

## Reflections on The Mindful Brain

A Brief Overview Adapted from  
*The Mindful Brain: Reflection and Attunement in the Cultivation of Well-Being*  
(New York: WW Norton 2007)

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Welcome to a journey into the heart of our lives. Being mindfully aware, attending to the richness of our experiences, creates scientifically recognized enhancements in our physiology, our mental functions, and our interpersonal relationships. Being fully present in our awareness opens our lives to new possibilities of well-being.

Almost all cultures have a form of practice to help develop awareness of the moment. The major religions of the world utilize some form of focusing one's attention, from meditation to prayer, yoga to tai' chi. Each of these traditions may have their own particular approach, but they share in common the power of intentionally focusing awareness in a way that transforms people's lives.

Why is this mindful awareness so universal an ideal goal across our human family? Can we find a common thread that links these practices that might help us understand the power of this way of being to enhance health, relationships, and well-being?

### **Minfulness as an Attuned Relationship with Oneself**

Although mindfulness is often seen as a form of attentional skill that focuses your mind on the present, the approach of *The Mindful Brain* takes a deep look at this type of awareness through a perhaps surprising perspective: seeing mindfulness as a form of healthy relationship with oneself.

In my own field of studying interpersonal relationships within families, we use the concept of "attunement" to examine how one person, a parent for example, focuses attention on the internal world of another, such as a child or a spouse. This focus on the mind of another person harnesses neural circuitry that enables two people to "feel felt" by each other. This state is crucial for people in relationships to feel vibrant and alive, to feel understood and to feel at peace. Research has shown that such attuned relationships promote resilience and longevity.

Our understanding of mindfulness can build on these studies of interpersonal attunement and the self-regulatory functions of attention in suggesting a new approach: That mindful awareness is a form of intra-personal attunement.

Being mindful is a way of becoming your own best friend.

We'll explore how the process of attunement may lead the brain to grow in ways that promote balanced self-regulation and a process called neural integration that enables flexibility and self-understanding. This way of feeling felt, of feeling connected in the world, may help us understand how becoming attuned to yourself may promote these physical and psychological dimensions of well-being with mindful awareness.

Turning to the brain can help us see the commonality of mechanisms between these two forms of internal and interpersonal attunement. By examining the neural dimension of functioning and its possible correlation with mindful awareness, we may be able to expand our understanding of why and how mindfulness creates the documented improvements in immune function, inner sense of well-being, and in our capacity for rewarding interpersonal relationships.

## **The Need**

We are in desperate need for a new way of being – in our selves, in our schools, and in our society. Our modern culture has evolved in recent times to create a troubled world with individuals suffering from alienation, schools failing to inspire and to connect with children, a modern society without a moral compass helping clarify how we can move forward in our global community.

I have seen my own children grow in a world more and more distant from human interactions that our brains have evolved to require – yet are not a part of our inherent educational and social systems. The human connections that help shape our neural connections are sorely missing in modern life.

We are not only losing our opportunities to attune to each other, but the hectic lives many of us live leave little time for attuning to ourselves.

As a physician, psychiatrist, psychotherapist and educator, I've been saddened and dismayed to find so absent from our work as clinicians a firm grounding in the healthy mind itself. After asking over seventy four thousand mental health professionals face-to-face in lecture halls around the world if they'd ever had a course on the mind, or on mental health, *ninety-five percent* replied “no.” What then have we been practicing? Isn't it time for us to become aware of the mind itself, not just to highlight symptoms of illness?

Cultivating an experiential understanding of the mind is a direct focus of mindful awareness: We come to not only know the mind, but to embrace our own inner world and the mind of others with kindness and compassion. The human potential for compassion and empathy is huge. Realizing that potential may be challenging in these troubled times, but perhaps it may be as direct as attuning to ourselves, one mind, one relationship, one moment at a time.

## **Interpersonal Neurobiology**

Understanding the deep nature of how our relationships help shape our lives and our brains has been a passion driving my professional life. Over the last fifteen years I have been involved in trying to create an interdisciplinary view of the mind and mental health (see Siegel, 1999, 2001, 2003, 2006). The perspective of “interpersonal neurobiology” embraces a wide array of ways of knowing, from the broad spectrum of scientific disciplines to the expressive arts and contemplative practice. Interpersonal neurobiology relies on a process of integrating knowledge from a variety of disciplines to find the common features that are shared by these independent fields of knowledge. Much like the old Indian fable of the blind men and the elephant, each discipline examines a necessarily focused area of the elephant, of reality, in order to know that dimension deeply and with detail. But to see the whole picture, to get a feeling for the whole elephant, it is vital that we try to bring different fields together. While each blind man may not agree with the perspective of the other, each has important contributions to creating a sense of the whole.

And so we will be using this integrative approach to bring together various ways of knowing to understand mindfulness in perhaps a broader way than any single perspective might permit. At the foundation we will be trying to combine first person knowing with scientific points of view. Beyond this important subjective/objective marriage, we'll be combining insights from the field of neuroscience with those of the fields of attachment research to consider how the fundamental process of attunement might be at work in the brain in states of interpersonal communication and the proposed form of intra-personal attunement of mindfulness.

Turning to the brain and attachment studies is not meant to favor these two fields over any other. This will be a starting point in our journey. As you'll see, a variety of fields will come into play as we examine the research on memory, narrative, wisdom, emotion, perception, attention, and learning along with explorations that go deeply into internal subjective experience.

## **An Invitation**

Mindful awareness requires that we dive deeply into the inner nature of the mind, to sense our experiences with a sometimes new set of lenses. Studying mindfulness as a useful and fascinating human process entails that we blend personal immersion and scientific thought.

I love science and am thrilled to learn from empirical explorations into the deep nature of ourselves and our world. But I am also a clinician, steeped in the world of subjective experience. Our internal world is real, though it may not be quantifiable in ways that science often requires for careful analysis. In the end, our subjective lives are not reducible to our neural functioning. This internal world, this subjective stuff of the mind, is at the heart of what enables us to sense each other's pain, to embrace each other at times of distress, to revel in each other's joy, to create meaning in the stories of our lives, to find connection in each other's eyes.

My own personal and professional interest in mindfulness emerged recently in an unexpected way. After writing a text exploring how the brain and relationships interact to shape our development, I was invited to offer lectures at my daughter's preschool about parenting and the brain. After creating some workshops for parents, the preschool director, Mary Hartzell, and I wrote a book in which we placed "mindfulness" as our first grounding principle. As educators we knew that being aware, being mindful, was the essential state of mind of a parent (or teacher or clinician) to promote well-being in children.

After our book was published, numerous people asked how we came to teach parents to meditate. This was a great question since neither Mary nor I are trained to meditate nor did we think that we were "teaching meditation" to parents. Mindfulness, in our view, was just the idea of being aware, of being conscientious, with kindness and care. We didn't actually teach parents to meditate, but rather taught them how to be reflective and aware of their children, and themselves, with curiosity, openness, acceptance, and love.

I am continually learning from my patients and from my students, whether they are parents or pupils in high school, therapists or scientists. These questions about mindfulness and parenting inspired me to delve into the existing research in the growing field of mindfulness-based clinical interventions. What struck me in learning about this burgeoning work was that the outcome measures for its clinical applications appeared to overlap with the outcome measures of my own field of research in attachment: the study of the relationship between parents and children.

This overlap of the ways in which well-being and resilience were promoted by secure attachment and by mindful awareness practice was fascinating. This similarity also dovetailed with the functions of a certain integrative region of the brain, the middle aspects of the prefrontal cortex just behind the forehead. I became intrigued by this convergence and was eager to learn more about the fascinating field of mindfulness.

