

# The Safe Container of Interpersonal Relationships

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## Abstract

The importance of maintaining a “container of safety” is emphasized in Rosen Method Bodywork practitioner training. When Rosen Method clients feel “safe enough” they can bring their awareness to their inner felt experiences; choose to express their inner experiences to the practitioner; be open to, and accepting of, the practitioner’s non-judgmental contact, compassion and mirroring. In the first part of this article, “safe enough” is defined as the autonomic nervous system balance of sympathetic nervous system arousal (ANS) and parasympathetic nervous system (PNS) relaxation. Rosen Method Bodywork practitioners’ attuned use of touch, words and their intention to “be with” the client’s inner experiences enable practitioners to *externally regulate* clients’ nervous system arousal when it is too high (hyper-arousal) or too low (hypo-arousal) to allow clients to safely tolerate their *embodied experience*. The second part of this article describes how the external regulation that clients receive in Rosen Method Bodywork sessions stimulates the growth of neural integrative fibers that enhance clients’ *internal emotional self-regulation*. Enhanced internal emotional self-regulation provides a wider “window of tolerance” for emotional experience, which allows clients to move out of their protective patterns into more fulfilling engagement with themselves and others.

## PART ONE:

### Arousal and Attunement

Marion Rosen observed that “healing takes place” when her clients experience trust, surrender, love. When her clients surrendered their protective muscular defenses, and breathed with no holding back, fully taking in and giving out, they often felt a loving connection with themselves, with others and with “all that there is.” From a lifetime of working with clients, Marion told her students that, “The clue to this work is that the universe is love. Our loving is then connected to the all love of the universe...I am certain that this is at the bottom of many of the healing processes that go on.”

When we feel trusting and loving, a look inside our brains reveals increased activity in a center that inhibits negative feelings and worrisome thoughts (Goleman, 1995, p. 6). Additionally, we are in a positive and engaged emotional state due to the production of biochemicals of reward, pleasure, relaxation and bonding (Cozolino, 2006, p. 216).

When negative feelings and anxious thoughts are turned down to a subdued hum, our autonomic nervous system can balance sympathetic nervous system arousal (ANS) and parasympathetic nervous

system (PNS) relaxation. In this balance of arousal and relaxation, we feel “safe enough” to listen deeply to ourselves and others. We can tune into our true feelings and desires and use them to guide our perceptions and behaviors.

The balance of arousal and relaxation is dynamic: one moment we may feel relaxed and receptive, the next moment we may feel more energized and focused. Because this balance includes a range of possible experiences, it is useful to think of it as a “safety zone” in which one feels “safe enough”. Even when we have some sense of threat (some anxiety, fear or increased alertness) PNS relaxation and SNS arousal can continue to balance within this safety zone. PNS/SNS balance occurs during *flow* experiences in which “one is fully and totally immersed in an activity in the subjective emotional present and that activity is potentially risky” (Fogel, 2013, p. 150).

In Rosen Method Bodywork sessions, it may feel risky to reveal one’s deepest feelings to the practitioner; to relax protective muscular holdings; to revisit emotionally charged memories; to experience the intensity of emotional feelings. Clients enter the absorption of the flow state when they can let go of enough worry and fear to feel “safe enough” to take these personal and interpersonal risks (Fogel, 2013, p. 150). Flow is the state in which creativity flourishes; it is a state in which we feel resourceful enough to move past our habitual protective patterns as we risk new experiences and behaviors. The deep engagement of the flow state is rewarding, being accompanied by a sense of pleasure, or high (Fogel, 2013, p. 312).

