

creative ferment. Pull on the tiger's tail of mindfulness and out leaps the tiger of wisdom awareness that may consume assumptions about our science and ourselves. At this point—as in lucid dreams—maybe we should just let the tiger eat us.

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Social Foundations of the Capacity for Mindfulness: An Attachment Perspective

Phillip R. Shaver, Shiri Lavy, and Clifford D. Saron

University of California, Davis

Mario Mikulincer

Bar-Ilan University, Ramat Gan, Israel

We are pleased to see Brown, Ryan, and Creswell's (this issue) excellent review of the research literature on mindfulness. Mindfulness is an important concept for bridging classical Buddhist writings and recent research on several different topics: stress reduction, self-regulation, clinical interventions in every domain of pathology from eating disorders to personality dis-

orders, the translation of Buddhist psychology into Western scientific psychology, and attachment theory and research. It is already clear (e.g., Gillath, Bunge, Shaver, Wendelken, & Mikulincer, 2005; Siegel, 2007) that the psychological and neurological correlates of mindfulness, effective emotion and self-regulation, and attachment security are similar, suggesting that

researchers need to understand the common underlying processes. Our own interests, as a group of authors, relate to two major projects. Mikulincer and Shaver (2007) have devoted 20 years to studying the sources and implications of attachment security in adulthood, and Saron and Shaver (2006) are currently working with Lavy on the Shamatha Project, a longitudinal study of intensive meditation training (of the kind outlined by Wallace, 2006b). Here, given space limitations, we focus only on the conceptual and empirical connections between mindfulness and security. Our goal is to place the capacity for mindfulness into a broader conception of social, cognitive, and developmental processes.

The potential links between attachment security and mindfulness have already been outlined by the authors of the current target article in a recent commentary (Ryan, Brown, & Creswell, 2007) on our own *Psychological Inquiry* article (Mikulincer & Shaver, 2007). What follows is a brief series of excerpts from their commentary:

The developmental research outlined here suggests the first of three connections between felt security and mindfulness. People who have experienced attentive, responsive, and sensitive caregiving are likely to be both more securely attached and more mindful. A second connection is that [these two processes] may be related, perhaps bidirectionally. Secure attachment fosters greater attention to relational partners, [and] mindfulness may facilitate secure attachments through an open, receptive attention to relationship partners. Third, felt security and mindfulness both appear to contribute to a variety of positive outcomes. (p. 180)

In the following sections we expand on their comments by, first, briefly discussing the similar correlates and outcomes of mindfulness and attachment security. We then attempt to embed mindfulness in a social matrix while explaining why we think security-enhancing interactions with attachment figures increase a person's capacity for mindfulness. Next, we briefly consider Buddhist conceptions of the social embeddedness of mindfulness while speculating about the ways in which mindfulness meditation may contribute to attachment security in adulthood, even though attachment security is usually attributed to the internalization of prior social relationships, beginning in infancy (see Grossmann, Grossmann, & Waters, 2005). Finally, we present new evidence for associations between the two major dimensions of adult attachment style (attachment anxiety and avoidance; Brennan, Clark, & Shaver, 1998) and the five major facets of mindfulness (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006).

Similar Positive Correlates and Outcomes of Mindfulness and Attachment Security

Ryan et al. (this issue) do an excellent job of showing that mindfulness is related to lower stress reactivity, less need for defenses against threats to the self, better mental and physical health, better behavioral self-regulation, better academic outcomes, greater relationship satisfaction, and more constructive responses to relationship conflict. Our recent overview of the attachment literature (Mikulincer & Shaver, 2007) shows that attachment security, whether measured via self-reports or coded clinical interviews, is related to these same variables. In most of the relevant studies, attachment security is operationally defined by low scores on two dimensions of insecurity: attachment anxiety (fears of unlovability and rejection, anger at the threat of separation, and a strong, insistent need for love and approval) and avoidant attachment (discomfort with closeness and interdependence, distrust of relationship partners, and a preference for emotional distance and extreme self-reliance). Hundreds of correlational studies have shown that these two dimensions of attachment insecurity are associated with lower relationship quality and stability, higher levels of depression, anxiety, and hostility, higher levels of somatic symptoms and unhealthy behaviors, and less coherent, less satisfying, and less productive career choices and performance at work (e.g., Shaver & Mikulincer, 2002, 2007).