With this exciting view of integrating ideas among the worlds of relationships, brain, and mind, I dove into direct experience into the depths of the mind. I invite you to come along with me as we explore the nature of mindful awareness that unfolded, moment by moment, in this mind-opening journey of discovery.

## **A Mindful Awareness**

Being aware of the fullness of our experience awakens us to the inner world of our mind and immerses us completely in our lives. This is an exploration into how the way we pay attention in the present moment can directly improve the functioning of our body and brain, our subjective mental life with its feelings and thoughts, and our interpersonal relationships with each other.

The essential proposal is that this ancient and useful form of awareness harnesses the social circuitry of the brain to enable us to develop an attuned relationship within our own mind. To explore this idea, we can turn to the research on our social lives, examining the particular

regions of the brain, including the mirror neuron system, that enable attunement and permit us to resonate with our own intentional states.

The term “mindful brain” is used in this approach to embrace the notion that our awareness, our mindful “paying attention or taking care,” is intimately related to the dance between our mind and our brain. Being “mindful” has a range of definitions, from the common everyday notion of “bearing in mind or inclined to be aware” to the specific educational, clinical, and scientific definitions of the term we’ll explore in the pages ahead. It is with this broad general common-usage definition that I invite you to become aware of both the exciting new science emerging about the more specific forms mindfulness and your own subjective experience of the moment at the heart of your life.

### **Finding the Mind in Our Everyday Lives**

Over the last twenty years there has been a growing attention to “mindfulness” in the western world. This focus of attention has been on a number of dimensions of daily life, from our personal lives to the experience of children in schools and patients in therapy. The busy lives people lead in the technologically-driven culture that consumes our attention often produces a multi-tasking frenzy of activity that leaves people constantly doing, with no space to breathe and just “be.” The adaptations to such a way of life often leaves youth accustomed to high levels of stimulus-bound attention, flitting from thing to thing, with little time for self-reflection or interpersonal connection of the direct, face-to-face sort that the brain needs for proper development.

Little in our hectic lives provides for attuning with each other.

In our personal lives, many of us have found this societal whirlwind deeply dissatisfying. We can adjust, responding to the drive to do, but often we cannot thrive in such a frenetic world. On this personal level people in modern cultures are often eager to learn about a new way of being that can help them flourish.

Mindfulness in its most general conception offers a new way of being aware that can serve as a gateway toward a more vital mode of being in the world: We become attuned to our selves.

Mindfulness has been described for thousands of years. It is found in cultures in modern and ancient times, in the West and in the East.

The mind is filled with beliefs, attitudes, and memories that create the influences that can keep us from being mindful in this general way. Wars can be initiated and mass destruction and genocide planned and executed by humans filled with top-down forces that keep them from considering the whole of their actions on others. With such mindless behaviors, people are able to destructively enact their impulses and ideas without consideration of the larger good.

Even in day-to-day life, small moments can be lived on automatic pilot and the opportunity to relish in the amazing gift of life is lost. The general notion of mindfulness is a part of our cultural vernacular, even if too rarely practiced in its generic meaning. Waking up in our lives involves seeing the larger picture of our societal paths as well as addressing the small moments of our precious lives.

### **Defining the Mind**

Before we explore the various ways of thinking about mindfulness and focusing the mind in the moment, we might want to ask the basic question: what is the mind?

I have found a useful definition of the mind, supported by a range of scientists from various disciplines, to be “a process that regulates the flow of energy and information.”

Our human mind is both embodied and relational. Embodied means that the mind involves a flow of energy and information that occurs within the body, including the distributed nervous system we’ll refer to by using the simple term, “brain.” Relational signifies that

dimension of the mind involving the flow of energy and information that occurs between people. Right now this flow from me as I type these words to you as you read them is shaping our minds – yours, and mine. Even as I am imagining who you might be and what your response is, I am changing the flow of energy and information in my brain and body as a whole. As you absorb these words your mind is embodying this flow of energy and information as well.

### **Being Mindful**

Mindfulness in its most general sense is about waking up from a life-on-automatic. With mindful awareness the flow of energy and information that is our mind enters our conscious attention and we can both appreciate its contents and also come to regulate its flow.

Mindful awareness, as we'll see, actually involves more than just simply being aware: It involves being aware of aspects of the mind itself. Instead of being on automatic and mindless, mindfulness helps us awaken and with this reflection on the mind we make choice and change possible.

How we focus attention helps directly shape the mind. When we develop a certain form of attention to our here-and-now experiences and to the nature of our mind itself, we create a special form of awareness called mindfulness.

### **Some Benefits**

Studies have shown that specific applications of mindful awareness improve the capacity to regulate emotion, to combat emotional dysfunction, to improve patterns of thinking, and to reduce negative mindsets. Mindfulness can even treat and prevent depression, changing the imbalance of circuits in the brain.

Research on some dimensions of mindful awareness practices reveals that the body's functioning is greatly enhanced: Healing, immune response, stress reactivity, and a general sense of physical well-being are improved with mindfulness (Davidson et al, 2003). Our relationships with others are also improved, as we see that the ability to perceive the non-verbal emotional signals from others is enhanced and our ability to sense the internal worlds of others is augmented (Ekman, 2006). In these ways we come to compassionately feel the feelings of others and to empathize, to understand another's points of view.

We can see the power of mindful awareness to achieve these many and diverse beneficial changes in our lives when we consider that this form of awareness may directly shape the activity and growth of parts of the brain responsible for our relationships, our emotional life, and our physiological response to stress.

### **Mindful Awareness**

Direct experiencing in the present moment has been described as a fundamental part of Buddhist, Christian, Hindu, Islamic, Jewish, and Taoist teaching for centuries (Goleman, 1988, Armstrong, 1993). In these religious traditions, from mystical Christianity with centering prayer (Keating, 2005; and Fitzpatrick-Hopler, 2006) to Buddhist mindfulness meditation (Kornfield, 1993, in press; Thich Nhat Hahn, 1991, Wallace, 2006), one sees the use of the idea of being aware of the present moment in a different light from the cognitive aspect of mindfulness.

Many forms of prayer in different traditions require that the individual pause and participate in an intentional process of connecting with a state of mind or entity outside the day-to-day way of being. Prayer and religious affiliation in general have been demonstrated to be associated with increased longevity and well-being (Pargament, 1997). The common overlap of group belonging and prayer makes it hard to tease apart the internal from the interpersonal

process, but in fact we may find that this is just the point: pausing to become mindful may indeed involve an internal sense of belonging.

In recent research, the clinical application of the practice of mindfulness meditation derived from the Buddhist tradition has served as a focus of intensive study on the possible neural correlates of mindful awareness. Here we see the use of the term “mindfulness” in a way that numerous investigators have been trying to clearly define. (Bishop et al, 2004; Baer et al, 2006). These studies across a range of clinical situations, from medically ill with chronic pain to psychiatric populations with disturbances of mood or anxiety, have shown the effective application of secular mindfulness meditation skills taught outside of any particular religious practice or group membership. These studies have demonstrated positive effects on mind, body, and relationships.

In many ways, scholars see the nearly 2500 year old practice of Buddhism as a form of study of the nature of mind (Lutz, Dunne, and Davidson, 2006) rather than a theistic tradition. It is possible to practice Buddhist-derived meditation, and ascribe to aspects of the psychological view of the mind from this perspective, for example, and maintain one’s beliefs and membership in other religious traditions. In contemplative mindful practice one focuses the mind in specific ways to develop a more rigorous form of present-moment awareness that can directly alleviate suffering in one’s life.

