

deeper
WHERE WE STAND
an invitation to wholeness...

EANTCONFERENCE2011

BIOLOGY AND PERSONAL TRANSFORMATION: BRIDGING SCIENCE AND THE ENNEAGRAM

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INTRODUCTION

The Enneagram recognizes and honors three “centers of intelligence” – which we will refer to as the head center, the heart center, and the body center – each of which consists of a triad of three Enneagram types. The Enneagram also recognizes important relationships between these centers and three aversive emotions – fear (head center), distress [or variants including sadness, grief, longing, etc.] (heart center), and anger (body center). Much of the Enneagram literature and teachings focus on lost qualities related to these centers, or on reactivity and other problems which arise as a result of our “relationship” with the aversive emotion associated with the triad in which our type resides. For example, types 8, 9, and 1 are all said to have problems related to self-forgetting, and various issues related to processing of anger.

These perspectives are extremely valuable and important and provide a foundation for powerful and transformative Enneagram work. It is also extremely interesting – and we suggest useful – to consider the Enneagram triads and type-related reactivity from contemporary scientific perspectives of evolution, psychology, and neurobiology. Thus, for example, the three centers can be viewed as domains of widely recognized fundamental human needs for: 1) a sense of safety and security, trust, and predictability (head center); 2) bonding and the support and care of important others (heart center); and 3) a sense of self-worth, stability and control, and comfort (body center). Throughout life humans are highly motivated to seek satisfaction of and avoid pain associated with these needs. Similarly, the three aversive emotions can be viewed as innate value systems which help to drive these motivations.

In this presentation we will explore a developing body of theoretical work on the Enneagram which is grounded in contemporary neurobiology and attachment theory. It provides fresh and powerful insights into the normalcy of the primal undercurrents of protective mammalian emotion which we suggest fuel type-related reactivity. It also illuminates the biological processes that underpin growth and change, and points toward pathways for deep in-the-moment transformational work with the three core aversive emotions of fear, distress, and anger that we humans share with all mammals.

NEUROBIOLOGY, ATTACHMENT THEORY, AND THE ENNEAGRAM

On Mammalian Brain Structure

All mammals share similar brain architecture. Deep in the oldest (in evolution) regions of the brain are structures responsible for control of most vital bodily functions, reflexive responses, states of general arousal, various instinctual drives, and primordial affective states.

Surrounding this core are the so-called limbic structures which, among many other things: 1) incorporate emotional content into new memory; 2) assign emotional meaning to new experience, based in part on its similarity to previous experience in memory; and 3) contain the roots of evolutionarily newer systems related to the mammalian social emotions (described in more detail later).

Enveloping all of these is the neocortex, the most recent feature to emerge in the long course of brain evolution. The size of the neocortex varies greatly across mammalian species, being relatively small in foragers, larger in predators, still larger in primates, whales and porpoises, and massive in humans. While various areas of the neocortex have functional specialties, as a whole it is fundamentally a pattern-recognizing machine which seeks to make sense of life by searching, automatically and relentlessly, for facets of current experience which are familiar, by virtue of their associations in memory of previous experience.

On Neural Networks, Memory, and Association

The actual business of the brain results from the passage of information across the trillions of tiny gaps which exist between individual cells in the brain (neurons). It is estimated that the human neocortex contains about 100 billion neurons, each connected to at least 10 others!

Virtually all brain functions and capacities involve *networks* of interconnected *neurons* (nerve cells). For example, human emotion systems (which we will examine in more detail shortly) consist of complex neural networks connecting various specialized areas of the brain with each other and with the rest of the body.

The brain constantly monitors the worlds within and beyond the boundaries of our bodies;

sensory, emotional, somatic, and physiological information from those sources activates neurons in specialty areas of the brain. When neurons in different areas of the brain are activated simultaneously, they also become connected in a network. (“Neurons which fire together wire together”). These association networks, which become stronger and more robust every time they are activated, are the essence of memory in its various forms (as well as many other functional capacities of the brain).

In a constant and relentless process, the brain also compares ongoing experience to previous experience in memory. In effect the brain is on a perpetual pattern recognition quest because action informed by previous experience is more likely than not to lead to life-sustaining action in current experience. One consequence of this ongoing “auto-associative” process is that we need only see part of a familiar whole in order to “remember” or grasp the whole. It also means that the brain, in its quest for familiarity, can easily and quickly “make up” a whole which is less than fully accurate. Optical illusions and magic tricks are familiar examples of the latter. But in exactly the same way the brain may interpret experience which is only potentially fearful or provocative or sad as definitely terrifying or enraging or tragic.

