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Mindfulness as a Context for the Cultivation of Compassion

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Mindfulness training and compassion-focused approaches are both significant, rising clinical and research trends in cognitive and behavioral therapies. In the historical Buddhist lineages that developed mindfulness practices, initial training in mindfulness frequently evolves into specific training in compassion and loving kindness for self and others. The sequencing of this mental training would suggest that there is a relationship between the experience of mindfulness and the experience of compassion, wherein mindfulness may serve as a context for compassion-focused approaches. Accordingly, current cognitive and behavioral therapies that make use of these concepts often interrelate the development of mindfulness with an emergent compassionate perspective. If this relationship is to bear the scrutiny of a scientific practice, then we would expect to see evidence of a such a relationship between the experience of mindfulness and compassion. Further, a scientific rationale for mindfulness as a context for compassion-focused therapies would be useful, if Western therapies are to integrate these processes responsibly. The present article is aimed at providing an exploration of the constructs of mindfulness and compassion, and the hypothesized neurophysiological processes involved in their cultivation. An examination of the relevant theoretical and neuroimaging literature reveals that both mindful awareness and a felt sense of compassion may be interrelated dimensions of human functioning, having their evolutionary roots in human relational behaviors. This is in accord with Buddhist philosophy, which has explained both the experience of mindful awareness and the phenomenology of an arising of compassion as correlates of a direct experience of the self as an interrelated part of a greater process of ever-evolving, interbeing.

Cognitive and behavioral therapists have significantly expanded the scope of scientific and cultural influences that inform their research and practice over the past 10 years. Recent notable advances in Cognitive Behavioral Therapy (CBT) have drawn concepts and techniques from an expanding range of sources, including Buddhist philosophy, new behavioral accounts of language and cognition, and affective neuroscience (Hayes, Follette, & Linehan, 2004; Kwee, 1990; Mansell, 2008). This has involved a shift away from some traditionally central foci of CBT, such as rational disputation of cognitions. Increasingly, mindfulness and acceptance based approaches such as Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999),

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Mindfulness Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002), and Dialectical Behavior Therapy (DBT; Linehan, 1993), have come to characterize the public face of this "third wave" of CBT. A further, growing trend in this third wave is the development of compassion-focused approaches, such as Compassion-Focused Therapy (CFT; Gilbert, 2005a). This emphasis upon compassion within CBT mirrors a greater integration of compassion-focused methods and Buddhist influences within psychotherapy in general (Germer, Siegel, & Fulton, 2005).

Within prescientific Buddhist traditions, mindfulness training is often a beginning point for the novice monk or lay practitioner (Mingyur, 2007). From this foundation, the Buddhist student will proceed to learn and practice more advanced methods for cultivating a felt sense of compassion for the self, and ultimately for all beings (Thurman, 1997). This is true in many schools of Buddhist practice, including Theravada, Zen, and Tibetan Buddhism. The sequencing of this mental training would suggest that there is a relationship between the experience of mindfulness and the experience of compassion, wherein mindfulness may serve as a context for compassion-focused approaches. If this relationship is to bear the scrutiny of a scientific practice, then we would expect to see evidence of a such a relationship between the experience of mindfulness and compassion. Further, a scientific rationale for mindfulness as a context for compassion-focused therapies would be useful, if Western therapies are to integrate these processes responsibly. The present article is aimed at providing an exploration of the constructs of mindfulness and compassion, and the hypothesized neurophysiological processes involved in their cultivation. An examination of the relevant theoretical and neuroimaging literature reveals that both mindful awareness and a felt sense of compassion may be interrelated dimensions of human functioning, having their evolutionary roots in human relational behaviors.

CURRENT CONCEPTUALIZATION OF COMPASSION

Many therapies discuss the value of warmth and empathy in the psychotherapeutic relationship (Gilbert & Leahy, 2007). However, CFT and other compassion-focused approaches are characterized by an emphasis on the patient's specific training in methods aimed at cultivating a felt sense of compassion for self and others. Compassion-focused approaches hypothesize the cultivation of compassion to be a central process in emotion regulation and in successful therapy, particularly when dealing with patients who struggle with feelings of shame, and who exhibit self-critical cognitions (Gilbert & Irons, 2005).