Experimental studies have shown, in addition, that more secure people respond with lower physiological reactivity to ego-threatening stimuli (e.g., Diamond, Hicks, & Otter-Henderson, 2006). And observational studies of couple interactions have shown that more secure partners handle conflicts more constructively, are more sensitive and responsive to each other's emotional self-disclosures and needs for support, and express more affection and support before temporary separations (e.g., Collins & Feeney, 2000; Fraley & Shaver, 1998; Simpson, Rholes, & Phillips, 1996). Other studies have shown that secure people have a more stable sense of self-worth and are less reactive to feedback about acceptance and rejection (e.g., Srivastava & Beer, 2005). They are also less biased by self-serving needs and defenses, such as the need for self-enhancement, needs for consensus and uniqueness, rigid defense of existing knowledge structures, and defense of cultural worldviews in the face of reminders of mortality (e.g., Mikulincer, 1995, 1997; Mikulincer & Florian, 2000; Mikulincer, Orbach, & Iavnieli, 1998).

Beyond correlational studies of individual differences in attachment style, there are experimental studies showing that "security priming" of various kinds (e.g., subliminally presenting the names of a person's security-enhancing relationship partners, inducing guided imagery about past supportive social interactions, presenting pictures that evoke a warm sense

of affection and couple solidarity) increases explicit and implicit positive affect and reduces emotional responses to stress and trauma (Mikulincer & Shaver, 2007). Two experiments have shown that security priming reduces defensive self-enhancement (Arndt, Schimel, Greenberg, & Pyszczynski, 2002; Schimel, Arndt, Pyszczynski, & Greenberg, 2001). In these studies, participants were asked to think about an accepting, loving relationship partner, after which their tendencies to self-enhance were assessed in various ways. Schimel et al. (2001) studied a common defensive social-comparison bias, the tendency to search for more social comparison information when it promises to indicate that others have scored worse than oneself. Arndt et al. (2002) studied defensive self-handicapping: making excuses for one's poor performance in order to escape the need to attribute failure to a lack of ability. In these studies, momentary strengthening of attachment security weakened the tendency to favor self-enhancing social comparisons or make self-protective attributions. Arndt and Schimel (2003) concluded that thinking about one's security-enhancing attachment figures "promotes a more secure feeling of self-esteem that is less vulnerable and thus less in need of psychological maneuvers to sustain it" (p. 29).

In short, there is strong empirical evidence that mindfulness and attachment security, whether dispositional in nature or experimentally induced, have similar correlates and effects. But the correlates and effects of attachment security, again both dispositional and manipulated, are part of an even wider network than the so far established correlates of mindfulness. For example, attachment security is related to compassion and altruism (Mikulincer, Shaver, Gillath, & Nitzberg, 2005), more humane values (Mikulincer, Gillath, Sapir-Lavid, Yaakobi, Arias, Tal-Aloni, & Bor, 2003), and greater tolerance of outgroup members (Mikulincer & Shaver, 2001). Security is also associated with a broad array of couple relationship variables, including good communication (e.g., Feeney, Noller, & Callan, 1994), more effective caregiving (e.g., Kuncie & Shaver, 1994), and a more satisfying sex life (e.g., Tracy, Shaver, Albino, & Cooper, 2003). At the intrapsychic level, security is related to more positive mental representations of self and others (e.g., Collins & Read, 1990) and to more coherent, complex, and flexible knowledge structures (e.g., Mikulincer, 1995, 1997). Future research should determine whether mindfulness, as conceptualized by Ryan et al., is also associated with this network of correlates and outcomes.