One more important point about memory is that in the process of pattern recognition aspects of new experience are assimilated into the memory association networks involved. In other words not only is new experience heavily shaped by previous experience, it also alters (to a lesser or greater degree) the memory network that informed it. Thus, in a very real sense memory is far from our perception of verbatim “recordings”. While potentially bad news for the reliability of eye witness accounts, the good news is that this creates a neural basis for learning, adaptive response, and personal transformation.

On the Workings of Emotion

It is very difficult to study emotions. As we shall see, much of process of emotional arousal occurs beneath conscious awareness. Even when we are aware we are emoting the “language” of emotion is more experiential, subjective, poetic, and musical than literal or literary. Finally, cognitive and emotional aspects of inner and outer experience are often inextricably intertwined because of the phenomenal capacities of the human neocortex to remember the past and project into the future. For years emotion research was captive to the resulting methodological challenges. Fortunately, huge advances in functional brain imaging technology over the past two decades have fueled a virtual explosion of scientific interest and insight.

Emotions play a central – and much greater than generally appreciated – role in shaping our understanding of the world, our life experience, and our behavior. While big emotions rise readily to conscious awareness and capture our attention, it is now evident that more subtle and emotional processes beneath conscious awareness are constantly and continually aroused by life experience, ebbing and flowing with a typical time course measured in seconds to minutes.

As a result our mind-brain is virtually always using emotional information in making sense of the world. In large part this happens because of the way the brain seeks similarity with what came before. Thus, when facets of current experience resonate with previous experience in memory networks, the emotions associated with that previous experience are activated because they are an integral part of the memory network. This is important because whenever emotions are activated, sensory and appraisal processes become more attuned to evidence that is salient to the emotional system involved. For example, when we are angry, we are more likely to interpret something as provocative. Thus emotions are powerful, primal forces which filter, color, and shape life experience and behavior whether or not we are consciously aware of the role they are playing at any given moment.

From an evolutionary perspective, emotions can be seen as innate value systems that serve to direct attention and motivate action toward the pursuit of important needs and goals, both instinctual and learned. It is now generally recognized that even very primitive animals are equipped with basic systems for emotions such as fear and anger because these systems helped their ancestors deal successfully with matters of constant and critical importance to their abilities to survive and reproduce. Damasio describes emotions as "...complex, largely automated programs of *actions* concocted by evolution. Emotions are an integrated crown jewel of life regulation." Evolution has provided mammals with a particularly sophisticated set of innate emotion systems which fuel and shape their complex patterns of behavior, relationship, and societal function.

Emotions and feelings are related but not synonymous. For example, not all feeling states originate in emotional arousal; and while emoting may generate feelings, feelings are the tips of the icebergs of our emotions. As Gross notes, emotions are "...multi-faceted, whole-body phenomena that involve...subjective experience (i.e. feelings), behavior, and central and peripheral physiology. Thus emotions can be described as objective and feelings as subjective. Emotions not only make us feel something, they make us feel like *doing* something." In fact feelings are relatively late conscious perceptions of the processes of our emotion systems preparing our minds and bodies to *do* that something, very rapidly and mostly beneath our general level of conscious awareness. Notably, that something includes focusing our attention on important aspects of ongoing experience related to the emotion. So if our fear system is activated, for example, our attention is extremely rapidly and mostly unconsciously shifted to seek, actively and automatically, for evidence of things in our current experience that we *might* have cause to fear.

Although emotions can make us *feel* like doing something, and they prepare our minds and bodies to do it, what we *actually* do depends on many things. Notably, and especially in mammals, these include learning from previous life experiences which created associations in

memories (both conscious and unconscious) of similar experiences (even if only in some facets). These learned associations influence the intensity, duration, subjective experience, expression, and behaviors which follow arousal of an emotion. For example, they determine whether arousal of the *emotion* of fear builds or dissipates; whether *feelings* of fear rise to the level of conscious awareness; whether fear leads to *behaviors* such as flight or freeze or fight; whether the *feelings* of fear are displayed or concealed (mammals, especially humans, can be deceptively adept at the latter); or whether it becomes an entirely different emotional state because subsequent appraisal of the situation and/or new sensory input call for an emotional response other than fear. The emotional state that existed when a new emotion is activated is also important because emotional states can blend together. Such factors contribute to the enormous range and complexity of human feeling states, moods, and behaviors which accompany emotion activation.