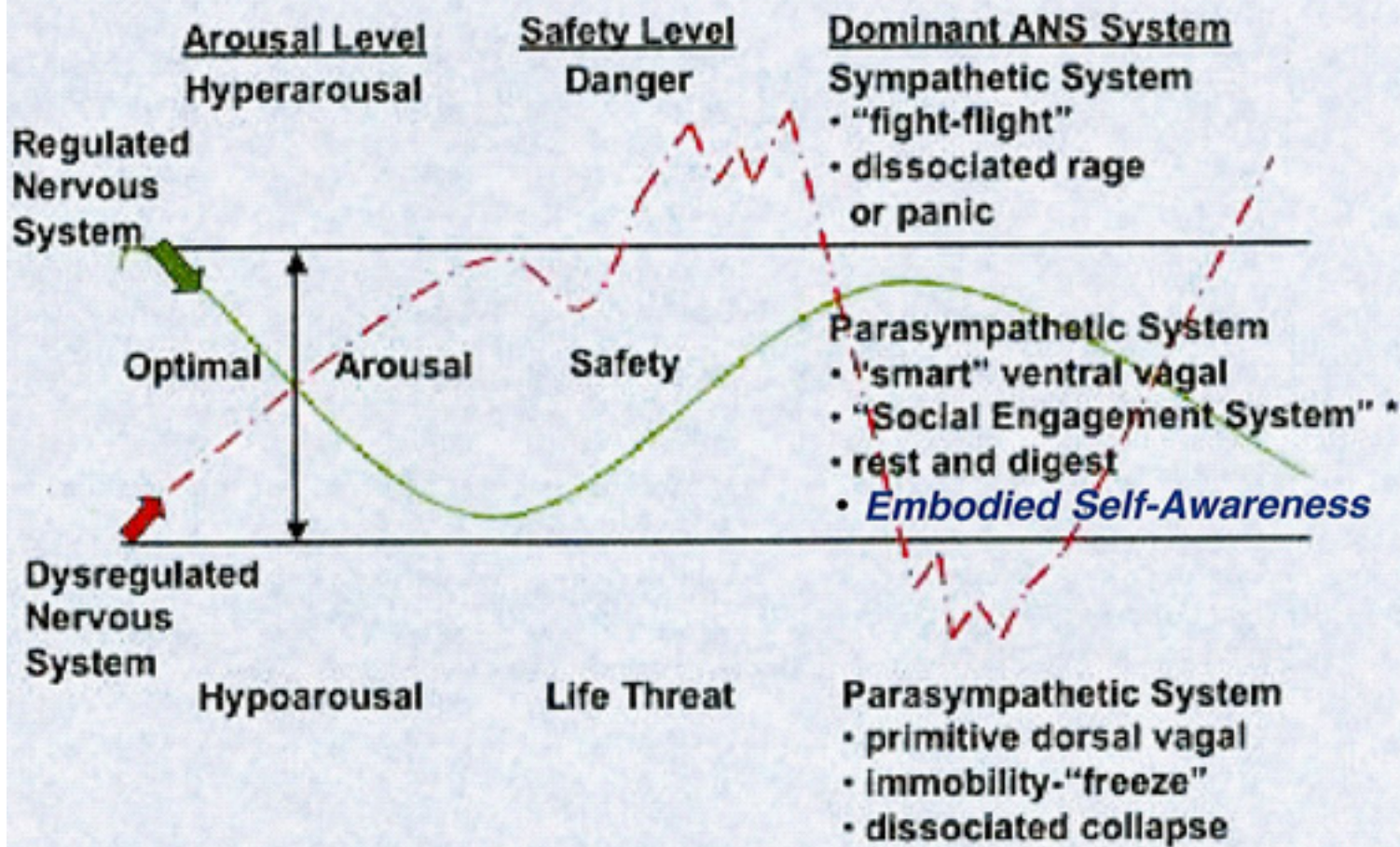
In the absence of threat or risk to oneself, the parasympathetic nervous system orchestrates restoration and recovery (Fogel, 2013, p. 14). As compared to a flow experience, restoration and recovery occurs when Rosen Method Bodywork clients’ diaphragm muscles fully release and stay released for some moments. The diaphragm releases when clients have taken the risk to feel what they are feeling, and accept the *emotional truth* of these feelings. With this acceptance, their diaphragm muscles release and clients automatically breathe with their full natural range, with no holding back (Green, 2012). This naturally deep breath is often accompanied by the peaceful and lovingly connected experience that Erik Erickson (1950) termed “basic trust”: the sense that all is well and as it should be in one’s world. One feels fully content and complete in the moment (Green, 2012).