Re-Embedding Mindfulness in a Social-Developmental Matrix

The concept of mindfulness was originally part of Buddhist psychology, where it was intimately as-

sociated with emotional balance and prosocial ethical values. For example, mindfulness-oriented meditation techniques were generally taught in conjunction with the "four immeasurables"—compassion, loving-kindness, empathetic joy, and equanimity (Wallace, 2004, 2006a,b). The goal was to increase not only mindfulness and healthy emotion regulation but also a sense of responsibility for and kindness toward all human beings—in fact, toward all sentient beings. American psychologists have lifted mindfulness out of this rich context (perhaps while attempting to separate it from religious considerations) and applied it in a more individualistic, less socially connected, and more ethically neutral way. In our opinion, placing mindfulness in an attachment-theoretical framework would allow it to benefit not only from additional kinds of empirical tests but also from an assortment of ethical, social, and developmental, yet not necessarily religious, concepts.

In order to explain why this conceptual move makes sense, we need to provide a brief account of attachment theory and research, which places personality development in its social context. The key idea is that every human infant "attaches" to a "stronger and wiser" attachment figure, usually a parent (and most often the infant's mother), because in evolutionary history this kind of attachment behavior increased the chances of infants surviving predation and other threats and dangers until they reached reproductive age. Infants quickly become dependent and reliant on their primary caregivers, and they enlist those caregivers' support through a combination of crying, clinging, smiling, cooing, and—after a few months—moving, crawling, and walking to maintain proximity to a safety- and support-providing "attachment figure" (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1982). Interactions between infants and their caregivers result in valuable mental models and social skills, including "internal working models" of self and relationship partners and coherent patterns of attention to feelings and emotion-regulation strategies.

Attachment theory has been greatly extended and clarified in recent years by the discovery (e.g., Hesse, 1999; Main, Kaplan, & Cassidy, 1985) that a caregiver's "coherence of discourse" and "coherence of mind" regarding attachment-related experiences, memories, feelings, and other "states of mind" strongly predict a child's security of attachment to that caregiver—and not by virtue of genetic transmission (e.g., O'Connor & Croft, 2001). In other words, certain kinds of "mindfulness," including what Allen and Fonagy (2006) call "mentalization" (i.e., noticing and articulating one's own and one's relationship partners' thoughts, needs, motives, and feelings), in both the care provider and the developing child, are integrally involved in attachment security. Longitudinal studies (e.g., Grossmann et al., 2005; Weinfield, Sroufe, & Egeland, 2000) show that early security- and

mentalization-enhancing interactions with primary attachment figures have beneficial effects of the kinds Ryan et al. (this issue) describe on children, adolescents, and adults throughout life, unless they are severely disrupted by subsequent abusive relationships or traumatic experiences.

In one effort to explain how prior relationships with security-enhancing attachment figures increase a person's mindfulness, we (Mikulincer & Shaver, 2004) proposed that internalization of and identification with such figures allows a person to develop effective self-soothing techniques based on what we call security-based self-representations. Following a well-established line of argument in psychoanalytic theory, which runs from Freud to the present, we proposed that people who have had many comforting and encouraging interactions with supportive attachment figures view themselves as reassuringly similar to those skillful, loving models. They can call up memories of the way they feel, or felt, in those people's reassuring and encouraging presence when they are threatened by stress or demoralization.

The first step in this internalization process is to use soothing interactions with an actual attachment figure to form mental representations of this comforting person and of oneself interacting with him or her. The second step involves weaving these representations into one's memory networks, especially one's working model of self. The attachment figure and his or her soothing, supportive reactions become integrated into one's own self-caregiving and self-compassion "subroutines," and the self-with-attachment-figure representation becomes a stable, integrated component of one's actual self. The third step is to reactivate these representations in times of stress or need, as a natural part of searching (mentally) for attachment-related sources of comfort and support. Originally, this search is for an actual flesh-and-blood attachment figure, but increasingly, because of generally favorable social experiences, the search turns up self-sustaining mental representations and coping techniques without there being an immediate need for an actual attachment figure. In a sense, some parts of the self are sensitive and caring toward other parts, and the latter parts are represented and experienced as secure, calm, and able to cope with threats. With practice, the entire system of representations and self-regulatory efforts becomes fully and seamlessly integrated into one's personality, making past links to attachment figures less conscious, and perhaps even invisible. In this way greater autonomy emerges from a history of reliable attachments and dependencies.