Gilbert (2007) describes compassion as a "multifaceted process" that has evolved from "the caregiver mentality" found in human parental care and childrearing. As such compassion involves a number of emotional, cognitive, and motivational elements. These include: care for the welfare of others, sympathy, distress tolerance, empathy, non-judgment, distress sensitivity, and the ability to create opportunities for growth and change with warmth (Gilbert, 2007). In his concise definition of compassion, Gilbert (2009) asserts that "its essence is a basic kindness, with deep awareness of the suffering of oneself and of other living things, coupled with the wish and effort to relieve it" (p. xiii).

The underlying theory for CFT links "psychotherapeutic processes with evolved psychological systems, especially those associated with social behavior" (Gilbert, 2007,

p. 109). Drawing from evolutionary affective neuroscience, Gilbert distinguishes different affect regulating systems that operate in humans. Among these systems there is a contrast between a threat-focused and affiliative-focused system that involves a felt sense of soothing and safeness (Gilbert, 2005a, 2007, 2009). The threat-focused system has emerged from older evolutionary structures in the brain, such as the amygdala and the limbic system. It involves the activation of a sudden and maximally effective defensive behavioral response, such as the classic "fight, flight, or freeze" responses. In contrast, affiliative-focused behaviors involve an evolved capacity for human beings to feel "safeness" and to feel soothed in the presence of stable, warm, empathic interactions with others (Gilbert, 2009). This affiliative-focused "safeness system" involves nonverbal behaviors that may resemble the stable, caring context that an engaged and effective parent may establish with his or her child. One of the aims of CFT is training patients in accessing and employing this system of self-soothing through the felt experience of compassion.

In a similar conceptualization of compassion, Wang (2005) hypothesizes that human compassion emerges from an evolutionarily determined "species-preservative" neurophysiological system. This system has evolved in a relatively recent evolutionary timeframe, compared to the older "self-preservative" system. This "species-preservative" system is based on an "inclusive sense of self and promotes awareness of our interconnectedness to others" (Wang, 2005, p. 75). Relative to some other animals, human infants and children may seem defenseless, requiring, as they do, a great deal of care and protection in their early life. As a result, particular brain structures and other elements of the nervous and hormonal systems have evolved that promote behaviors, which involve protection of and care for others. Wang's review of the relevant literature suggests that the prefrontal cortex, cingulate cortex, and the ventral vagal complex are involved on a structural level, in the activation of this "species-preservative" system (Wang, 2005). These structures are all involved in the development of healthy attachment bonds, and may also be involved in the cultivation of mindfulness (Siegel, 2007).

In a related approach, Kristin Neff has suffused Western social psychology with fundamental elements of Buddhist philosophy to develop a theory of "self-compassion" which is distinct from both "self-esteem" and compassion for others (Neff, 2003). According to Neff, self-compassion involves three primary elements, these being: self-kindness, an awareness of our common humanity, and mindful awareness. Neff has developed a self-compassion measure, the Self-Compassion Scale (SCS; Neff, 2003), which is in use in an active research program. Higher levels of reported self-compassion have been found to be correlated with lower levels of depression and anxiety (Neff, 2003; Neff, Hseih, & Dejitthirat, 2005; Neff, Rude, & Kirkpatrick, 2007). These relationships have been found to persist, even after controlling for the effect of self-criticism. Neff and colleagues' research has demonstrated positive correlations among self-compassion and a range of positive psychological dimensions (Neff, Rude, & Kirkpatrick, 2007). These factors include, but aren't limited to: life satisfaction, feelings of social connectedness (Neff, Kirkpatrick, & Rude, 2007), personal initiative and positive affect (Neff, Rude, & Kirkpatrick, 2007). As Neff's conceptualization of compassion explicitly involves a Buddhist concept of mindfulness awareness, it represents a bridge between Eastern and Western thought, which is informing an observational and experimental research program.

BUDDHIST CONCEPTUALIZATIONS OF COMPASSION

Several concepts from Buddhist psychology relate to the term "compassion" as it is coming to be used in cognitive and behavioral therapies. The first, and possibly most directly related term, is *karuna*, which is a *Pali* term that translates as "compassion" (Rahula, 1959). Specifically, *karuna* involves a desire to prevent harm and suffering from occurring to others and the self. It is a general term which readily translates to our Western notion of compassion as involving a concern for the prevention of the suffering of others, and it is a quality which is seen as desirable in Buddhist teachings.