Jon Kabat-Zinn has devoted his professional life to bringing mindfulness into the mainstream of modern medicine. In Kabat-Zinn’s view, “An operational working definition of mindfulness is: the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment.” (Kabat-Zinn, 2003, pages 145-146). This “non-judgmental” view in many ways can be interpreted to mean something like “not grasping on to judgments,” as the mind seems to continually come up with reactions that assess and react. Being able to note those judgments and disengage from them may be what non-judgmental feels like in practice. “On purpose” implies that this state is created with intention to focus on the present moment. As the Inner Kids program for young children to learn basic mindfulness skills states, mindfulness is “Being aware of what’s happening as it’s happening.” (Kaiser-Greenland, 2006)

Kabat-Zinn goes on to note that the Buddhist origins of this view of mindfulness and the natural laws of the mind reveal “a coherent phenomenological description of the nature of the mind, emotion, and suffering and its potential release, based on highly refined practices aimed at systematically training and cultivating various aspects of mind and heart via the faculty of mindful attention (the words for mind and heart are the same in Asian languages; thus ‘mindfulness’ includes an affectionate, compassionate quality within the attending, a sense of openhearted, friendly presence and interest). And mindfulness, it should also be noted, being about attention, is also of necessity universal. There is nothing particularly Buddhist about it. We are all mindful to one degree or another, moment by moment. It is an inherent human capacity. The contribution of the Buddhist tradition has been in part to emphasize simple and effective ways to cultivate and refine this capacity and bring it to all aspects of life.”

Modern applications of the general concept of mindfulness have built on both traditional skills of meditation and have also developed unique non-meditative approaches to this human process of being mindful. A useful fundamental view is that mindfulness can be seen to consist of the important dimensions of the self-regulation of attention and a certain orientation to experience as Bishop and colleagues (2004) have proposed: (1) “the self-regulation of attention so that it is maintained on immediate experience, thereby allowing for increased recognition of mental events in the present moment” and (2) “a particular orientation toward one’s experiences in the present moment, an orientation that is characterized by curiosity, openness, and acceptance.” In the Dialectical Behavior Therapy approach, mindfulness has been described as “the intentional process of observing, describing, and participating in reality, nonjudgmentally, in the moment, and with effectiveness” (Dimidjian & Linehan, 2003a, 2003b). These and other

authors acknowledge that mindfulness also may result in common outcomes, such as patience, non-reactivity, self-compassion, and wisdom. In Acceptance and Commitment Therapy, mindfulness “can be understood as a collection of related processes that function to undermine the dominance of verbal networks, especially involving temporal and evaluative relations. These processes include acceptance, defusion, contact with the present moment, and the transcendent sense of self.” (Fletcher and Hayes, 2006).

A recent synthetic study of numerous existing questionnaires regarding mindfulness (Baer et al 2006) reveals five factors that seemed to cluster from independently created surveys were: 1) Nonreactivity to Inner Experience (e.g., I perceive my feelings and emotions without having to react to them); 2) Observing/noticing/attending to sensations, perceptions, thoughts, feelings (e.g., I remain present with sensations and feelings even when they are unpleasant or painful); 3) Acting with awareness/(not on) automatic pilot/concentration/nondistracted (e.g., I (do not) break or spill things because of carelessness, not paying attention, or thinking of something else); 4) Describing/labeling with words (e.g., I can easily put my beliefs, opinions, and expectations into words); 5) Nonjudgmental of experience (e.g., I (do not) tell myself I shouldn't be thinking the way I'm thinking).

Each of these, except for observing, were found to be the most statistically useful and reliable constructs in considering an operational definition of mindfulness. They seemed to reveal four relatively independent facets of mindfulness. Observing was found present more robustly in these subjects of college students whom meditated regularly. Observation was considered a learnable skill. Future research needs to clarify it as an independent facet. For now we will maintain observation in the five facets that Baer and colleagues delineated as we explore the nature of mindfulness and the brain.

At this point in the state of the art of the scientific endeavor to operationalize a clear definition for mindful awareness, the most parsimonious approach will be to build on the cumulative wisdom of the breadth of practitioners and researchers in the field. This will be our framework for exploring the ways in which this form of mindful awareness may involve the social neural circuitry of the brain as mindfulness promotes a form of internal attunement.

### **Awareness of the Mind Itself**

Ultimately the practices that develop mindful ways of being enable the individual to perceive the deeper nature of how the mind functions. Though there are many ways of cultivating mindful awareness, each of them develops an awareness of the faculties of the mind, such as how we think, feel, and attend to stimuli. Mindfulness meditation, as one example, is thought to be especially important for the training of attention and the letting go of a strict identification with the activities of the mind as being the full identity of the individual.

Mindful awareness practices, or “MAPs” as we call them at the Mindful Awareness Research Center at UCLA (MARC.UCLA.edu), can be found in a wide variety of human activities. Historically various practices have been developed for literally thousands of years in the forms of mindfulness meditation, yoga, tai chi chuan, and qui quong. In each of these activities, the practitioner is focusing the mind in a very specific way on moment-to-moment experience.

In almost all contemplative practices, for example, there is an initial use of the breath as a focal point in which to center the mind's attention. Because of this commonality of the breath across cultural practices, we'll be discussing the possible significance of breath-awareness for the overall processes of the mindful brain. Mindful awareness is a human capacity not limited to one religious or contemplative practice, but practiced by and available to the full spectrum of our human family.

Mindfulness enables us to not only refine our awareness of the present moment, it opens an important window of the mind to come to know itself.

Mindful awareness involves awareness of awareness.

This reflection on the nature of one's own mental process is a form of "metacognition" in which "meta" signifies something reflected onto itself: Thinking about thinking in the broadest sense. When we have "meta-awareness" this indicates "awareness of awareness." Whether we are engaging in yoga or centering prayer, sitting and sensing our breathing in the morning or doing tai chi at night, each MAP develops this capacity to be aware of awareness.

Awareness of awareness is one aspect of what we can consider a form of reflection. In this way, mindful awareness involves reflection on the inner nature of life, on the events of the mind that are emerging, moment by moment.

### **Life on Automatic Pilot: Mindlessness and Mindfulness**

The difference between jogging "mindlessly" versus jogging "mindfully" is that in the latter we are aware, each moment, of what we are doing as we are doing it. If we jog and daydream about what we'll be doing that night, or what happened yesterday, then we are not engaged in mindful jogging. There is nothing "wrong" with daydreaming and letting the mind wander: In fact, as we'll see, mindful practice can actually intentionally focus awareness on *whatever* arises, as it arises. If you intended to enable your mind to daydream and were aware of your awareness of your imagination then that would be a mindful reverie, though perhaps not a mindful jog as you were unaware of your feet and the path in front of you.

Notice here that we can often perform behaviors, such as jogging down a trail, and be lost in thinking about something other than the physical activity we are doing. We have neural circuits that carry out this "automatic behavior" all the time, enabling us to do several things at once, like jog and daydream simultaneously. Yet fortunately we don't usually trip and fall or crash the car on the highway.

For some people, this "living on automatic" is a routine way of life. If our attention is on something other than what we are doing for most of our lives we can come to feel empty and numb. As automatic thinking dominates our subjective sense of the world, life becomes repetitive and dull. Instead of experience having an emergent feeling of fresh discovery, as a child sensing the world for the first time, we come to feel dead inside, "dead before we die."

The question often asked is, can we learn to wake up and live fully?

Living on automatic also places us at risk of mindlessly reacting to situations without reflecting on various options of response. The result can often be knee-jerk reactions that in turn create similar mindless reflexes in others. A cascade of reinforcing mindlessness can create a world of thoughtless interactions, cruelty, and destruction.

Being mindful opens the doors not only to being aware of the moment in a fuller way, but by bringing the individual closer to a deep sense of their own inner world, it offers the opportunity to enhance compassion and empathy. The misunderstood vision of mindfulness as being "self-indulgent" is actually disproven by careful research that demonstrates that mindful awareness skills actually enhance the capacity for caring relationships with others.