Lists that attempt to capture the enormous variety of human emotion states abound, but a few points of consensus among emotion researchers seem clear. First, most seem to agree that emotions are associated with either a “positive” or a “negative” *feeling state*. (In this context “positive” and “negative” refer only to qualities of the *feeling states*; all emotions have life-supportive functions.) In general positive emotions are accompanied by pleasurable and rewarding feeling states and move us toward a goal or object of attention. Aversive emotions, on the other hand, are accompanied by unpleasant, painful, or aversive feeling states and are designed to quickly raise alarm signals that something is amiss, to focus attention on the problem, and to motivate corrective action to improve the situation. Second, there seems to be general agreement that fear, distress, and anger are three fundamental aversive emotions. (Some also list disgust as a fourth.) While there is less agreement regarding the number, primacy or even labels of other aversive emotions (e.g. guilt or shame) many emotion researchers regard these as more complex variants in the sense that they involve significant components of social cognitive learning. Finally, it is clear that emotions of all variety can co-exist and mix together, and that seemingly opposite positive and aversive emotions are not, in fact, opposite ends of the same scale – e.g. sadness and happiness can coexist in bitter-sweetness.

On Mammalian Emotion Systems

While we cannot know the subjective feeling states of animals, there is much to learn about the biology of emotion from research on emotion in animals. Jaak Panksepp is an experimental neurobiologist whose career has focused on the study of mammalian emotion. Although a sometimes provocative and controversial figure, his perspective on the evolution of mammalian emotion SYSTEMS is helpful because it essentially sorts the long lists of emotions presented by others into functionally and biologically related groups. It is also particularly resonant with Enneagram teachings. Panksepp describes “at least seven” discrete, primary

emotion SYSTEMS that he believes all mammals share (there may be others not yet clearly delineated). He labels these SYSTEMS as FEAR, RAGE, PANIC/DISTRESS¹, CARE, SEEKING, PLAY, and LUST. The FEAR, RAGE and PANIC/DISTRESS SYSTEMS are associated with aversive emotions and feeling states. The other four are associated with “positive” affect.

Before describing these briefly, it is important to emphasize Panksepp’s focus on functional SYSTEMS², as opposed to discrete emotions. For example, the variety of feeling states which might be labeled fear, anxiety, or terror all arise from activation of the FEAR system. Similarly the variety of feeling states labeled distress, grief, sadness, or anguish all arise from activation of the PANIC/DISTRESS SYSTEM. It is also important to emphasize that these emotions SYSTEMS interact with each other in many ways. For example, under some circumstances activation of the FEAR system can lead to activation of the RAGE or PANIC/DISTRESS SYSTEMS, while in others it can lead to inhibition of PANIC. Similarly, rough and tumble play can lead quickly to anger or fear.

Very brief descriptions of these seven SYSTEMS follow. The purpose of presenting them here is to offer a broad categorical perspective on the diversity and biological functions of emotion. This is particularly important in understanding – and in an Enneagram context working with – the aversive emotions emanating from the FEAR, PANIC/DISTRESS, and RAGE systems, which relate in obvious ways to the Enneagram’s head, heart and body centers of intelligence.

- The basic function of the FEAR system is to quickly orient the animal toward potential danger, to mobilize the senses, and to fuel various protective physiological responses (e.g. increased heart rate and blood flow to the extremities) and behaviors (e.g., flight, freeze, or fight). Fear is experienced as an aversive, apprehensive, tense state of uncertainty, which tells the animal that its safety may be in peril. The FEAR system can be aroused by innate stimuli (e.g. the smell of a cat arouses fear in laboratory rats who have never been exposed to a cat), but many more are learned. When activated the FEAR system broadcasts signals which say “Pay attention! You do not understand what is going on here! You may be in danger! Prepare for action!”
- The PANIC/DISTRESS system is, first and foremost, one evolutionary mechanism to assure protective and nurturing connection between the relatively helpless mammalian

¹ Just as with Enneagram type, words can be semantic traps in the realm of emotions. Panksepp’s choice of the word PANIC is probably unfortunate. To most the word panic refers to a fear disorder. For all practical purposes he is actually referring to a system that most would label SEPARATION DISTRESS. In this paper we will use the label PANIC/DISTRESS.