A second, related Buddhist concept of compassion, *metta*, is usually translated as "loving-kindness." *Metta* involves a desire to bring happiness and positive emotional experience to others and the self (Rahula, 1959). Perhaps the most commonly practiced form of compassionate mind training in contemporary Western Buddhist practice would be the *metta* meditation. During this meditation, the practitioner visualizes herself as an innocent being, and trains herself in the direction of physical, conceptual, and imaginal aspects of compassion toward the self (Kornfield, 1993). It is worth noting that this practice emerges in the *Theravada* tradition, wherein meditation training begins with mindfulness practice, and proceeds to more advanced practices which involve the cultivation of qualities such as *metta*. In this tradition, mindfulness serves as the context for the further development of compassion.

The third Buddhist concept related to the development of compassion is the concept of *bodhicitta*. *Bodhicitta* is a more complex concept to grasp to most Westerners, as it involves a Buddhist conceptualization of the self. A Buddhist view of the self stresses an interdependent nature of existence, suggesting that all phenomena are inextricably interwoven. It asserts that the contemplative experience of this great sense of connection will eventually result in an arising of altruistic aspiration to work toward the alleviation of suffering for all beings. This arising motivational imperative, known as *bodhicitta* (awakened heart; Chödrön, 2003), is a major foundation of Buddhist practice. Sheila Wang (2005) defines compassion in a way that reflects a linkage of neurophysiology and the Buddhist concept of self as follows: "Compassion is the feeling that arises from the realization of the deeper reality that we are all connected, we are all one" (p. 104).

CONCEPTUALIZATION OF MINDFULNESS

Over the course of the past several decades, the English language term "mindfulness" has been used as a placeholder for a variety of practices aimed at regulating the mind and body, which are largely derived from Buddhist psychology. This may be useful, as mindfulness has been foundational to Buddhist teachings since their inception (Mingyur, 2007). Nevertheless, a clarification of precisely what is meant by "mindfulness" is in order if one is to clearly examine the interrelationship of compassion and mindfulness. *Sati* is the original *Pali* term that has been translated into English as "mindfulness." *Sati* is a state of mind that can be said to involve a blend of attention, awareness, and memory (Kabat-Zinn, 2009; Seigel, Germer, & Olendzki, 2009). *Samma-sati* (translated as "correct mindfulness") is one of the eight primary aspects of Buddhist methodology, which are known as "The Eightfold Path" (Rahula, 1958). As such, *Sati* truly is a fundamental element of the original teachings of the historical Buddha,

Siddartha Gotama, with a history of practice of over 2,500 years. Numerous Buddhist approaches, particularly within the *Theravada* (Elder Vehicle) lineage, begin their programs of mental training with meditations and exercises designed to develop mindfulness. The influential Tibetan teacher, Chogyam Trungpa Rinpoche (2005) described mindfulness as "the method for beginning to relate directly with the mind which was taught by the Lord Buddha" (p. 24). Subsequent Buddhist teachings clearly emphasize techniques, ethical prescriptions, and philosophical perspectives designed to foster the cultivation of compassion. However, these practices emerge from a foundation in the development of *sati*.

Several writers have observed that the translation of *sati* as "mindfulness" has been in dispute, in Buddhist circles, over the past several decades (Dryden & Still, 2006; Kabat-Zinn, 2009; Seigel, Germer, & Olendzki, 2009). Differing translations have used such terms as "concentration," "bare attention," and "self-possession" (Dryden & Still, 2006). An awareness of these varying perspectives can shed some light on some varying aspects of the phenomenology of mindfulness practice. Nonetheless, it is clear that usage of "mindfulness" as a description of *sati* in English has gained irrevocable traction, and is firmly established.

