal skills that require a high level of self-regulation and empathy. Using analogies such as this, PET-C therapists accept the challenge of motivating all couples therapy clients to begin mindfulness training.

Cultivating motivation for mindfulness training occurs in phases. The first phase involves helping partners understand that it is unlikely that they will get the kind of responsiveness from their mates that they would like to have, unless they become more skillful in navigating conflicts. Through a careful assessment process, the therapist identifies specific skill deficits evidenced by each partner, and then presents the following logic:

“One of the most important differences between people who are good at eliciting respon-

siveness from their partners and those who aren't involves how people react when they feel upset. All partners in long term relationships feel upset with each other at various times. Evidence suggests that some people know how to handle such moments in ways that cultivate respectfulness and receptivity in their partners. Others react in ways that make it almost impossible for their partners to genuinely care. Studies suggest that the ability to react effectively when feeling upset is not optional—it's a must for anyone who hopes to have a satisfying intimate relationship. If you want to be treated well by your partner, you need to learn to think and act like people who almost always get treated well, and you certainly don't want to be thinking and acting like people who almost never get treated well.”

The therapist paints a clear picture for each partner of the kind of changes needed in his or her typical ways of reacting during conflict. Most clients recognize immediately the difficulty of the task that lies ahead of them. The therapist clarifies that for most people, conscious effort alone is not enough to succeed in developing and implementing the skills. The therapist explains “You're going to need to react differently at moments when you're feeling very stressed. In order to do this, if you're like most people you'll need to tune up your nervous system.” The therapist goes on to explain that there is a scientifically documented method for tuning up the nervous system—mindfulness training. The therapist details studies documenting the effectiveness of mindfulness training and sends e-mails to clients containing Web links to articles from publications such as the *New York Times*, videos from widely recognized programs such as “Nightline,” and other sources attesting to the effectiveness of mindfulness training. The therapist explains the bottom line: most people cannot make significant progress in reacting more effectively during stressful interpersonal situations without developing more flexible nervous systems. The therapist proposes a 2-pronged approach: (1) learning the needed interpersonal skills, and (2) developing the mental strength and agility needed to implement them when they are needed. The therapist takes the following position: “I'll work with you whether you engage in the mental strength training or not, but I want you

to understand that your odds of success will be much better if you do.”

Motivation for mindfulness training is enhanced by asking each partner to complete the *Areas in Need of Improvement Questionnaire* (Atkinson, 2012a), which asks clients to react to a series of statements regarding abilities that mindfulness training has been shown to strengthen. Sample statements include: “I ruminate too much after disagreements with my partner.” “I give in in order to keep the peace too often.” “I need to be better at making sure that my preferences and opinions count as much as my partner’s.” “I need to find a way to react less intensely when my partner does things that I don’t like or agree with.” “My mind wanders too much while my partner is talking to me.” “I need to be a more attentive listener.” Meeting with each partner separately, the therapist reviews his or her self-identified areas of needed improvement, discussing specifically how mindfulness training will help him or her develop more ability in these areas.

Once partners are motivated to undertake mindfulness training, they concurrently begin counseling sessions and enter an 8-week mindfulness course. At the Couples Clinic and Research Institute, the course includes focused attention meditation, open monitoring meditation, mindful movement, loving-kindness meditation, and other mindful exercises. Therapists who are practicing PET-C in locations at which no mindfulness courses are available use self-guided programs such as those developed by Williams and Penman (2011) and Salzberg (2011).

The couples therapy part of the treatment process involves a combination of conjoint and individual sessions during which partners are encouraged to apply the mindfulness skills they are learning through formal training to their relationships. For example, as meditation strengthens each partner’s ability to suspend evaluation and become compassionately attuned to his or her internal experience, the therapist encourages partners to widen the focus of nonjudgmental awareness so that it includes his or her partner. Structured exercises give partners the opportunity to slow down, relax, pay close attention to, and “take in” the messages communicated by their mates, as well as the sensations involved when looking at, touching, or listening to their mates. Clients learn that

mindful moment-to-moment attention to their partners is simply an extension of the process of mindful moment-to-moment attention to self and/or environment that they have been practicing during meditation. As the client’s ability to sustain present moment-to-moment awareness through mindfulness training increases, so does his or her ability to relate mindfully to his or her partner.