² Panksepp’s convention is to CAPITALIZE when referring to the SYSTEMS, as a way of emphasizing their overarching functional roles. That convention is followed here.

infant/child and its caregivers. “The PANIC/DISTRESS system provides mammals with a sensitive emotional barometer to monitor the level of social support they are receiving. If contact <with vital caregivers> is lost, the PANIC/DISTRESS system generates a painful feeling of separation and the young protest (cry) vigorously in an attempt to reestablish contact and care.” (Panksepp, 1998, pg. 54). Later in life the system helps maintain other sources of connection and social support. When activated, the PANIC/DISTRESS system broadcasts signals such as this: “You have lost connection to those you need!! Make yourself seen and heard because you need their care and support!!”

- The basic function of the RAGE system is to empower the animal and energize aggressively assertive behavior in the pursuit of various needs or desires. In experimental settings many stimuli can provoke this system “...but the most common are the irritations and frustrations that arise from events that restrict freedom of action, or access to resources or expected rewards (Panksepp, pg. 187).” Another function of the RAGE system is to arouse fear in opponents. When activated the RAGE system broadcasts signals which say “Get big! Go after what you need and want! Have your way! You are in charge here!”
- The most powerful and dramatic evocation of the CARE system is seen in the parent-child relationship. In this context it ensures that parents are deeply connected – indeed devoted – to their relatively helpless offspring. For example, a parent’s CARE is powerfully engaged when their child’s PANIC system is aroused. Archetypal images of this system at work include the mammalian mother gazing lovingly into the eyes of her infant. In later life bonding with, and compassion for the suffering of others also involve this system, which serves to lessen distress and strengthen human bonds.
- The SEEKING system is harnessed by a wide variety of biological instincts (e.g. hunger) and learned desires that involve the pursuit of rewarding goals. The system makes us intensely interested in exploring our world, and leads us to become excited when we are about to get what we desire. In this way it facilitates learning, for example mastering information about where resources are situated and the best ways to obtain them.
- Simply put, the PLAY system is what makes play *feel* fun! It is especially active in childhood. It manifests as the infectious delight and giddiness of children (animal or human) at play. In essence it “tricks” children into pursuing novel activities in which they will learn important physical, mental, emotional, and social skills – notably including emotion regulation. Like SEEKING, it plays a central role in learning. Together with seeking, play motivates the extraordinary exploratory curiosity we see in all young mammals.

- The affective output of the LUST system is the range of feelings that motivate us toward and accompany sexual attraction and activity. This system illustrates well the principle that emotions serve the “interests” of evolution (i.e. we are equipped with the desires, but not an innate awareness that the pleasures of sex are primarily about perpetuating the species). It also illustrates brilliantly how emotions can overpower reason and our best interests!

On Attachment, Development, and Self-Regulation, and Behavioral Systems

From a neurobiological perspective, we mammals are born with innate emotion systems which provide emotional capacities. However, the systems are designed to be flexible and capable of learning and responding adaptively to new situations (unlike more primitive emotion systems which are more “programmed”). They must, therefore, be trained and “tuned” by life experience if we are to be able to use their innate evolutionary wisdom effectively, and to restore emotional equilibrium when it is perturbed. Much of the early life experience of young mammals revolves around such learning and the fine-tuning of these essential self-regulation skills in attachment relationships.

For humans, the attachment system is an overarching behavioral system that organizes and regulates emotions – including the aversive emotions emanating from the FEAR, PANIC/DISTRESS, and ANGER systems. Human babies are born with the pre-wired physiological response patterns associated with these emotions, but until the baby engages with another human mind these responses have no “emotional” connotation. It is within early attachment relationships that a baby’s brain begins to form the complex patterns that link physical states with behavioral responses. This linkage occurs through countless interactions between the infant and its attachment figure(s) that take the form of “receive-process-respond”. For example, when a baby experiences either distress or happiness, the mother notices (receives) the baby’s experience, interprets (processes) it, and responds to it. For example, if the baby is having a pleasurable experience, the mother will mirror and amplify the pleasure until the baby begins to tire or get bored. If the baby is having a distressing experience, the mother will again mirror, but instead of amplifying the experience, she will soothe the baby. Through countless repetitions of this process, the baby’s brain gradually begins to form neural maps that connect physical states with behavioral responses. For each emotional state, parents teach the baby, “This is what you are feeling.”; “This is where the feeling is anchored in your body”; and “This is what you do about this feeling.” This learning occurs in the first year of the baby’s life, and is conducted almost entirely between the right brains of the baby and the parents.