The English term "mindfulness" entered Western psychological discussion more prominently after Jon Kabat-Zinn popularized the use of "mindfulness" in two ways. First, in his Mindfulness-Based Stress Reduction (MBSR) program, Kabat-Zinn used "Mindfulness" as an "umbrella term" (Kabat-Zinn, 2009) for his approach. This was a part of an effort to secularize and implement methods of meditation and mental training which he had found useful in Buddhist practice. Perhaps more importantly, Kabat-Zinn (1994) employed an operational definition of mindfulness that has become standard in psychological writing and practice. This operational definition is as follows: "the awareness that arises through paying attention, on purpose in the present moment, and non-judgmentally" (p. 4). An alternative, brief variant of this definition that is also in popular usage is, "awareness of present experience with acceptance" (Germer, Siegel, & Fulton, 2005, p. 7).

In "third wave" behavior therapies and Buddhist practice, this state of mindfulness is cultivated through various systematic methods, typically involving meditation, movement, and yogic exercises. Although such practices are important in mindfulness training, the concept of mindfulness points to a way of being, and a mode of operation of mind and body, that involves more than a skill that is learned through exercises (Hayes, 2002; Kwee, 1990, Tirch & Amodio, 2006). When construed as a distinct mode of experiencing, mindfulness may be understood as a fundamental core mechanism involved in the alleviation of suffering (Corrigan, 2004; Fulton & Seigel, 2005; Martin, 1997). Development of mindfulness cultivates an intentional mode of awareness that involves a paradoxical dis-identification from the contents of our conscious minds while gently allowing a nonjudgemental, full experience of the present moment (Segal, Williams, & Teasdale, 2002). Over the course of practice, mindfulness meditation can facilitate "breaking through stereotyped perception" (Goleman, 1988) to more accurately and thoroughly process the experience of living.

MINDFULNESS AND SOCIAL NEUROPHYSIOLOGY

Human emotion, cognition, awareness, and meta-awareness has emerged through an interaction of evolutionarily derived, genetically transmitted neurophysiology and

learned behavioral responses to environmental challenges (Panskepp, 1994). Over the past 20 years, research in mindfulness has begun to involve the establishment of models of evolutionary neurophysiology that relate to attachment, compassion, and regions of the brain associated with social functioning. An exploration of these neurophysiological models will allow us to better understand the role of mindfulness as a context for the further cultivation of compassion

Based upon his work in interpersonal neurobiology and his subjective experience in mindfulness training, Daniel Seigel (2007) has developed a theory of mindfulness which views mindful awareness as a special relationship with the self, using the brain's social hardware to cultivate an attuned awareness of internal mental processes, which promotes neural integration. The central concept of this perspective is that the quality of focused attention that a caregiver brings to his or her child while fostering healthy attachment bonds, referred to as "attunement," is being brought to the self through mindfulness training. Siegel characterizes the quality of attention in mindful awareness practices as involving "curiosity, openness, acceptance and love (COAL)." Synthesizing the work of other researchers, Siegel's text, *The Mindful Brain* (2007), outlines the ways in which the brain's central hub of social circuitry is involved in, and activated by, mindfulness practice. This perspective is entirely in accord with current research in compassion-focused approaches to therapy, which specifies similar processes and points to similar neural structures (Gilbert, 2005b, 2007, 2009; Neff, Kirkpatrick, & Rude, 2007; Wang, 2005).

Recent research has suggested that mindfulness training may affect more than regional brain activity, and may actually be associated with structural changes in the brain. Sara Lazar and colleagues (2005) conducted neuroimaging research that revealed increased thickness in both the middle prefrontal area and the right insula. This thickening was more pronounced in practitioners who had been practicing mindfulness meditation for a longer period of time. As has been noted, the middle prefrontal areas are often associated with caregiver behavior, and have been suggested to be involved in the experience of compassion (Wang, 2005). The insula serves as a communication channel between the limbic system and the middle prefrontal areas. Information about bodily sensations, emotions, and the representation of others is hypothesized as being linked and synthesized through the action of the insula (Critchley, 2005; Siegel, 2007). Lazar and colleagues' research is groundbreaking in that it is the first structural evidence of "experience-dependent cortical plasticity" associated with meditation training.