Mindfulness heightens the capacity to become filled by the senses of the moment and attuned to our own state of being. As we also become aware of our awareness, we can sharpen our focus on the present, enabling us to feel our feet as we travel the path of our lives. We engage with ourselves and with others with more authentic connection, with more reflection and consideration. Life becomes more enriched as we are aware of the extraordinary experience of being, of being alive, of living in this moment.

### **COAL and Kind Awareness**

In addition to this reflective awareness of awareness in the present moment, mindfulness has the qualities that I describe with my patients with the acronym "COAL:" we approach our here-and-now experience with curiosity, openness, acceptance, and love.

Imagine this situation. Let's say you've stubbed your toe badly and feel the intensity of the pain. Okay, you may say, I am "mindful" of that pain. Now if you say inside your head "What an idiot I was for stubbing my toe!" You can be sure that the suffering you'll experience will be greater than the pain you have emanating from your toe. You are aware of the pain, but are not filled with the COAL mindset. In this case your brain actually creates more suffering by amplifying the intensity of the pain and belittling you for having the accident. This is all the difference between intensifying the distress versus coming to feel the pain without suffering.

Diane Ackerman told the story at our Mind and Moment gathering of poets, practitioners, and psychotherapists about a time when she had an accident in Japan and nearly died. She had been traversing down a cliff to study some rare birds on a small island and fell, breaking several ribs and being barely able to breathe. Her description of the event (Ackerman et al, 2006) reveals how she approached the moment-to-moment encounter with curiosity, openness, acceptance, and love. This mindset enabled her to learn from the event, to gather the internal strength she needed to hold on, literally, and to not only survive in spite of the accident, but to thrive because of it.

This distinction between awareness with COAL and just paying attention with preconceived ideas that imprison the mind ("I shouldn't have hit my foot, I'm so clumsy" "Why did I fall off this cliff? What is wrong with me?") is the difference that makes all the difference.

This is the difference between being aware, and being mindfully aware.

Cultivating mindful awareness requires that we become aware of awareness AND that we be able to notice when those "top-down" preconceptions of shoulds and ought-to's are choking us from living mindfully, of being kind to ourselves. Top-down refers to the way that our memories, beliefs, and emotions shape our "bottom-up" direct sensation of experience. Kindness to ourselves is what gives us the strength and resolve to break out of that top-down prison and approach life's events, planned or unplanned, with curiosity, openness, acceptance and love.

But can we actually cultivate such love for ourselves? Research into mindful awareness suggests that we can. Our approach to mindfulness as a form of relationship with oneself may hold a clue as to how this is accomplished. With mindfulness seen as a form of intra-personal attunement, it may be possible to reveal the mechanisms by which we become our own best friend with mindful practice. Would you treat your best friend with kindness or hostility? Attunement is at the heart of caring relationships of all sorts: between parent and child, teacher and student, therapist and patient/client, lovers, friends, and close professional colleagues.

With mindful awareness, we can propose, the mind enters a state of being in which one's here-and-now experiences are sensed directly, accepted for what they are, and acknowledged with kindness and respect. This is the kind of attunement interpersonally that promotes love. And this is, I believe, the intrapersonal attunement that helps us see how mindful awareness can promote love for oneself.

Interpersonal relationships have been shown to promote emotional longevity, helping us achieve states of well-being and medical health (Anderson and Anderson, 2003). I am proposing here that mindful awareness is a form of self-relationship, an internal form of attunement, which creates similar states of health. This may be the as yet unidentified mechanism by which mindfulness promotes well-being.

### **Medical Applications**

Sensing the profound importance of this power of mindfulness, Jon Kabat-Zinn nearly thirty years ago began a project to apply these ancient ideas in a modern medical setting. What began as an inspiration during a silent retreat led to Kabat-Zinn's approaching the medical faculty at the University of Massachusetts Medical Center where he taught. Could he take on the patients whose situations could no longer be helped by conventional medical interventions? Could he add anything at all to the recovery of those patients who were treated conventionally? Glad to have a place where these individuals might find some relief, the medical faculty agreed and the

beginnings of the Mindfulness-Based Stress Reduction (MBSR) clinic were initiated (Kabat-Zinn, 1990, 1995).

The MBSR program brought the ancient practice of mindfulness to individuals with a wide range of chronic medical conditions from chronic back pain to psoriasis. Kabat-Zinn and colleagues, including his collaborator Richard Davidson at the University of Wisconsin in Madison, were ultimately able to demonstrate that MBSR training could help reduce subjective states of suffering and improve immune function, accelerate rates of healing, and nurture interpersonal relationships and an overall sense of well-being (Davidson et al, 2003).

MBSR has now been adopted by hundreds of programs around the world. Research (Grossman et al, 2004) has demonstrated that physiological, psychological, and interpersonal improvements occur in a variety of patient populations. With these consistent findings being so robust, and a rising interest in mindful awareness practices, it wasn't surprising that my own field of mental health would take note and integrate the essence of mindfulness as a basis for approaching individuals with psychiatric disorders.

### **Discernment and Mental Health Implications**

Mindfulness has influenced a wide range of approaches to psychotherapy with new research revealing significant improvements in various disorders with reduction in symptoms and prevention of relapse (Hayes, Strosahl, & Wilson, 1999; Linehan, 1993; Parks, Anderson, & Marlatt, 2001; Marlatt & Gordon, 1985). Studies on depression (Mayberg, 2005) reveal that mindfulness techniques can alleviate symptoms of depression and lead to improvements in brain functioning that balance previously abnormal neural functioning. Mindfulness can also prevent relapse in cases of chronic depression in Segal, Williams and Teasdale mindfulness based cognitive therapy. (Segal, Williams, & Teasdale, 2002, Segal, Williams, Teasdale and Kabat-Zinn, 2007). Similarly, mindfulness has been used as an essential part of the treatment of borderline personality disorder in Marsha Linehan's creative and effective Dialectical Behavior Therapy (DBT) (Linehan, 1993). Relapse prevention in individuals with substance abuse is also a part of the skills taught by Marlatt and colleagues (2001). The principles of mindfulness are also inherent in the application of contemporary behavior analysis in Steven Hayes' Acceptance and Commitment Therapy (ACT). (Hayes, 2004). One of the first studies to demonstrate the psychotherapy can alter the function of the brain utilized mindfulness principles in the treatment of individuals with obsessive compulsive disorder (Baxter et al, 1992) In the past five years, several books (Hayes et al, 2004; , Segal, Williams, & Teasdale, 2002; Germer et al, 2005) have been published that review the use of mindfulness and acceptance in the psychotherapy of a wide range of conditions from which people suffer, from eating disorders to anxiety, post-traumatic stress, and obsessive compulsive disorders.

The general idea of the clinical benefit of mindfulness is that the acceptance of one's situation can alleviate the internal battle that may emerge when expectations of how "life should be" do not match how "life is." Being mindful entails sensing what is – even sensing your judgments – and noticing that these sensations, these images, feelings, and thoughts, come and go. If you have a COAL stance, the rest takes care of itself.

There is no particular goal, no effort to "get rid" of something, just the intention to be – and specifically, to experience being in the moment as one lets go of grasping onto judgments and goals.

Emerging from this reflective COAL mindful way of being is a fundamental process called "discernment" in which it becomes possible to be aware that your mind's activities are not totality of who you are.

Discernment is a form of dis-identification from the activity of your own mind: As you *SIFT* through your mind (being aware of sensations, images, feelings, and thoughts) you come to see these activities of the mind as just waves at the surface of the mental sea. From this deeper place within your mind, this internal space of mindful awareness, you can just notice the brain-

waves at the surface as they just come and go. This capacity to disentangle oneself from the chatter of the mind, to discern that these are “just activities of the mind,” is liberating and for many, revolutionary. At its essence, this discernment is how mindfulness may help alleviate suffering.