People who possess such self-representations and have acquired greater coherence of mind as a result of interacting with attachment figures who also exhibit coherence of mind and coherence of discourse find it easier to remain mindful of what is happening within

and around them, analyze problems (including other people's needs) more accurately and quickly, mobilize effective coping strategies, and more easily endure inevitable periods of upheaval, loss, or trauma. This is the process by which interaction with loving and coherent attachment figures gradually strengthens and sustains authentic self-esteem, the capacity for stable mindfulness, and effective emotion regulation.

Why does this also produce a person who is relatively undefensive, more compassionate, and more considerate of others? First, rather than being perpetually on guard so as not to be injured in one way or another, securely attached people can explore new territories, new experiences, and new social groups without constantly worrying about protection and safety. Second, secure people can focus unbiased and nonanxious attention on existential concerns related to aging, death, freedom, relating deeply to others, and finding meaning in life. Although dealing with these issues sometimes destabilizes almost anyone, the more secure among us rebalance themselves, grow psychologically, and achieve a deeper appreciation of life, the natural world, and other people. Third, attachment security encourages social responsibility, compassionate love, and multifaceted, mutually enriching I-Thou relationships (Buber, 1958).

It's no accident that humanistic psychologists and philosophers, such as Rogers, Maslow, and Buber, as well as transformational religious and political leaders (Buddha, Jesus, Gandhi, Martin Luther King, Jr.), stressed the importance of "unconditional positive regard" (Rogers), Being-love (Maslow), compassionately taking on others' suffering (Jesus, Buddha), and ending racism and other forms of egocentrism (King). Re-embedding mindfulness in a network of concepts, including both those from Buddhist psychology (e.g., the four immeasurables) and those from attachment theory (to explain how mindfulness and the four immeasurables emerge from close relationships), would provide both a richer conception of mindfulness and a better scientific understanding of its prosocial potential.

Having mentioned the relevance of the early humanistic psychologists to this discussion, we might take a moment to recall how Rogers (1961) dealt with some of the issues discussed in the current dialog. According to Rogers' conception of "the fully functioning person," such a person has several qualities, of which four seem closely related to mindfulness. The first is *openness to experience*; the capacity to listen to one's feelings, notice what is going on within oneself, and reflect on thoughts and feelings. The second quality is *existential living*; enjoying the flow of experience and living fully at every moment. It means being "a participant in and an observer of the ongoing process of organismic experience, rather than being in control of it" (Rogers, 1961, p. 188). Two other qualities of the

fully functioning person that seem related to mindfulness are *organismic trusting*, i.e. trusting one's feelings, thoughts, and sensations and making decisions based on what one feels is right rather than being driven by external forces and *experiential freedom*, being free to choose among alternative courses of action and taking responsibility for one's choices. Rogers thought, as do we, that these four characteristics of the fully functioning person are beneficial outcomes of having been unconditionally loved. According to Rogers (1961), the four qualities indicate that a person has a strong sense of inner coherence, self-determination, and social responsibility, all of which have been shown by attachment researchers to be aspects of attachment security.

Buddhist Conceptions of the Social Embeddedness of Mindfulness

The Buddhist literature, including its most recent North American incarnation, clearly places mindfulness within a matrix of concepts related to love. For example, Chödrön (2003) writes:

The essential practice is to cultivate maitri, or loving-kindness. The Shambala teachings speak of “placing our fearful mind in the cradle of loving-kindness.” Another image for maitri is that of a mother bird who protects and cares for her young until they are strong enough to fly away. People sometimes ask, “Who am I in this image—the mother or the chick?” The answer is *both*. . . . Without loving-kindness for ourselves, it is difficult, if not impossible, to genuinely feel it for others. (pp. 9–10)

This is similar to our ideas about internalizing both sides of a loving attachment relationship (Mikulincer & Shaver, 2004).