This article describes the many ways that Rosen Method Bodywork practitioners may be able to help *externally regulate* their clients’ nervous system arousal when it is too high or too low for clients to *safely tolerate* their embodied experience. The importance of maintaining a “container of safety” is emphasized in Rosen Method Bodywork practitioner training. When clients feel “safe enough,” they can bring their awareness to their inner felt experiences; they can choose to express their inner experiences to the practitioner; they are able to be open to and accepting of the practitioner’s contact, mirroring and compassionate acceptance.

Neurologists confirm that healing and growth occur when arousal and relaxation are balanced within the zone of safety, because this is when many different levels of neural circuitry become functionally integrated. *Neural integration* is the mind’s process of linking different modes of information processing, such as sensation, emotion and meaning, into a functional whole (Siegel, 2012, p. 394). Neural integration allows multiple pathways of information to connect with and influence one another, such as the pathway that conveys information about our internal states and emotional feelings, the pathway that conveys information about the external environment and about other people, and the pathway of the thoughts we have which help us classify and understand this information. As seen in Figure 1, when clients’ nervous systems are in dysregulated states of hyper- or hypo-arousal, neural integration does not take place.

When stressed, we cannot be in regulated-sustained states of embodied self-awareness

# Autonomic Nervous System Arousal



Wheatley-Crosbie, adapted from Levine, Porges, & Ogden

Figure 1. Levels of Autonomic Nervous System Arousal. Source: [http://www.yellowbrickprogram.com/papers\\_by\\_yellowbrick/rightbrainaffectregulation\\_p4.html](http://www.yellowbrickprogram.com/papers_by_yellowbrick/rightbrainaffectregulation_p4.html)



## Hyper-arousal

When danger or threat is detected the sympathetic branch of the autonomic nervous system supplies energy for “fight or flight” behavior. When a large amount of energy is supplied, and that amount of energy is dysregulated, one may become hyper-aroused. In hyper-arousal, internal sensations and emotional feelings are uncomfortably intense, and cognition, perception and behavior become either rigid or disorganized and ineffective. One becomes unable to distinguish this unique present moment from past similar moments, and responds automatically in ways one has responded in the past when frightened or threatened. One loses the self-awareness and openness of perception that allows for a more flexible response based on present realities (Siegel, 2012, p. 281-283).

## Hypo-arousal

When the danger or threat is assessed as *inescapable* or *overwhelming*, the dorsal vagus nerve of the parasympathetic nervous system becomes activated to slow down the functioning of many of the body’s organs and glands. The slowdown affects one’s ability to be self-aware as well as the ability to move one’s muscles, so that one may enter a *dissociated state*: freezing in place, feeling numb, disconnecting thoughts from feelings (van der Kolk, 1996, p. 214-232). Dissociation involves a “disruption in the integration of various processes, including memory, identity, perception and consciousness” (Siegel, 2012, p. 360). “When the experience is dissociated, neural integration is not possible; to the extent that dissociation prevails, there is fragmentation of the self” (Siegel, 2012, p. 359). The “fragmentation of the self” is reflected in how memories of the stressful/traumatic situation are encoded: they may not be woven together to form a unified conscious autobiographical memory. Rather, the *implicit* aspects may reside separately in sensory, muscle and emotional memory, while the explicit details (*what, where, when, why*) may have been incompletely encoded in memory systems.

During a Rosen Method Bodywork session, there is no objective threat or danger from the environment. What clients fear, and protectively contract their muscles against, is the level of intensity of certain emotional experiences that they anticipate will overwhelm their ability to continue to function in their lives, or will interfere with the relationship with their practitioners. Present fears are based on past experiences. **Attachment Theory**, a psychological model of human development, explains that we *cut off* (suppress, repress) certain sensations, emotional feelings, needs, desires, and impulses to act. These aspects of our inner, felt experience were unacceptable to the people we depended upon to protect us, meet our needs and regulate our nervous systems’ levels of arousal when we were too young to do these things for ourselves. Aspects of our experience that were unacceptable to our caregivers became unacceptable, and thus threatening, to ourselves (Bowlby, 1988). Attachment theory and its applications to Rosen Method Bodywork will be discussed in the following article (Green, 2014).