These earliest-life experiences and learning are extremely important in the trajectory of our adult emotional lives because many of our major emotion systems – including the aversive emotions – are operational at birth (and likely before), long before significant cognitive

functionality, and our early lives are lived primarily through emotion. Capacities for words and rules and thoughts come later, but are built on the earlier foundations. In addition, given the brain's tendency to construct a "remembered present", there is a "first-come, first-served" tendency for early life experience to lay down networks which become default pathways merely because they already exist, and to then become stronger and more permanent and "automatic" – in neurobiological terms more resonant – every time they are subsequently activated.

Initially the parent-child attachment relationship provides a highly intimate, protected and nurturing environment in which the foundations of these vital life skills are laid down. Subsequent relationships with siblings and playmates (driven by the emotions of the PLAY system, for example) build additional self-regulatory sophistication on top of the early attachment relationship foundations. For example, we begin to learn more effective ways of expressing anger than violent tantrums or destructive fits of rage, or how to pull back on the reins of excitement so it does not spin into a dysfunctional frenzy.

Throughout, fearful experiences, disappointments, separations, frustrations, and the many other emotional bumps and bruises we experience in even the best of childhoods activate our FEAR, PANIC/DISTRESS, and ANGER systems. These are the teachers of our emotion systems. They are literally required if our brain is to be trained to be able to respond in functional ways to the inevitable adverse events we will encounter in later adult life. Among the many important things we learn, by experience and in the context in which we are born and raised, are strategies to lessen the pain of adverse emotions when they do arise, or even to lessen the possibility that they will arise. This knowledge, which is largely pre-conscious, becomes embodied through the establishment of neural networks. Like all neural networks, the more they are activated the more robust they become, and the more likely they are to be activated by subsequent experience because they have more associations! As we grow and mature these *cognitive-emotional structures* responsible for self-regulation and behavior become established as key features of our emotion systems and thereby our personality. Serious Enneagram work involves cultivating awareness of these emotional undercurrents, and discerning the wisdom to know, consciously, the difference between past and present.

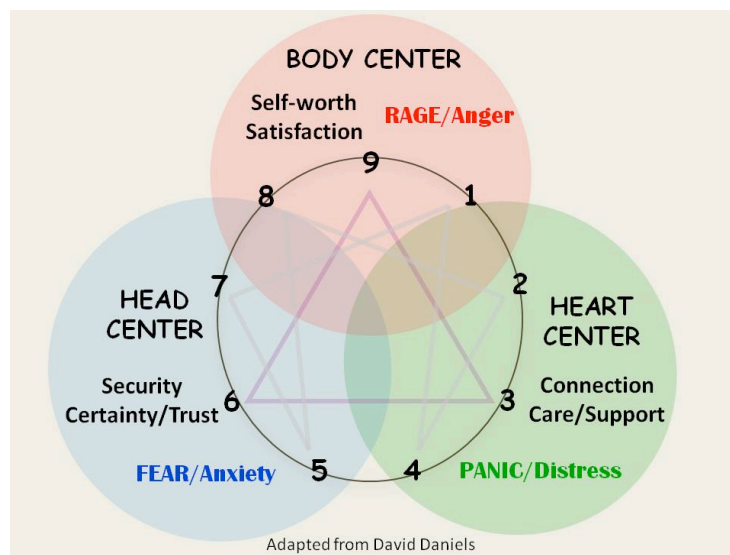
A Neurobiological Model of the Enneagram

- In both a very literal biological and a very poetic and spiritual sense, we emerge into life from a state of oneness and union. Immediately at birth we must begin "working for a living", letting our caregivers know of our needs, and depending on them for care and protection.
- Both Enneagram theory and the science of developmental psychology suggest that we have certain fundamental needs in three broad domains: 1) security, safety, certainty, and trust;

2) nurturing connection, care, and social ; and 3) support self-worth and the satisfaction of our various needs and wants.