One of the common goals of meditation is to achieve and maintain a state of deep relaxation and a natural, gentle pattern of breathing combined with alert attention (not drowsiness or mental laxity; Wallace, 2006b). Another goal is to open oneself to whatever arises in the mind, without “grasping” or “suppressing,” and to be attentive and curious about what arises without becoming captured by or lost in it. As Chödrön (2003) explains:

It's helpful to remind yourself that meditation is about opening and relaxing to whatever arises, without picking and choosing. It's definitely not meant to repress anything, and it's not intended to encourage grasping, either. . . . To the degree that we're willing to see our enmeshment or grasping and our repressing clearly, they begin to wear themselves out. . . . That's what we're doing in meditation: Up come all these thoughts,

but rather than squelch them or obsess about them, we acknowledge them and let them fade. (pp. 35, 47–48)

This quotation suggests how practicing a certain kind of mindfulness might reduce one or both kinds of insecurity studied by attachment researchers, anxiety (grasping, obsessing) and avoidance (repressing, squelching). It is interesting to us that the two major threats to mental stability are conceptualized so similarly in Buddhist psychology and attachment theory.

A difference between attachment theory and Buddhist psychology, at least as portrayed in Chödrön's writings, might initially seem to be that attachment theory focuses on social experiences and close relationships as the foundation of security, whereas mindfulness researchers and English-language books about Buddhist meditation make the process of mindful meditation seem rather solitary and asocial. During our discussions with the Dalai Lama in 2004, however, it was pointed out that one of the simplest and most frequently spoken Buddhist prayers is: “I take refuge in the Buddha, the Dharma, and the Sangha,” which means (in our terms) the mental representation of the Buddha as a loving, compassionate, and wise teacher; the Buddha's teachings (dharma); and the community of fellow Buddhists (sangha). In other words, the key concept is “taking refuge,” which is similar to Bowlby and Ainsworth's notion of using an attachment figure as a “safe haven” and “secure base for exploration.”

The social nature of Buddhism is also evident in the Dalai Lama's writings (e.g., *The Heart of Compassion*, 2002). When explaining what Buddhism calls “the Triple Gem” he writes:

Which object of refuge will never deceive us? There are three: the rare and supreme Buddha, the Dharma, and the Sangha. . . . The Buddha is the protector and is like a doctor; the precious dharma is like the medicine; and the spiritual sangha is like a nurse, taking care of us like a good friend. (pp. 17–22)

Seeing the similarity between central ideas in Buddhist psychology, mindfulness research, attachment theory, and classic issues in clinical psychology suggests that the main thrust of these conceptual frameworks is similar—that there is a “perennial wisdom” underlying all these approaches to the mind. For example, just as Buddhist meditation techniques include deep relaxation combined with an open, non-grasping, and non-suppressing mental orientation, Freud (1963/1917) developed a psychoanalytic technique whereby the client lies on a couch and free-associates, attempting to let his or her mind remain open and loosely associative without resisting or defending. Later, when behaviorists sought to reject

Table 1. Pearson Correlation Coefficients and Regression Analysis Results Showing Links between Attachment Dimensions and Mindfulness Scores

Mindfulness scores	Attachment anxiety		Avoidant attachment		<i>F</i> (2,68)	<i>R</i> ²
	<i>r</i>	β	<i>r</i>	β		
Nonreactivity to inner experience	-.54**	-.43**	-.47**	-.32**	20.63**	.38
Observing/noticing/attending	-.17	-.07	-.30*	-.28*	3.52*	.10
Describing/labeling with words	-.21	-.11	-.31**	-.27*	4.14*	.11
Acting with awareness	-.46**	-.37**	-.38**	-.25*	12.07**	.27
Nonjudging of experience	-.43**	-.32**	-.42**	-.30**	11.99**	.26
Total mindfulness score	-.52**	-.39**	-.53**	-.40**	24.08**	.42

* $p < .05$, ** $p < .01$.

and surpass psychoanalysis in favor of something more scientific, they invented systematic desensitization (e.g., Wolpe, 1969), a procedure in which deep muscle relaxation is combined with imagination of objects or situations feared by a client, in hopes that he or she will stop being preoccupied with or defending against them and instead remain calm in their presence. Around the same time, Rogers (1961) was promoting client-centered therapy, a technique in which the therapist provides unconditional positive regard, which helps a client become less defensive and more open to “organismic experiencing.” In all of these techniques there is a stronger and wiser other who helps a client or seeker of emotional stability become less anxious, less avoidant, more secure, and more effectively mindful, both during the practice of meditation or therapy and, by extension, in daily life in the outside world.