PET-C therapists also give special emphasis to helping partners relate mindfully to difficult feelings that arise in response to relationship conflicts. Partners often fuel distress by jumping to conclusions, ruminating unproductively over distressing interactions, and obsessing on the details of their partners’ perceived wrongdoings. They often blindly accept the validity of perceptions and interpretations that are automatically generated by their brains. Through mindfulness training, partners learn to avoid “buying in” to the validity of the interpretations and assumptions generated by their minds when difficult emotions prevail. Clients learn to postpone deliberating about upsetting situations until they have calmed upset feelings through the process of mindful attention to physical sensations that arise with the feelings. The simple process of labeling a feeling can help reduce amygdala activation (Creswell et al., 2007; Lieberman et al., 2007). Directly approaching uncomfortable feelings in an accepting manner activates the left prefrontal cortex, an area of the brain associated with positive feelings (Davidson, 2012; Davidson et al., 2003). Partners discover that rapid calming of difficult feelings can result when they are able to avoid buying into their mind’s knee-jerk interpretations and attributions, suspend deliberation and rumination, and instead attend to present moment-to-moment experience.

Some clients are unable to give mindful attention to strong negative emotions without getting lost in distress-maintaining thoughts. As a stepping stone, PET-C therapists help such clients engage in processes that stimulate milder versions of uncomfortable feelings than the ones that typically arise in the moments when upsetting things happen. Deliberate stimulation of uncomfortable feelings can happen in a variety of ways, but among the most frequently used are *vivid re-experiencing* and *listening to prerecorded criticisms*. In vivid re-experiencing, the client recalls details of a distressing

relationship situation or argument with enough vividness so that the client experiences reactivation of upset feelings. However, self-stimulated feelings are usually milder and more manageable than the ones that occur when the arguments are actually happening. In *listening to prerecorded criticisms*, the client listens to complaints that the therapist has asked his partner to record (through the sound recorder on her smart phone) when feeling upset. Most clients feel provoked when listening to their partners' prerecorded criticisms, but not as strongly as when complaints are delivered "live" and in person. Using vivid re-experiencing and listening to prerecorded criticisms, clients stimulate uncomfortable feelings at will and work on increasing negative affect tolerance through mindful awareness as often as is desired (Atkinson, 2010a, 2011; Weiss, Atkinson, Holzinger-Young, & Larsen, 2011).

As clients develop more ability to calm negative affect through mindful attention to difficult emotions, PET-C therapists help them engage in another form of mental practice, *intention meditation* (Atkinson, in press). Intention meditation involves cultivating specific abilities and/or priming certain feelings states by visualizing or dwelling on clearly articulated intentions and outcomes. This method is used by athletic coaches and trainers around the world to help athletes increase skill by visualizing goals and focusing intention on steps toward the goals (Denis, 1985). Compassion and loving-kindness meditation are forms of intention meditation, in that they focus on cultivating the intent to experience compassion and kindness toward self and others. Clients regularly practice compassion and loving-kindness meditation during their 8-week mindfulness training course. PET-C therapists also encourage and prepare clients to engage in a variety of additional intention meditations that are tailored to their specific needs. Two of the most common intentions and outcomes that clients are encouraged to meditate on are those related to (1) skillfully navigating conflicts and (2) cultivating intimacy-related feelings.

Meditating on the skillful navigation of conflicts. Regulating negative affect in the face of upsetting partner behavior is not the only ability needed to successfully navigate conflicts. Partners must also avoid defensive, dismissive, and critical attitudes. Further, they need to stand