- As mammals, evolution has equipped us with sophisticated emotional systems – FEAR, DISTRESS/PANIC, and ANGER respectively – which serve to protect and support us in these areas.
- These systems must be tuned and tempered by actual life experience. In that process we learn to use them effectively in later life. The foundations for these abilities to self-regulate are established in our early-life attachment relationships with our parents/caregivers. This occurs through processes of attunement to them and their responses to us and our needs, at a time when we are literally and utterly dependent upon them for everything related to our survival and satisfactory existence.
- During this time fearful experiences, disappointments, separations, frustrations, and other emotional bumps and bruises inevitably occur and are processed within our unique family systems.. Our most salient experiences related to fundamental needs and their associated aversive emotions slowly establish adaptive, generally functional patterns for dealing with our aversive emotions. These become part of self-reinforcing neural networks in our emotion systems.
- We carry these patterns with us through life, and they activate key aspects of our personality and personal reactivity.

**The Model: Basic Aversive Emotions
and the Three Centers of Intelligence**



On Neuroplasticity

We all know from experience that Enneagram work aimed at modifying our “habitual” strategies for getting along in the world is difficult and demanding. Fortunately, neurobiology points toward very good reason to pursue it. There is now abundant evidence that our brains remain “plastic” and eminently capable of change – literally structural change – throughout our lives. The scientific term for this phenomenon is **neuroplasticity**. The practical consequence is that in learning to bring these powerful, rapid, primal emotional signals to conscious awareness, and in following other than ingrained, habitual, and more-or-less functional but perhaps outmoded paths of reactivity and response, we can actually create new cognitive-emotional structures in the form of new neural networks. In other words with practice and repeated use (think of exercise or fitness training), we actually create in our neurobiological “wiring” an expanded, more varied, and more nuanced repertoire of response to aversive emotional reactivity.

DEEPER WHERE WE STAND

Fear, distress, and anger all relate to the core of our being and are very powerful. Fear is attempting guard our need for knowing what makes life secure and flourish; distress our original need for unconditional love and vital connection and our ongoing need for social support, and anger guards against disruption of our essential need for satisfaction and a sense of self-worth. Among other things, deep Enneagram work is about developing heightened awareness of the arousal of these emotions that kick start the habitual patterns of thinking and acting of our particular type, and then choosing to act differently. This is difficult because these emotional energies come from primal mammalian systems designed to deal with archetypal concerns and threats. They are built to act very rapidly and without much conscious cognitive involvement, and to drive us to do something so we stop feeling them. Moreover, the particular emotion system corresponding with our type’s triad is comparatively sensitive and primed to respond.

Because these emotions are painful and we don’t want to feel them, we are highly motivated to find ways to minimize them. We learn to navigate the terrain of emotions in our early-life attachment relationships. In general what we learn works more often than not in protecting us from their pain. And assuming “good-enough” nurturing and protection by our care-givers (this is a big and important assumption), we are protected from the greater harms of their sustained and constant pain or the failure to have their associated needs addressed.

There is a profound paradox here - that which sustained us comes to limit us. Instead of attempting to avoid or minimize aversive emotions, we can learn to allow ourselves to experience these emotions as they arise, and to reflect on their relevance and validity in our current circumstances. Applying the “5As” of the Universal Growth Process provide a vehicle

for doing this: developing grounded presence (Awareness); becoming non-judgmental toward ourselves and others (Acceptance); having some gratitude for the positive qualities in ourselves and others (Appreciation); applying a process of pausing when we are in the grip of strong emotions to do inquiry and discernment leading to conscious conduct (Action); and doing this daily (Adherence) can make all the difference. With this process we become receptive to integrating the higher essential qualities into our lives, and to actually transforming our lives.

When we see and appreciate, deeply, the functions of these sometimes problematic emotions and how we have come into the relationships we have with them --- and how they relate to our type --- we open the door to more compassion for ourselves and for others, and to more and wiser options for dealing with the reactivity that WILL happen in our lives

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Note

Some of the work presented here grows out of a deeply rewarding and ongoing collaboration, which also includes Dan Siegel, MD, Denise Daniels, PhD, and Laura Baker, PhD. That project attempts to present the Enneagram in contemporary scientific terms to a scientific audience.