In a comprehensive review of EEG and fMRI imaging studies of meditation, Cahn and Polich (2006) found that meditation involved increased regional bloodflow to certain areas during the act of meditating. Although Cahn and Polich (2006) were not limiting their research to mindfulness meditation practices, all of the meditation practices that they studied involved some elements of mindfulness and focused concentration, with varying degrees of emphasis. As a result, their observations concerning brain behavior during meditation are particularly relevant. Overall, meditation appeared to involve changes in the anterior cingulate cortex (ACC), and in dorsolateral prefrontal regions of the brain. Cahn and Polich relate increased activation in the cingulate cortex and prefrontal and orbitofrontal cortices found in meditation imaging research to an increase in attentional focus. However, they note that Bartels and Zeki (2004) have also related the functioning of the ACC to the experience of "love." Indeed, researchers have established that the middle prefrontal cortex and ACC are

involved in attachment and caregiving, as well as attentional and decision-making processes (Siegel, 2007). Accordingly, here we may note the connection between cultivation of meditative attentional capacities and the emergence of warmth and empathy. CFT seeks to create states of mind that activate specific brain systems such as those linked to empathy (e.g., the insula, ACC) in order to facilitate new ways of processing difficult emotional memories or emotions. Meditation and mindfulness also activates, stimulates, and develops important brain systems that facilitate new ways to regulate and work with threats and organize our minds.

In a particularly clear study of the role of the ACC in mindfulness practice, recent fMRI research has demonstrated that adept meditators practicing a mindfulness of breathing exercise exhibit stronger activation in the rostral ACC and dorsal medial prefrontal cortex bilaterally during mindfulness of breathing, when compared to controls (Holzel et al., 2007). It has been hypothesized that this group difference may be attributed to a more effective processing of distracting events, and may involve more effective processing of emotions. As noted above, the ACC is hypothesized to be involved in attentional control. However, the ACC is also theorized to be involved in the resolution of conflict, emotion regulation, and adaptive responses to changing conditions (Allman, Hakeem, Erwin, Nimchinsky, & Hof, 2001). The involvement of the rostral ACC, in particular, suggests an emotion regulation role that is taking place during mindfulness practice (Allman et al., 2001).

It has been postulated that the ACC may be involved in a neural homeostatic mechanism that regulates an individual's response to distress (Corrigan, 2004). On the basis of this hypothesis, the state of mind that is cultivated during mindfulness training can be viewed as a core mechanism involved in the alleviation of suffering, through various forms of psychotherapy (Corrigan, 2004). Further, the involvement of the ACC reveals the activation of a structure wherein attention, emotional experiencing, and decision making come together. As noted previously, the subjective accounts of long-term Buddhist meditators suggest that advanced mindfulness training facilitates an emergence of a compassionate awareness and a change in the emphasis of the experienced sense of self. Neurophysiological research in this area is beginning to establish neural correlates for such experience.

Recent neuro-imaging research has further explored the neurophysiological changes that may be involved in such a shift in the experienced self. Research using fMRI technology has contrasted the neural correlates involved in a "narrative" mode of self-reference, and an "experiential" mode of self-reference (Farb et al., 2007). A "narrative" sense of self roughly corresponds to a conventional Western view of the self as a pervasive and ongoing, separate individual identity enduring across time and situation. The narrative mode of self-reference has been found to be correlated with the medial prefrontal cortex (mPFC), which is involved in maintaining a sense of self across time, comparing one's traits to those of others, and the maintenance of self-knowledge (Farb et al., 2007). The "experiential mode" of self-reference corresponds to the present moment focused awareness found in mindfulness meditation, and represents the mode of being that has been described as an "Observing Self" (Deikman, 1982). Additionally, this experiential mode of self-reference resembles relational frame theory concept, this being the experience of "Self As Context," which is to say an experience of the self which transcends verbal relational processing frames such as "I-It," "Here-There," "Then-Now." Essentially, this is an experience of self that is not involved with the processing of an experience of separateness and locality in space and time.

Farb and colleagues' (2007) research examined the neurological activity involved in these modes of self-reference among both experienced meditators and novice participants in an 8-week mindfulness training. Novice meditators exhibited a reduction in the activity of the mPFC while maintaining an experiential focus, which may reflect a reduction in a narrative sense of self-reference. More experienced mindfulness practitioners exhibited stronger reductions in this mPFC activity. Further, the trained participants also exhibited a more right lateralized network of cortical activity including the lateral prefrontal cortex, viscerosomatic areas, and the inferior parietal lobe. This network of activity appeared to correlate with a phenomenology of an "observing self" and may indicate a more effective mode of processing emotional memories from a mindful stance. Additionally, novice meditators evidenced a stronger coupling between areas of the PFC involved in narrative self-reference (mPFC) and areas which may be involved in the translation of visceral emotional states into conscious feelings (i.e., right insula; Damasio, 1999). More experienced meditators exhibited weaker coupling between these areas, which may reflect a cultivated capacity to disengage the habitual connection between an identified sense of self across time and the processing of emotional memories, yielding the previously described beneficial aspects of the experience of mindfulness.