Discernment also gives us the wisdom of how to interact with each other with more thoughtfulness and compassion. As we develop kindness toward ourselves, we can be kind to others. By getting beneath our automatic mental habits, we are freed to engage with each other with a deeper sense of connection and empathy.

The clinical mental health implications of mindfulness have been explored in great detail in a number of texts and special journal editions that offer an excellent set of chapters and articles discussing various research and practical applications to aspects of mindfulness in psychotherapy. So this is not the goal of this book. Instead here we’ll be exploring the possible underlying neural mechanisms of mindful awareness that enable it to promote such a profoundly important sense of relief from suffering in our daily lives and in clinical practice. These mechanisms, as we’ve discussed, may be proposed to involve the social circuits of the brain that enable a sense of love and concern to develop for oneself. This intrapersonal attunement may help us understand the deeply transformative nature of mindfulness in our lives.

### **Why the Mindful Brain?**

Why turn to the brain to explore mindfulness?

By exploring potential mechanisms in the brain that correlate with mindfulness, it becomes possible to see the connection among our common everyday view of mindfulness and the clinical use in medical and mental health practices of reflective mindful awareness. I propose that these sometimes-intermixed modern uses of the term “mindfulness,” while quite distinct in practice, actually share common neural pathways. Illuminating these neural mechanisms associated with cognitive and reflective mindfulness might then assist us in expanding our scientific understanding further, opening the doors for asking specific testable questions. Such neural insights may also shed light on how to design and implement practical applications of mindfulness in ways we haven’t yet imagined. By revealing the ways in which mindfulness harnesses our social neural circuitry, we may be able to extend our understanding of its impact on physiological and psychological well-being.

Another important dimension of looking toward the mindful brain is that by understanding the neural mechanisms beneath mindful awareness, we may be in a better position to identify its universal human qualities and make it more accessible and acceptable to a broader audience. We all share the brain in common. Can you imagine a world in which this health-promoting, empathy-enhancing, executive-attention developing, self-compassion nurturing, affordable and adaptable mental practice was made available in everyone’s life?

We so need the wisdom of reflection in our individual and collective lives.

### **Mindfulness as a Relationship**

But how, you might ask, could the private process of mindful awareness be considered a social experience?

Long before we spent time cultivating our minds with reflection, we evolved as social creatures. A great deal of the process of our brains at rest, in what is called a default mode, appears to be neural circuitry correlated with understanding others (Gusnard and Raichle, 2001). It is the social circuits of the brain that we first used to understand the mind, the feelings and intentions and attitudes of others. When we view mindful awareness as a way of cultivating the mind’s awareness of itself, it seems that it is likely harnessing aspects of the original neural mechanisms for being aware of other minds. As we become aware of our intentions and our

attentional focus, we may be utilizing the very circuits of the brain that first created maps of the intention and attention of others.

When we build into this view the COAL way in which we approach our own minds in mindful awareness, it reminds me of my research days working in the field of attachment: COAL is exactly what parents who provide secure attachment to their children have as a stance toward their kids.

In this way, mindfulness can be seen as the development of a loving and attuned relationship – with your self!

We can propose that the interpersonal attunement of secure attachment between parent and child is paralleled by an intra-personal form of attunement in mindful awareness. Both forms of attunement promote the capacity for intimate relationships, resilience and well-being. As you'll see, both forms of attunement may have similar integrative influences on the brain itself.

### **Mindfulness and Integration**

Why would mindfulness and secure attachment have similar outcomes? This question drove me to dive deeply into the nature of mindfulness to understand what they could share as common mechanisms.

The outcome measures for studies of secure attachment, the relationship between child and parent, and those for mindful awareness practices, had markedly overlapping findings. I had found, too, that many the basic functions that emerged in these two seemingly different entities were associated with a certain region of the brain, the middle areas of the prefrontal cortex just behind the forehead. These functions include regulating your body, balancing your emotions, attuning to others, modulating fear, responding flexibly and exhibiting insight and empathy. Two other functions of this prefrontal region, being in touch with intuition and morality, had not been studied in attachment work but did seem to be an outcome of mindful awareness practices.

The proposal that my colleagues and I had made earlier (see Schore, 2003a and b, 1994; Cozolino, 2002; Siegel, 1999, Siegel and Hartzell, 2003, Solomon and Siegel, 2003) was that the relationships of secure attachment between parent and child, and the effective therapeutic relationship between clinician and patient/client, each promoted the growth of the fibers in this prefrontal area.

Prefrontal function is integrative. What this means is that the long lengths of the prefrontal neurons reach out to distant and differentiated areas of the brain and body-proper. This linkage of differentiated elements is the literal definition of a fundamental process called “integration.” For many reasons discussed elsewhere (Siegel, 1999, 2001, 2006) integration can be seen as the underlying common mechanism beneath various pathways leading to well-being.

How does attunement promote integration?

When relationships between parent and child are “attuned” a child is able to “feel felt” by a caregiver and has a sense of stability in the present moment. During that here-and-now interaction, the child feels good, connected, and loved. The child’s internal world is seen with clarity by the parent, and the parent comes to resonate with the child’s state. This is attunement.

Over time, this attuned communication enables the child to develop the regulatory circuits in the brain – including the integrative prefrontal fibers – that give them a source of resilience as they grow. This resilience takes the forms of the capacity for self-regulation and engaging with others in empathic relationships. Here we see that interpersonal attunement – the fundamental characteristic of what is called a “secure attachment” – leads to the empirically proven outcome measures we described above.

This list of nine prefrontal functions also seemed to overlap with what I was coming to learn about mindfulness practice. I presented this idea for the first time publicly to Jon Kabat-Zinn on a discussion panel (Ackerman et al, 2005) with much trepidation and excitement. I was not a meditator and knew no one in the mindfulness field. What if these ideas were a delusion, a fantasized hope for similarity that was way off the mark? Could it be plausible that an intra-

personal form attunement of mindful awareness actually promoted the growth of these integrative middle prefrontal regions? Could this be the shared mechanism underneath the seemingly common outcome measures between mindfulness and secure attachment?

Fortunately, Jon Kabat-Zinn confirmed the accuracy of the observation of these as outcome measures. He went on to extend the idea that this list is not just about research-verified outcomes, but it is the process of mindful living itself. In fact, one can examine being mindful through a step-by-step immersion in each of these nine functions (see Siegel, 2008).

In this exploration into the mind we examine what in the world mindful awareness, secure attachment, and prefrontal brain function could have in common.

As we'll see, much of the research on mindfulness meditation examines the attentional processes that are thought to be involved in this training of awareness. But if we apply the emerging findings of social neuroscience (see Cozolino, 2006; Goleman, 2007) to a new understanding of mindfulness as self-relational, could these existing neural studies perhaps be seen in a new light? What would intrapersonal attunement correlate with on a scan? How would we picture the neural associations with "being your own best friend?" What would learning to befriend yourself feel like? And how could we approach helping others, and our selves, in perhaps slightly new ways if we conceived of mindfulness as a way of having an attuned relationship – with your self?

### **“Brain” and “Mind”**

Whenever you see me write about “the brain” please remember that I always mean “the brain as an integrated part of the whole body.” This reality changes the way we think about the relationship of “brain” to “mind.”

Because the mind itself is both embodied and relational, our brains actually can be considered the social organ of the body: Our minds connect with each other via neural circuitry in our bodies that is hard-wired to take-in each others' signals.