New Evidence Concerning Attachment Security and Mindfulness

Beyond speculating and reasoning about the associations between attachment security and mindfulness, we can present some relevant new data. As part of the Shamatha Project (Saron & Shaver, 2006), we assessed 70 adults, mostly from the United States, who volunteered to participate in one of two 3-month, full-time meditation retreats in Colorado. They were 50 years of age, on average, and half of them were randomly assigned to the first retreat, while the other half were assigned to a waitlist control group (while waiting to participate in a subsequent 3-month retreat). Our pre-assignment assessment battery included, among many other measures, Brennan et al.’s (1998) scale measuring the two major dimensions of attachment insecurity, anxiety and avoidance, and Baer et al.’s (2006) five-facet measure of mindfulness. All of the participants were required to have previous meditation experience and to indicate their sincere interest in further training and their likely ability to survive a 3-month retreat.

Baer et al.’s (2006) measure of mindfulness was derived by factor-analyzing 112 items contained in five pre-existing self-report mindfulness scales, which were administered to a sample of over 600 college students: the Mindful Attention Awareness Scale (Brown & Ryan, 2003); the Freiburg Mindfulness Inventory (Buchheld, Grossman, & Walach, 2001); the Kentucky Inventory of Mindfulness Skills (Baer, Smith, & Allen, 2004); the Cognitive and Affective Mindfulness Scale (Hayes & Feldman, 2004); and the Mindfulness Questionnaire (Chadwick, Hember, Mead, Lilley, & Dagnan, 2005). The factor analysis yielded five main factors which the authors called 1) Nonreactivity to Inner Experience, 2) Observing/Noticing/ Attending to Sensations/Perceptions/Feelings, 3) Acting with Awareness/Automatic Pilot/ Concentration/Nondistractedness, 4) Describing/Labeling with Words, and 5) Nonjudging of Experience. The authors found, using higher-order factor analysis, that four of these factors (all except Observing/Noticing) formed a single overarching mindfulness factor.

The correlations between the Baer et al. scores and the Brennan et al. attachment scales are shown in Table 1, along with results from regression analyses in which each of the mindfulness scores was regressed on attachment anxiety and avoidance. All five facets of mindfulness were significantly predicted by the two attachment dimensions, which accounted for between 10 and 38% of the variance. Attachment anxiety was significantly associated with and made significant unique contributions to lower scores on three of the five mindfulness facets: nonreactivity to inner experience, acting with awareness, and nonjudging of experience. Avoidant attachment was significantly associated with and made significant unique contributions to all five mindfulness facets (the three just mentioned plus observing/noticing/attending to perceptions/thoughts/feelings and describing/labeling with words). Remarkably, the two attachment dimensions, each of which made a strong unique contribution, accounted for 42% of the variance in the total mindfulness score. In other words, the more attachment-anxious participants were less capable of maintaining

a nonreactive, nonjudgmental stance toward their experience, and the more avoidant participants were less mindful in general, including being less able to notice their experiences and label them in words. These results are clearly supportive of the connections we have discussed in this commentary, although, being correlational in nature, the findings do not reveal which came first: attachment security/insecurity, mindfulness, or some other variable or variables that explain the association between security and mindfulness.

Conclusions

The similar correlations between salutary outcomes, on the one hand, and mindfulness and attachment security on the other, plus the fact that mindfulness and security are substantially correlated, present an opportunity for further research of great conceptual and clinical value. The fact that the issues raised at the boundaries of the mindfulness and attachment literatures corresponds with ones raised 35 years earlier by humanistic psychologists, and raised long before then by Buddhist contemplatives, suggests that they are absolutely central to human experience and mature moral conduct. We applaud Ryan et al.'s (this issue) careful and extensive review of the mindfulness literature, and we look forward to further research and dialog concerning the issues discussed briefly here.

Note

Address correspondence to Phillip R. Shaver, Department of Psychology, University of California, Davis, One Shields Avenue, Davis, CA 95616-8686. E-mail: prshaver@ucdavis.edu

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