CONCLUSIONS

The experience of two discrete states of being, as described by Farb and colleagues (2007) may be seen as phenomenological correlates of the "Two Truths" postulated by Madhyamika Buddhist philosophy (Tirch & Amodio, 2006). According to the Madhyamika teaching of Nagarjuna (2nd century), reality can be seen from two perspectives. One is the conditioned representation of reality, subjectively constructed in each individual's mind. Essentially, this represents identification with the stories that our minds tell us. Perhaps, this sense of reality and sense of self emphasizes the self-preservative processes in the mind and brain. This perspective is known as "Relative Truth." The second perspective is the nature of things as they "are" devoid of perceptual processing and cognitive interpretation, which is neither objective nor subjective. From this perspective, our sense of self may be connected to our direct experience of being, connected with the environment we coexist with and within. Such a perspective may be more involved with species-preservative mental and neural processes. This perspective is known as "Absolute Truth" in the Madhyamika philosophy. While we may experience ourselves as separate beings with a consistent sense of self, Buddhist philosophy contends that this is an illusion. From the Buddhist perspective of "dependent origination" and *karma* (cause and effect) all phenomena arise as the result of the interplay of numerous cause-and-effect relationships. All things in the world are not only interrelated, but also impermanent; and always being in a state of change, they lack "inherent existence." In other words, "Upon examining the ultimate nature of reality, Buddhist philosophers have concluded that things lack inherent existence, that is they do not have self-defining, self-evident characteristics. This is because if we search for the essence of matter in whatever object it may be, we discover that it is unfindable" (Dalai Lama, Benson, Thurman, Gardner, & Goleman, 1991, p. 23).

In order to demystify this perspective, one might consider the assumptions of string theory in quantum physics, wherein matter, ultimately, can be reduced to energy and movement (Greene, 1999; Dalai Lama, 2005). Similarly, the "Two Truth" working hypothesis can be viewed through the neural network and neuroscientific paradigm, which explains all human phenomenology as arising from spreading activation across a vastly complex network of nodes (LeDoux, 2002). The cognitive scientist and biologist, Francisco Varela (2000) has suggested that mindfulness, and the related affective phenomenon of arising compassion, training may represent a form of "neurophenomenology" which allows us to "cut the chain" of conditioned perceptions, revealing a conscious experience of our embodied cognition as an instantiate and self-referential aspect of a vast, perhaps infinite, network of "interbeing." According to Varela, the human mind is an emergent property resulting from the complex organization of enactively embodied cognition, wherein, "the organism as a meshwork of entirely co-determining elements makes it so that our minds are, literally inseparable, not only from the external environment, but also what Claude Bernard called the *milieu interieur*, the fact that we have not only a brain but an entire body" (Varela, 2000, p. 74).

The broad, interconnected perspective suggested by the theory, neuroscience, and practice of mindfulness and compassion-focused disciplines has far-reaching clinical implications. The clinician employing mindfulness training, compassionate mind training, or interventions aimed at fostering de-centering from the content of negative cognitions, is actually drawing the patient's awareness toward a more functional, workable experience of himself as an interactive part of a living process, moment by moment. Practitioners of mindfulness and compassionate mind training disciplines are deploying their attention in a way that may activate a species-preservative network of neural activity that promotes intrapersonal attunement and neural integration. In doing so, they contact a core mode of being, which presents itself as fundamental, liberating, and awe-inspiring. Indeed, the scientific examination of mindfulness may be the beginning of a clinical neuro-phenomenology of a new model of mental health. Employing mindfulness training as a context for the subsequent cultivation for compassion for the self and others, a radical sanity may begin to be approached which involves a transcendent sense of self, and contact with the present moment, both of which have been established as psychological processes that contribute to psychological flexibility and well-being (Hayes, Stroshal, & Wilson, 1999). Historical Buddhist philosophical and technical writings point to this inevitable emotional emergent property of this practice, this being the arising of the *bodhicitta*, the altruistic aspiration for the cessation of suffering of all beings. This can be construed as an abundant compassion emerging from the intellectual and experiential knowledge of the intimate interconnection of all phenomena. Compassion and mindfulness may be viewed as co-creating one another.