Clients may fear that relaxation and attention to their bodily sensations may bring up *traumatic* memories held in implicit (bodily) memory systems. Some clients may have no conscious memories of aspects of their traumatic experiences, so that when these memories emerge, they are not only intensely felt, but also frighteningly confusing.

Clients may also be anxious about allowing *unknown* sensations and feelings to emerge. We have a certain sense of who we are, and we may fear encountering feelings, thoughts, beliefs and impulses to act that do not fit snugly into our self-images. Attachment Theory explains that when we are very young, if our caregivers do not mirror and encourage certain potential abilities, for example, self-assertion, these

abilities do not develop optimally through practice (Bowlby, 1988). Another developmental ability that is either encouraged or discouraged by our caregivers is listening to and understanding our bodies' messages. If our childhood attempts to feel and understand our emotional feelings by giving them a name, a voice and acting upon them are not mirrored and clarified by our caregivers, the neural circuits that connect conceptual understanding to felt experience may remain underdeveloped. Our bodies' intelligence would then remain mysterious to us, rather than enlightening.

A Rosen Method Bodywork session is a step by step process into *embodied self-awareness*. The first step is focusing clients' awareness onto their felt bodily experiences through the practitioner's touch. As clients' bodies respond to being touched, the practitioner meets and mirrors the subtle muscular changes. Under this mirroring reflection, clients become curious about the personal meaning of their physical responses. This process of self-exploration continues, with practitioner's words acting as a third hand which deepens and clarifies clients' unfolding experiences. Self-exploration ceases if/when clients move out of the "safety zone" into hyper- or hypo-arousal. When hypo- or hyper-aroused, clients are unable to tolerate their sensations or emotional feelings without tightening their bodies in protective defense; they may be unable to pay attention to and utilize the contact and support of the practitioner's hands and words.

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### Experiential Exercise

To get a felt sense of "safe enough," let yourself enter into these two spin-offs of the fairy-tale *Goldilocks and the Three Bears*. Close your eyes and imagine you are riding on a train to get home. Let the train accelerate until it is hurtling you forward at a bone-shaking speed. As you imagine this, feel what the muscles in your body are doing, how you are breathing, what your mind is thinking, and what emotions come up. Now let the train slow to a crawl, barely moving. Again, feel your bodily responses, notice your breathing, what you are thinking, and what emotions comes up. Finally, imagine that the train is going not too fast and not too slow, but just the *right* speed to get you home. Using speed as a metaphor for arousal, the just right speed fits your needs, and is "safe enough."

Close your eyes and imagine that you are physically and energetically very much larger than you actually are. How does your body respond; what is your breathing like, what are your thoughts and emotions? Then shrink yourself into a space one-half your actual size. How do your muscles and breath respond, what are your thoughts and emotions? Finally, let your body take up exactly the right amount of space to be all of who you are. Using body-sense as a metaphor for arousal, you have all the space you need, not too big, not too small, but *just right*: "safe enough."

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Through the process of **attunement**, a Rosen Method Bodywork practitioner can tell when clients are moving out of their safety zones into hyper- or hypo-arousal.

### Attunement

Goleman defines attunement as "listening, or paying attention, to another with full receptivity. It goes beyond momentary empathy to a total, sustained presence that facilitates rapport" (Goleman, 2006, p. 84). Attunement is something we achieve because we are paying close attention to the other person, and care about them, while we maintain awareness of our own embodied experience. Marion Rosen began to **care** about a person when she touched him or her with open, listening hands (Rosen and Brenner, 2003). Gentle, contactful touch releases the neurohormone oxytocin, which facilitates relaxation and bonding (Uvnas-Moberg, 2003).

The process of attunement allows us to know another person from the inside out, because we recreate their internal experience inside ourselves to some degree. Recreating another person's internal experience inside ourselves depends upon *mirror neurons*. "Mirror neurons lie at the crossroads of the processing of inner and outer experience, where multiple networks of visual, motor and emotional processing converge" (Cozolino, 2006, p. 187). Mirror neurons initiate *imitative*, or *resonant*, behaviors. I see you yawn, I automatically yawn in imitation. When I see you reach out for a cup of coffee, my mirror neurons fire off enough of that pattern so that I perceive the intention of your movements: you will bring the cup to your lips and drink. I may even have the sense memory of the taste of coffee, or become aware that I want a cup myself.