To examine the relationship of the mind – the flow of energy and information – to the brain – neural connections and their complex patterns of firing – we need to be careful of certain pre-conceived ideas that might restrict our understanding and bias our thinking. The timing and location of neural activation correlates with the timing and characteristics of mental activity. If I show you a photograph and can monitor your brain's activity in a functional scanner, we'll see activation (usually blood flow increases in a functional MRI scan or electrical activity in an EEG) in the posterior part of your brain. The most accurate thing we can then say is that occipital lobe firing correlates with visual perception.

Why not say the neural activity created the visual perception? If we make causal phrases like this the erroneous idea is reinforced that the mind is only created by the brain. But isn't that true? If we are cognitively mindful here, we need to be open to the truth that seeing the picture actually created the neural firing. The directional arrow goes both ways: The mind can actually use the brain to create itself.

Without cognitive mindfulness, we'd miss this bidirectional point. When we examine the nature of our evolution as a species, for example, we find that in the last forty thousand years our species has changed by way of cultural evolution. Culture is the way that meaning is transferred among individuals and across generations with groups of people. How this energy and information flow shifts its patterns across time is what cultural evolution involves. This reality of how we've changed as a species involves not the genetically driven evolution of our brains, but the *mental* evolution of how we collectively pass energy and information among each other across generations. This is the evolution of the mind, not the brain.

In fact, one can see that for the mind (energy and information flow) to occur, it needs to harness the activity of the brain.

The mind uses the brain to create itself.

I know this may seem different from what you may have read from other views. But this perspective actually is consistent with the scientific state of our understanding of how mind and brain are related to each other. There is no need to try to simplify the dimension of one reality into that of another. Mind is not “just” brain activity. Energy and information flow happens in a brain within the body and it happens within relationships.

To visualize this perspective we can say that the “mind rides along the neural firing patterns in the brain” and realize that this riding is a correlation with bidirectional causal influences.

Relationships among people involve the flow of energy and information, and thus utilize these riding patterns along neural firing as well. This interconnection among brain, mind, and relationships will be a triangle of reality that we’ll be returning to again and again.

Here is an important point: relationships shape energy and information flow – as is happening now by these words in your mind. But the brain’s activity also directly shapes how energy and information flow is regulated. Right now your brain may be activating certain firing patterns that distract you from paying attention to the reading. This would impair your ability to be mindfully aware at this moment in time. A friend may come in the room and also distract you, shaping how energy and information flow – the focus of your attention – is occurring at this moment.

In this way, we can imagine a “*triangle of human experience*” in which the three points represent mind, brain, and relationships. Each of these three are not reduceable to the others. In fact, one can sense that the arrows of influence go in all directions—a tridirectional flow. The Mind is how we regulate energy and information flow. The Brain is embeds the pathways of energy and information flow. And Relationships are the way we share energy and information flow. This triangle represents three aspects of the one reality of human experience. A healthy life entails a coherent mind, integrated brain, and attuned relationships.

Attention to the present moment, one aspect of mindful awareness, can be directly shaped by our ongoing communication with others, and from the activities in our own brains. Indeed one of the biggest challenges to being present are the patterns of activation in our brains we call “top-down” influences that continually bombard us with neural firing and mental chatter that keep us from showing up in the moment. Mindful awareness is one way to promote a healthy triangle of our human lives in mind, brain, and relationships. As we move forward in our journey we’ll explore how we can be influenced by these neural patterns as the mind reaches toward being aware in the moment.

### **Reflection in Clinical Practice: Being Present and Cultivating the Hub of the Mind’s Wheel of Awareness**

The implications of our journey into the mindful brain point to the importance of our own reflective presence as professionals. Whether we are teachers or clinicians, the ways that we help others grow will be directly shaped by our own mindful presence. We can engage in “mindful practice” (R. Epstein, 1999) in the medical professions that creates in us a state of reflection and emotional availability that are at the heart of effective clinical work.

Mindful awareness can become a fundamental part of the mental health effort of psychotherapy to improve people’s lives and reduce mental suffering by both direct and indirect ways (Germer et al, 2005; M. Epstein, 1995). Some approaches use formal mindfulness meditation techniques, such as MBSR (Kabat-Zinn, 1990) and MBCT (Segal, et al, 2002), while others use applications of mindfulness skills such as with ACT (Hayes, 2004) and DBT (Linehan, 1993). In these approaches the availability and empathy of the therapist that emerge with the therapist’s own mindful presence may be a common source of healing in psychotherapy across the various “schools” and specific orientations. These may be considered the “indirect” effects of a mindful therapist on the patient’s experience. Such indirect impacts may be seen to emerge from the empathic availability of the clinician to be mindfully present for whatever arises in the

shared attentional field of the therapy experience. But teaching mindfulness itself, within formal meditation or other skill-building exercises, can offer patients useful capacities that can transform their relationship with themselves, reduce suffering from symptoms, and create a new approach to life itself.

Direct application of mindfulness skills teaches people how to become more reflective. The overall idea of these approaches, as we've discussed at length, is that the various facets of mindful awareness are cultivated. Such practices enable individuals to jettison judgment and develop more flexible feelings as they come to approach what before may have been mental events they tried to avoid or to which they had intense aversive reactions. Becoming non-reactive, developing equanimity in the face of stressors, supports the view of mindfulness directly shaping the self-regulatory functions of the brain by promoting reflection of the mind.

Mindfulness is a teachable skill. In many ways this learning parallels the idea of *mindsight*: our capacity to see the mind in ourselves, and in others. Developing the circuits of *mindsight*, as with mindful awareness, can be done through reflective dialogues and skill building.

Reflective dialogues are the ways in which we focus our mutual attention on the nature of the mind itself within conversations with each other. As we use words to illuminate the mind, the linguistic representations serve as a finger pointing to the important dimension of our internal lives and develop our capacity for *mindsight* (see Siegel, 1999, and Siegel, in press). Describing and labeling these mental events with words is a facet of mindfulness that these reflective dialogues can directly foster. As we've seen, the capacity to label seems to balance the arousal of the right hemisphere with the activity of the left to create a more flexible integrated state.

As reflective dialogue becomes internalized the individual can develop a new source of insight into her own mind. Life is transformed when *mindsight* is developed: Being able to "be" with whatever arises is greatly helped by being able to "see" what it is that is arising as in fact a transient activity of the mind itself, not some fixed entity that can take over the person's life. Sometimes words can be of great help in setting the stage for seeing this dynamic and non-verbal world of the mind. These dialogues may be of central importance in helping children in families and patients in therapy develop the reflective thinking needed to sense the mind itself. When offered with mindful learning principles in mind—with the state of the learner, the conditional nature of learning, and the sensitivity to contexts and distinctions as a part of the dialogue—then reflective conversations can create new states of mindful awareness.

But words by themselves are often not enough. As they point a finger to the direction of experience, the conceptually-based words should be supplemented by our other streams of awareness: sensation, observation, and knowing.

Teaching of mindfulness involves developing the skill of direct sensory experience and the observational focus on the non-verbal world. If we imagine four streams of awareness we can sense how therapy may utilize mindful reflections. The stream of *sensation* becomes an important grounding point in which to wake up the mind often drowning beneath the waves of anxiety or depression, fear or numbing, that as "symptoms" have taken over the hub of the mind. Learning to dive into sensation can be frightening, especially for those who've experienced trauma and are avoiding being aware of the body. Here we see that the balance of all of the streams in actual clinical practice becomes essential. *Observation* is crucial to enable people to decouple automatic mental processes, such as flashbacks or intrusive memories, as well as habits of mind such as derogatory internal voices or emotional reactivity. Additionally, the *conceptual* understanding of the nature of these processes, and their neural correlates, can help dis-engage the mind's stormy activity. Within the non-verbal sharing, interpersonally and internally, a deeper sense of a non-conceptual *knowing* about healing and well-being often illuminate a sense of the innate drive toward a more integrated state of mental health. These four streams can be recalled by the acronym, SOCK: sensation, observation, concept, and knowing. The integration of these four can often be experienced as a sense of direction, a "glimmer of hope," or an image of healing. As

these work together for the fullness of experience, the non-conceptual knowings are often hard to articulate with words and sometimes are felt as “insights” that emerge as shifts in perspective, a new frame of mind, rather than an outright word-based thought that can be easily shared.