REFERENCES

Allman, J. M., Hakeem, A., Erwin, J. M., Nimchinsky, E., & Hof, P. (2001). The anterior cingulate cortex. The Evolution of an interface between emotion and cognition. *Annals of The New York Academy of Science, 935*, 107-117.

Bartels, A., & Zeki, S. (2004). The neural correlates of maternal and romantic love. *Neuroimage, 21,* 1155–1166.

Cahn, B. R., & Polich, J. (2006). Meditation states and traits: EEG, ERP, and neuroimaging studies. *Psychological Bulletin, 132,* 180-211.

Chödrön, P. (2003). *Start where you are: A guide to compassionate living*. Boston: Shambhala.

Corrigan, F. M. (2004). Psychotherapy as assisted homeostasis: activation of emotional processing mediated by the anterior cingulate cortex. *Medical Hypotheses*, 63, 968-973.

Critchely, H. D. (2005). Neural mechanisms of autonomic, affective and cognitive integration. *Journal of Comparative Neurology, 493*, 154-166.

Dalai Lama, H.H. (2005). *The Universe in a single atom*. New York: Morgan Road Books.

Dalai Lama, H.H., Benson, H., Thurman, R.A.F., Gardner, H.E., & Goleman, D. (1991). *Mind science: An East-West dialogue*. Boston: Wisdom.

Damasio, A.R. (1999). *The feeling of what happens: Body and emotion in the making of consciousness.* USA: Harcourt Trade Publishers.

Deikman, A. (1982). *The Observing self: Mysticism and psychotherapy*. Boston: Beacon Press.

Dryden, W., & Still, A. (2006). Historical aspects of mindfulness and self-acceptance in psychotherapy. *Journal of Rational-Emotive & Cognitive-Behavior Therapy, 24*(1). 3-28.

Farb, N. A. S., Segal, Z., Mayberg, V., Bean, H. J., McKeon, D., Fatima, Z., et al. (2007). Attending to the present: Mindfulness meditation reveals distinct neural modes of self-reference. *Social Cognitive Affective Neuroscience Advance Access*, *2*, 1-10.

Fulton, P.R., & Seigel, R.D. (2005). Buddhist and Western psychology: Seeking Common Ground. In C.K. Germer, R.D. Seigel, & P.R. Fulton (Eds.), *Mindfulness and Psychotherapy* (pp. 55-72). New York: Guilford.

Germer, C.K., Seigel, R.D., & Fulton, P.R. (Eds.). (2005). *Mindfulness and Psychotherapy*. New York: Guilford.

Gilbert, P. (Ed.). (2005a). *Compassion: Conceptualisations, research and use in psychotherapy*. New York: Routledge.

Gilbert, P. (2005b). Compassion and cruelty. In P. Gilbert (Ed.), *Compassion: Conceptualisations, research and use in psychotherapy*. New York: Routledge.

Gilbert, P. (2007). Evolved minds and compassion in the therapeutic relationship. In P. Gilbert & R. Leahy (Eds.), *The therapeutic relationship in the cognitive behavioral psychotherapies*. New York: Routledge.

Gilbert, P., & Irons, C. (2005). Focused therapies and compassionate mind training for shame and self-attacking. In P. Gilbert (Ed.), *Compassion: Conceptualisations, research and use in psychotherapy* (pp. 263-326). New York: Routledge.

Gilbert, P., & Leahy, R. (2007). *The therapeutic relationship in the cognitive behavioral psychotherapies*. New York: Routledge.

Goleman, D. (1988). *The meditative mind.* New York: Putnam.

Greene, B. (1999). *The elegant universe*. New York: Norton.

Hayes, S.C. (2002). Acceptance, mindfulness and science. *Clinical Psychology Science and Practice, 9,* 101-106.