Mirror neurons recreate another person's internal experience inside oneself to some degree. However, attunement is more complex than simple imitation. Attunement draws upon imitative and resonant behaviors, and then involves additional levels of neural processing and integration in what Siegel calls *resonance circuitry*. Resonance circuitry involves mirror neurons and neural networks of embodied self-awareness and association areas in the prefrontal cortex. When we attune to another, we use embodied-self awareness to feel our own internal state as it mirrors and resonates with the other person's. This information travels to association areas in the prefrontal cortex, which creates emotional and conceptual meaning from the information we receive from our mirror neurons (Siegel, 2012, p. 157). *The definition of resonance circuitry is important for Rosen Method Bodywork practitioners, because it states that one's ability to understand the internal experience of others is directly related to felt awareness of one's own internal experience. Rosen Method Bodywork practitioners listen to their own bodies in order to attune to their clients.*

As Rosen Method Bodywork practitioners attend to their clients with their eyes and ears while touching them with caring, listening hands, practitioners receive information about their clients' emotional states and levels of arousal through changes in patterns of their clients' breath, degrees of contraction or release of their clients' muscles, emotional expressions on client's faces, and the content, rate, tone and pitch of the clients' words. This non-verbal sense of "being with" another person is called *intersubjectivity*. "In intersubjectivity, one's awareness is expanded beyond the boundaries of the body to include the emotional states of others, a dyadically expanded state of consciousness" (Fogel, 2013, p. 224; Tronick, 2007).

### **Boundaries: Attunement is not Fusion**

Being with another person intersubjectively does not mean that we need to completely merge our experience with theirs. Even in this "dyadically expanded state of consciousness" the architecture of the brain allows us to discriminate between the inner experiences that belong to us, and the inner experiences of the other with whom we are resonating. "The sense of agency, of having a purpose to notice or empathize with the other, as well as the perception of the other as an independent agent, is related to the *inferior parietal lobe*. The sense of ownership of inner experiences involves the *anterior parietal* (body ownership), and the *anterior insula* (self-agency). When this information becomes part of the network of embodied self-awareness that involves the *insula*, *anterior cingulate cortex*, *orbitofrontal cortex*, *somatosensory cortex*, and *motor areas*, we can assess the nature and source of an inner experience, and make appropriate decisions about how to respond" (Fogel, 2013, p. 223).

The ability to discriminate between one's own and another person's inner experiences is known as having *good boundaries* in interpersonal relationships. If we do not have good boundaries, and cannot discriminate between inner experiences that are ours, and the inner experiences of the other person with whom we

are resonating, we have gone beyond empathy into *fusion* (Kohut, 1984). If, as practitioners, we are fused or merged with our clients, we cannot act as external regulators of their levels of nervous system arousal, helping clients stay within their own “safety zones.” Practitioners need to maintain good boundaries, so that they can achieve what Stern describes as true empathy: “the attempt to experience the inner life of another while retaining objectivity. One holds one’s own perspective in mind while simultaneously imagining what it is like to be the other” (Stern, 2004, p. 76).

### Attunement Leads to Understanding

Cozolino defines **empathic understanding** as a hypothesis we make about another person’s internal experience based upon a combination of our own visceral, emotional and cognitive information that we derive from the process of attunement (Cozolino, 2006, p. 203). Rosen Method Bodywork practitioners non-verbally convey their empathetic understanding through listening touch and subtle movements of their hands in response to clients’ minute muscular movements; they convey verbal, conceptual understanding through words which describe the changes practitioners observe in the client’s body, and words which mirror the clients’ own self-descriptions. Stern tells us that understanding goes beyond imitation: “If you just imitate a baby, that only shows that you know what he did, not what he felt. To let him know you sense how he feels, you have to play back his inner feelings in another way. Then the baby knows that he is understood” (Stern, in Goleman, 1995, p. 100). In Rosen Method Bodywork sessions, feeling understood in this deep way may be all clients need to bring them back into the balance of “safe enough.”