Psychotherapeutic approaches that utilize mindfulness offer well-developed non-verbal exercises that enable the individual to dip into direct sensation beneath the veil of words that may often conceal the mind’s pain. This sensory immersion enables the individual to disengage from those bottom-up enslavements at the root of suffering. Using imagery and body observation, intentional movement exercises, sensing emotion and enhancing awareness of the present immersion in direct experience, these techniques help build the skills of mindfulness. For example, in MBSR a focus on the sensations of eating a single raisin over many minutes enhances the individual’s sensitivity to the sensory stream of awareness. Likewise, the body scan enables the mind to open its receptivity to the subtle sensations from throughout the soma that are so often excluded from our day to day living (see Kabat-Zinn, 1990).

The benefits of mindfulness may also be attained through the experience of mindful awareness practices (MAPs) offered outside of therapy itself. MAPs include such practices as mindfulness meditation (Kornfield, 1991, in press; Kabat-Zinn, 1990), yoga (Brown and Gerbarg, 2005a and 2005b), Qigong (Jones, 2001; and Chen, 2004) and tai’ chi chuan (Wall, 2004; Irwin, 2005). These MAPs share a deep focus on one’s on intention and are coupled with the awareness of awareness. For some patients, suggesting the enrollment in classes that teach these MAPs may be an important adjunct to work in the therapeutic sessions.

I have also found that teaching people to focus on a *wheel of awareness* in their own minds has been extremely useful. In this model, the rim represents all of the elements that may enter awareness, the hub represents the awareness itself. On the rim are the domains of the first five senses that bring in data about the outside world, a sixth sense of the body, a seventh sense of the mind’s thoughts, feelings, perceptions, memories and beliefs, and perhaps an eighth sense of our relationships with others, and perhaps the larger world. Developing mindful awareness and this conceptual framework of the metaphor of the mind’s wheel of awareness can enable patients to develop their middle prefrontal regions and insular cortex to promote the executive functions inherent in mindfulness. These very regions appear to grow with mindfulness practice, as supported by the work of Lazar and colleagues (Lazar, et al., 2005). These skills help promote a sense of well-being and improve interpersonal relationships and physiological health that come from the wisdom of these ancient practices. Could you really ask for more?

Recall that the mind uses the brain to create itself, and so in certain situations we can ally ourselves with the mind to create more integrated functioning in the neural system itself. Disengaging automatic reactions makes a huge difference and is one example of this in which we have bodily reactions that we come to feel enslaved by that in many cases we can actually improve. For example, a number of individuals who come to therapy for anxiety breathe primarily with their chests, something we do in a state of danger in preparing ourselves for flight or fight responses. After being taught how to become aware of their body and to then breathe with the abdomen, a basic technique of yoga, many individuals experience a great reduction in their anxiety. There are many steps, for example, to the treatment of obsessions and mood disturbances, that can specifically help disengage from the automatic reinforcements that exacerbate an anxiety or dysphoria into a full-blown disorder. Ultimately when we teach reflection, we are giving a lifelong gift of mindful self-regulation. “If you give a person a fish, she eats one meal; if you teach her how to fish, she can eat for a lifetime.”

In addition to gaining some distance in learning about the brain’s role in a pattern of mind, helping the individual to attain a state of reflective awareness is often essential. To achieve this receptive, self-observant, and reflexive capacity, elements of the time-tested mindfulness meditation can be extremely useful. Recall that the word “meditation” simply means the cultivation of the mind, and so this is truly a skill-building exercise that helps develop a mental ability. In this case, that ability is one of reflection.

Mindfulness meditation enhances the very circuits involved in insight and empathy. There is something about the resonance in interpersonal attunement and in intrapersonal attunement that seems to promote a deep sense of well-being. A young teenager in my practice recently said to me in a session after he had been quite upset about something and then, after feeling understood by me, he said “wow, I feel so much better now that I’ve told you about this—how does this happen in the brain?” In many ways, internal attunement creates that deep sense of feeling felt. With mindfulness, I believe, we come to feel felt in a genuine way by ourselves. This is internal attunement.

What would happen if we promoted intrapersonal attunement – that luminous space of possibility for resonating that then, as all the studies show and experience has demonstrated, promotes interpersonal resonance and compassion with each other? What a different world we’d have.

The challenge for us all is to see life as a verb, not a noun. We cannot hold on to the fluid river of life, guarantee the certainty of facts, the universality of rules. We need to not only tolerate ambiguity, but learn to treasure its secrets. Being is a moving entity that never ceases to lead us down its winding path. Embracing this dynamic nature of our transient lives liberates us from the prison of our efforts to run from this reality. In mindful awareness, within the reflective hub of our minds, we can welcome this truth into our hearts, and into our collective lives.

We can nurture in each other an access to a core self deeper than personal identity, that core of being that we all share beneath the adaptations of everyday life and the constrictions of habits of our personality. Perhaps gaining access to this deeper self is the common ground we can share as we bring mindfulness to each other. At that mindful place, there may be a path toward healing our global community one mind, one relationship, one moment at a time, since kindness is to our relationships, on this precious and precarious planet, what breath is to life.

## References

- Ackerman, D., Kabat-Zinn, J., & Siegel, D.J. (March 2005). Presented at the panel discussion at the 28<sup>th</sup> Annual Psychotherapy Networker Symposium, Washington D.C.. [Audio recordings]. (Available at PsychotherapyNetworker.org).
- Anderson, N. B. (with Anderson, P. E.). (2003). *Emotional longevity: What really determines how long you live*. New York: Viking.
- Armstrong, K. (1993). *History of God*. New York: Ballantine Books
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, 13(1), 27-45.
- Baxter, L.R., Schwartz, J.M., Bergman, K.S., Szuba, M.P., Guze, B.H., Mazziotta, J.C., Alazraki, A., Selin, C.E., Ferng, H.K., Munford, P., et al. (1992) Caudate glucose metabolic rate changes with both drug and behavior therapy for obsessive-compulsive disorder. *Archives of General Psychiatry*, 49(9), 681-689.
- Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., & Carmody, J. et al. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, 11(3), 230-241.
- Brown, R.P. & Gerbarg, P.L. (2005). Sudarshan Kriya Yogic Breathing in the Treatment of Stress, Anxiety, and Depression: Part II—Clinical Applications and Guidelines. *The Journal of Alternative and Complementary Medicine*, 11(4), 711-717.
- Chen, KW (2004): An analytic review of studies on measuring effects of external Qi in China. *Altern Ther Health Med*; 10 (4): 38-50.
- Cozolino, L.J. (2002). *The neuroscience of psychotherapy : building and rebuilding the human brain*. New York: Norton.
- Cozolino, L.J. (2006). *The neuroscience of human relationships: Attachment and the development of the social brain*. New York: WW Norton.
- Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F., Urbanowski, F., Harrington, A., Bonus, K., & Sheridan, J. F. (2003). Alterations in brain
- Dimidjian, S., & Linehan, M. M. (2003a). Defining an agenda for future research on the clinical application of mindfulness practice. *Clinical Psychology: Science and Practice*, 10(2), 166-171.
- Dimidjian, S.D. & Linehan, M.M. (2003b). Mindful practice. In O'Donohue, W., Fisher, J., & Hayes, S. (Eds.), *Cognitive behavior therapy: Applying empirically supported techniques in your practice* (pp. 229-237). New York: Wiley.
- Epstein, M. (1995). *Thoughts Without A Thinker: Psychotherapy from a Buddhist Perspective*. New York: Basic Books.
- Epstein, R. M. (1999). Mindful practice. *JAMA: Journal of the American Medical Association*, 282(9), 833-839.
- Fitzpatrick-Hopler, G. (June 2006). *Christian contemplative practice: Centering prayer*. Presented at the Mind, Life Summer Research Institute, Garrison, NY.