Hayes, S. C., Follette, V. M., & Linehan, M. M. (Eds.). (2004). *Mindfulness and acceptance: Expanding the cognitive-behavioral tradition*. New York: Guilford.

Hayes, S.C., Stroshal, K.D., & Wilson, K.G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York: Guilford.

Holzel, B. K., Ott, U., Hempel, H., Hackl, A., Wolf, K., Stark, R., & Vaitl, D. (2007). Differential engagement of anterior cingulate and adjacent medial frontal cortex in adept meditators and non-meditators, *Neuroscience Letters*, *421*(1), 16-21.

Kabat-Zinn, J. (1994). *Wherever you go there you are*. New York: Hyperion.

Kabat-Zinn, J. (2009). Foreword. In F. Didonna (Ed.), *Clinical handbook of mindfulness*. (pp. xxv-xxxiii). New York: Springer.

Kornfield, J. (1993). *A path with heart*. New York: Bantam.

Kwee, M.G.T. (Ed.). (1990). *Psychotherapy, meditation, and health: A cognitive behavioural perspective*. London: East-West.

Lazar, S. W., Kerr, C. E., Wasserman, R. H., Gray, J. R., Greve, D. N., Treadway, M. T., et al. (2005). Meditation experience is associated with increased cortical thickness. *Neuroreport*, *16*(17), 1893-1897.

LeDoux, J. (2002). *Synaptic self*. New York: Viking.

Linehan, M.M. (1993). *Cognitive behavioral treatment of borderline personality disorder*. New York: Guilford.

Mansell, W. (2008). What is CBT really and how can we enhance the impact of effective psychotherapies such as CBT? In R. House &

D. Loewenthal (Eds.), *Against and for CBT: Toward a constructive dialogue?* (pp. 19-32). Herefordshire: PCCS Books.

Martin, J.R. (1997). Mindfulness: A proposed common factor. *Journal of Psychotherapy Integration, 7,* 291-312.

Mingyur, Y. (2007). *The joy of living: Unlocking the secret and science of happiness*. New York: Harmony Books.

Neff, K. D. (2003). Development and validation of a scale to measure self-compassion. *Self and Identity, 2,* 223-250.

Neff, K. D., Hseih, Y., & Dejitthirat, K. (2005). Self-compassion, achievement goals, and coping with academic failure. *Self and Identity, 4,* 263-287.

Neff, K. D., Kirkpatrick, K., & Rude, S. S. (2007). Self-compassion and its link to adaptive psychological functioning. *Journal of Research in Personality, 41,* 139-154.

Neff, K. D., Rude, S. S., & Kirkpatrick, K. (2007). An examination of self-compassion in relation to positive psychological functioning and personality traits. *Journal of Research in Personality, 41*, 908-916.

Panskepp, J. (1994). The basics of basic emotion. In P. Ekman & R.J. Davidson (Eds.), *The nature of emotion* (pp. 20-24). New York: Oxford University Press.

Rahula, W. (1959). *What the Buddha taught*. New York: Grove Press.

Siegel, Z.V., Williams, J.M.G., & Teasdale, J.D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. New York: Guilford.

Siegel, D. (2007). *The mindful brain*. New York: Norton.

Seigel, R., Germer, C. K., & Olendzki, A. (2009) . Mindfulness: What is it? Where did it come from? In F. Didonna (Ed.), *Clinical handbook of mindfulness* (pp. 17-35). New York: Springer.

Tirch, D., & Amodio, R. (2006). Beyond mindfulness and posttraumatic stress disorder. In M. G. T. Kwee, K.J. Gergen, & F. Koshikawa (Eds), *Horizons in Buddhist Psychology* (pp. 101-118). Taos, NM: Taos Institute Publications.

Thurman, R. (1997). *Essential Tibetan Buddhism*. Edison, NJ: Castle Books.

Trungpa, C. (2005). *The sanity we are born with.* Boston: Shambhala.

Varela, F. (2000). Steps to a science of interbeing. In G. Watson (Ed.), *The psychology of awakening* (pp. 71-89). York Beach, ME: Samuel Weiser.

Wang, S. (2005). A conceptual framework for integrating research related to the physiology of compassion and the wisdom of Buddhist teachings. In P. Gilbert (Ed.), *Compassion: Conceptualisations, research and use in psychotherapy*. New York: Routledge.