### Non-judgmental Attunement: Being with “What Is”

In order to attune to another person with the goal of empathetically understanding their inner experience, we have to be open to the other’s experience without judgment. The minute we judge, edit, or fear his/her experience inside ourselves, we have left our own embodied self-awareness, and our diaphragm muscles may have contracted in fear. We have lost our attunement. The listening, supportive, responsive touch that Rosen Method Bodywork practitioners employ is a constant resource that brings practitioners back to the open receptive state in which they care about their clients without judgment. Marion Rosen tells us that practitioners touch “from their hearts and with their whole being” (Rosen and Brenner, 2003, p. 81). “Touch that is gentle, listening, safe and loving has the potential to enhance embodied self-awareness by activating the biobehavioral response of engagement, both with others and with self” (Fogel, 2013, p. 221).

Supportive, caring touch, which is a form of love, is primarily processed in the *social neural networks in the right hemisphere* of the brain. The right hemisphere specializes in processing emotional and social signals: the nonconscious, nonverbal and emotional information gained through auditory, visual and tactile perception. The term **nonconscious**, rather than the term *unconscious*, refers to processes that take place below the level of neural integration necessary for conscious awareness. This usage reflects current publications in the fields of neurophysiology and psychology.

By contrast, the *left hemisphere* primarily processes information verbally and sequentially, which allows for analysis, judgment and planning for the future (Schore, 2008). Left-hemisphere brain processes are more likely to organize “fixing” (manipulate, analyze, change) behaviors, whereas right-hemisphere processes focus engagement with what is happening in the present moment in a different, more “holistic” way.

Because Rosen Method Bodywork practitioners touch their clients without the agenda to “fix” them, practitioners can listen to the emotional meaning of what they are experiencing within their own bodies

as they attune to and resonate with clients' inner experiences. Having the agenda to fix or change clients would pull practitioners' attention away from the right-brain mode of sensing and understanding, and into left-brain processes which would promote "fixing" behaviors. The agenda that Rosen Method Bodywork practitioners have is to "be with" what is happening within the client. This agenda keeps left-brain processes at bay, promoting right-brain to right-brain attunement (Schore and Schore, 2008). Marion Rosen says, "It is not so much *what we do* to patients as it is *who we are* with them" (2003, p. 21).

## The Role of Unconditional Acceptance

How does the non-judgmental process of "being with what is" allow clients to have new and different experiences that may lead to changes in their self-perceptions and behaviors? Doesn't being with "what is" simply reinforce "what is"? This question brings us to the heart of the exquisite simplicity of Rosen Method Bodywork. "Being with what is," within the support of a compassionate relationship, is the new experience for our clients.

The *new experience* clients have is participating in an interpersonal relationship in which all elements of their embodied experiences are accepted as meaningful, valid, and worthwhile by a person they trust and value. Remember that Attachment Theory states that as children we had to disown aspects of our internal experiences (and their external expressions) in order to continue to be in a relationship with people upon whom our lives depended. What was unacceptable to our caregivers became unacceptable to our selves. In this present moment of a Rosen Method bodywork session, the practitioner not only accepts disowned aspects of a client which emerge through relaxation and embodied self-awareness, but values them as part of the client's essential self. A formerly disowned aspect of the client's self, such as tenderness or self-assertion, is clarified and mirrored by the practitioner's responses. The practitioner is doing in the present what caregivers were unable to do in the past. As infants, we need to be mirrored to know ourselves (Bowlby, 1988). Marion Rosen tells us that as adults, when we are seen for all of who we are, we can finally see our true selves (2003, p. 14).

Rosen Method Bodywork practitioners provide and model mirroring and compassionate acceptance to "what is" occurring in clients' bodies. This helps clients let go of expectations and judgments that create tension and take their attention away from the present moment of experience. Receiving "loving kindness" and acceptance from the practitioner helps clients access their own resources of compassion and acceptance. These conditions make it more possible for clients to *surrender* into fully feeling the emotional truth of "what is" (Fogel, 2013, p. 276). With this surrender, the diaphragm muscle releases. On this release, emotions that have been protected against through muscular contraction become consciously felt and expressed.