- Fletcher, L. & Hayes, S.C. (2006). Relational Frame Theory, Acceptance and Commitment Therapy, and a Functional Analytic Definition of Mindfulness. *Journal of Rational Emotive and Cognitive Behavioral Therapy*
- Germer, C.K., Siegel, R.D., & Fulton, P.R. (Eds.). (2005). *Mindfulness and psychotherapy*. New York: Guilford Press.
- Goleman, D. (1988). *The meditative mind: The varieties of meditative experience*. Los Angeles: JP Tarcher.
- Goleman, D. (2007). *Social intelligence: The new science of human relationships*. New York: Bantam Books.
- Greenberg, M.T. (submitted). Promoting resilience in children and youth: Preventive interventions and their interface and neuroscience. .
- Greenberg, M.T., Weissberg, R.P., O'Brien, M.U., Zins, J.E., Fredericks, L, Resnick, H., & Elias, M.J. (2003). Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. *American Psychologist*, 58(6/7), 466-474.
- Grossman, P. (2007). Mindfulness practice: A unique clinical intervention for the behavioral sciences. In Heidenreich, T & Michalak, J. (Eds.), *Mindfulness and acceptance in psychotherapy*. Tuebingen: DVTG Press.
- Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits: A meta-analysis. *Journal of psychosomatic research*, 57(1), 35-43.
- Gusnard, D.A. & Raichle, M.E. (2001). Searching for a baseline: Functional imaging and the resting human brain. *Nature Neuroscience*, 2, 685-693.
- Hayes, S. C. (2004). Acceptance and commitment therapy, relational frame theory, and the third wave of behavioral and cognitive therapies. *Behavior Therapy*, 35(4), 639-665.
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. Guilford Press, New York, NY: US.
- Hayes, S.C., Follette, V.M., & Linehan, M.M. (Eds.). (2004). *Mindfulness and Acceptance: Expanding the Cognitive-Behavioral Tradition*. New York: The Guilford Press.
- Irwin, M. (2005). *The impact of Tai Chi on elderly subjects*. Presented at the Mindful Awareness Research Center, University of California, Los Angeles.
- Jones, B: (2001): Changes in cytokine production in healthy subjects practicing Guolin Qigong: a pilot study. *BMC Complementary and Alternative Medicine*, 1, 1-8.
- Kabat-Zinn, J. (1990). *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness*, New York: Delacorte Press
- Kabat-Zinn, J. (1995). *Wherever You Go, There You Are*, New York: Hyperion Press.
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, 10(2), 144-156.
- Kaiser-Greenland, S. (2006). Information from Inner Kids Organizational Website. [www.innerkids.com](http://www.innerkids.com)
- Keating, T. (2005). *The orthodoxy of centering prayer*. Presented at the 13<sup>th</sup> Annual Investigating the Mind: The Science and Clinical Applications in Meditation Meeting, Washington D.C.
- Kornfield, J. (1993). *A path with heart*. New York: Bantam Books.
- Kornfield, J. (in press). *The Wise Heart*. New York: Bantam Books.

- Lazar, S.W., Kerr, C.E., Wasserman, R.H., Gray, J.R., Greve, D.N., Treadway, M.T., McGarvey, M., Quinn, B.T., Dusek, J.A., Benson, H., Rauch, S.L., Moore, C.I., Fischl, B. (2005). Meditation experience is associated with increased cortical thickness. *Neuroreport*, *16*(17), 1893-1897.
- Linehan, M.M. (1993a). *Cognitive-behavioral treatment of borderline personality disorder*. New York: Guilford Press
- Linehan, M.M. (1993b). *Skills training manual for treating borderline personality disorder*. New York: Guilford Press.
- Lutz, A., Dunne, J.D., Davidson, R.J. (2007). Meditation and the neuroscience of consciousness. In Zelazo, P.D., Moscovitch, M., & Thompson, E. (Eds.), *The Cambridge handbook of consciousness*. Cambridge, MA: Cambridge University Press.
- Marlatt, G. A., & Gordon J.R. (1985). *Relapse prevention: Maintenance strategy in the treatment of addictive behavior*. New York: Guilford Press.
- Mayberg, H. (2005). *Paths to recovery: Neural substrates of cognitive mindfulness-based interventions for the treatment of depression*. Presented at the 13<sup>th</sup> Annual Investigating the Mind: The Science and Clinical Applications in Mediation Meeting, Washington D.C.
- Pargament, K.I., (1997): *The Psychology of Religion and Coping: Theory, research, and practice*. New York: Guilford Press.
- Parks, G.A., Anderson, B.K., & Marlatt, G.A. (2001). Relapse prevention therapy. In N. Heather, T.J. Peters, & T. Stackwell (Eds.), *Interpersonal handbook of alcohol dependence and problems* (pp. 575-592). New York: John Wiley.
- Schore, A.N. (1994) *Affect regulation and the origin of the self. The neurobiology of emotional development*. New Jersey: Lawrence Erlbaum Associates.
- Schore A.N. (2003a). *Affect dysregulation and the disorders of the self*. New York: Guilford Press.
- Schore, A.N. (2003b). *Affect regulation and the repair of the self*. New York: Guilford Press.
- Segal, Z.V., Williams, J.M.G., & Teasdale, J.D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. New York: The Guilford Press.
- Segal, Z.V., Williams, J.M.G., & Teasdale, J.D., Kabat-Zinn, J. (2007). *The Mindful Way through Depression*, New York: The Guilford Press.
- Siegel, D.J. (1999). *The developing mind*. New York: Guilford Press.
- Siegel, D.J. (2001). Toward an interpersonal neurobiology of the developing mind: Attachment, “mindsight”, and neural integration. *Infant Mental Health Journal*, *22*, 67-94.
- Siegel, D.J. (2003). An interpersonal neurobiology of psychotherapy: The developing mind and the resolution of trauma. In Solomon, M. & Siegel, D.J. (Eds.), *Healing Trauma* (pp. 1-56). New York: WW Norton.
- Siegel, D.J. & Hartzell, M. (2003). *Parenting from the inside out: How a deeper self-understanding can help you raise children who thrive*. New York: Penguin Putnam.
- Siegel, D.J. (2006). An interpersonal neurobiology approach to psychotherapy. *Psychiatric Annals*, *36*(4), 248-256.
- Siegel, D. J. (2007). *The Mindful Brain: Reflection and attunement in the cultivation of well-being*. New York: WW Norton.
- Siegel, D.J. (2008). *The Mindful Brain*. A new audio book with Sounds True, Inc., Boulder Colorado, SoundsTrue.com.

- Siegel, D.J. (in press). *Mindsight: Our seventh sense*. New York: Bantam.
- Solomon, M.F. & Siegel, D.J. (Eds.). (2003). *Healing trauma: Attachment, mind, body and brain*. New York: W.W. Norton and Company, Inc.
- Thich Nhat Hanh. (1991). *Peace is every step: The path of mindfulness in everyday life*. New York: Bantam Books
- Wall, R.B. (2005). Tai chi and mindfulness-based stress reduction in a Boston public middle school. *Journal of Pediatric Health Care*, 194, 230-237.
- Wallace, B.A. (2006). *The attention revolution: Unlocking the power of the focused mind*. Boston: Wisdom Publications.