up for themselves when needed, without unnecessarily arousing their partners' defenses (Atkinson, 2005). In short, they need to develop a combination of skills that have been shown to lead to good relationship outcomes. Thankfully, the sequences of interactions during any given couple's disagreements are usually redundant and predictable (e.g., one partner is usually the first to express upset; one partner is usually critical and blaming and the other defensive, etc.). Before starting the intention meditation process, the PET-C therapist helps each partner study the couple's typical conflict sequence and makes a specific plan for how he or she could react more skillfully. The plan includes both internal skills (such as self-reminders or self-statements that will help him or her stay centered) and external responses (things that she or he needs to remember to say or do differently as the typical conflict sequence unfolds). Once a client has developed a precise practice plan, he implements it daily as follows: (1) The client stimulates uncomfortable feelings through vivid re-experiencing or listening to prerecorded criticisms; (2) the client decreases emotional reactivity through mindful attention to the uncomfortable feelings; (3) mentally, the client pictures his partner in front of him enacting the conflict that he is remembering (or that he is hearing through the recording). As he sees or hears his partner engage in ways that typically trigger strong reactions in him, (a) he practices self-statements that he has memorized ahead of time based on their anticipated value in helping him stay nonreactive, and (b) he visualizes himself saying or doing the specific things that he has prepared ahead of time, tailoring them to respond to the specific conflict situation that he is visualizing.

Meditating on intimacy-related feelings.

When a person feels consistently mistreated or disrespected by her partner, feelings of warmth, tenderness, fondness, affection, the desire for loving forms of attention, sexual interest, and playfulness understandably wane. As therapy progresses, feelings often return—but sometimes they do not (Atkinson, 2010b). Further, some people have never had an abundance of intimacy-related feelings toward their partners. Inspired by studies documenting the effectiveness of compassion and loving-kindness meditation in cultivating empathy, PET-C encourages partners to engage in meditations designed

to prime the brain's social bonding circuits (Panksepp & Bevin, 2012) by focusing intently on the desire and intention for intimacy-related feelings to increase. Each client is encouraged to spend 5 min per day dwelling on things that cultivate intimate feelings toward her partner. Examples include dwelling on a moment or moments when the client had warm, tender, affectionate, fond, sexual, or playful feelings toward her partner; picturing what her mate might be doing and feeling at that moment and wishing her mate happiness and ease; feeling grateful for things that her partner has done or continues to do that enhance life together; thinking about things that she can do to make her partner happy; picturing herself feeling close and warm, cuddling with her partner; planning a pleasant surprise for her partner and anticipating her partner's reaction; and remembering the good feeling that comes from her partner's loving attention.

The therapist helps motivate clients to engage in intention meditation by describing (and encouraging clients to read about) studies documenting how mental practice leads to physical changes in the brain that are nearly identical to those obtained through physical practice (Pascual-Leone et al., 2005). For example, in one study, subjects who rehearsed a piano sequence mentally for 5 days showed the same brain changes as those who practiced the sequence physically for 5 days. When performance ability was tested at the end of 5 days, the mental-only rehearsal group could play nearly as well as the physical rehearsal group. With just a day of subsequent physical practice, the mental practice group played at the level of performance that it took the physical practice group 5 days to accomplish (Pascual-Leone et al., 1995).

In all intention meditations, partners are encouraged to take the practices seriously, engage in them earnestly, maintain a steady focus on the intentions and outcomes that are selected for each meditation session, and seek to cultivate strong intention and desire (Dispensa, 2012). The process of allowing oneself to really wish for something often stirs emotion and brings various fears, hurts, insecurities, beliefs, and assumptions to the forefront. The therapist helps clients relate mindfully to such reactions in a way that helps uncouple strong associations between hopes, dreams, and desires from the fears and assumptions that may hinder them.

Conclusion

When considering information relevant to the health of intimate partnerships, the most significant neuroscientific development that has occurred in the past decade involves studies documenting mindfulness-induced changes in brain systems and structures that mediate social and emotional intelligence. Studies suggest that mindfulness training strengthens neural processes that organize relationship-relevant cognition and behavior. Interest in and funding for neuroscientific investigation of mindfulness is on the rise. Twelve of the existing 17 studies documenting structural brain changes in response to mindfulness meditation have been published within the past 2 years. The fact that these changes in the brain are centrally involved in regulating interpersonal behavior should be of particular significance to those who work with intimate partners. Although currently there is only one professional book written specifically for couple and family therapists on mindfulness (Gehart, 2012), one documented program that integrates formal mindfulness training in enriching healthy couple relationships (Carson et al., 2004, 2007), and one therapy approach that integrates formal mindfulness training in the treatment of intimate partner distress (Atkinson, in press), it is likely that we will see a significant increase in efforts to integrate mindfulness into educational programs and therapies for couples in the near future.

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Received February 9, 2013

Revision received March 31, 2013

Accepted April 1, 2013 ■

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