Clients have a qualitatively different experience when they reach and express their emotional truths while in a compassionate, attuned relationship than they would if they were alone with their emotional experience. When one's emotional state is reflected by another person and enriched by a complimentary response, it gains more meaning and depth. When painful and feared emotions are out there, in what Fosha calls a **holding space** between the self and the other, they can become *challenges* in the external environment that the self and the other can tackle together (Fosha, 2000).

There is a significant difference in the body's response to *threat* (stress) and *challenge* (*eustress*: good stress). **Challenge** is associated with increased production of adrenaline, but *not* with increased production of cortisol, which is the more toxic, longer lasting chemical associated with threat (Rossi, 1993, p. 177). When



the therapeutic relationship transforms a threatening emotional experience into a challenge that the client with the help of the practitioner has the resources to deal with, a moderate surge of adrenaline provides energy for coping without sending one into hyper-arousal. When one is coping with a challenge, multiple pathways of information continue to connect with and influence one, and proteins can be synthesized for new neural growth and connectivity. Coping adaptively with a challenge and being in a state of “flow” are similar: anxiety is associated with both states, but there is also the nervous system balance that is associated with focused engagement, and the inner sense that one has sufficient resources to stay with the challenge and see it through.

When clients are in the nervous system balance of “safe enough,” and they bring their awareness to the sensations, emotions and the impulses to act that are part of disowned experiences, the awareness process stimulates growth of neural connectivity in those underdeveloped neural circuits. Optimal growth of *integrative fibers* in the brain occurs when the client is in the zone of safety. “Moderate levels of arousal maximize the biochemical processes that drive protein synthesis necessary for modifying neural structures” (Cozolino, 2006, p. 308). Davidson and Irwin (1999) state this more simply, “We can learn to be resilient by being exposed to a threat or stress at a level that allows us to manage it.”

As many of us have experienced on our own paths to deeper self-awareness, the road to reclaiming disowned aspects of ourselves may be strewn with minefields. When the process of feeling and acknowledging what has been unacceptable, or simply unfamiliar, brings up significant degrees of fear and anxiety in clients, they may move out of their window of tolerance for the experience, becoming hyper- or hypo-aroused.

Rosen Method practitioners are trained to notice muscular tightening, restricted breathing, changes in facial expression and body temperature, etc., that signal clients’ fear and anxiety. Rosen Method practitioners may resonate with their clients’ fear, but so long as practitioners can continually access their own embodied self-awareness, *they know that it is not their own fear*. This discrimination allows practitioners to emotionally self-regulate, maintaining their own nervous system balance of “safe enough.”

The following list draws on neurophysiological research to clarify the ways in which the Rosen Method Bodywork practitioner’s own nervous system balance of “safe enough” *externally regulates* clients’ levels of nervous system arousal.

1. **As both practitioner and client access their embodied self-awareness, they are stimulating the activity of regulatory networks that balance arousal and relaxation.** The practitioner’s touch, verbal mirroring and observations *activate clients’ neural networks of embodied self-awareness* that in turn *monitor* and *regulate* heart rate, blood flow, respiration, digestion, movement and the immune system via the ventromedial prefrontal cortex’s connection to the amygdala and hypothalamus (Fogel, 2013).
2. **The practitioner cares about the client.** Research at the HeartMath Institute ([www.heartmath.org](http://www.heartmath.org)) into emotions of caring and compassion show that these states *integrate* all the systems in the body to work together more efficiently (Zettmar, 2011). This includes more efficient balancing of the sympathetic and parasympathetic nervous systems, as well as increasing right-left hemispheric brainwave coherence (McCraty et al., 1995). Caring stimulates the integration of systems in the practitioner’s body. Then, when the practitioner attunes to the client, *brainwaves synchronize* to some degree, with the more coherent (cohesive) brain pattern influenced by the cohesion of the other (Grinberg-Zylberbaum et al, 1992). This suggests that the more coherent brainwave pattern of

the practitioner may lead to an increase of integration of all body states in the client, allowing the sympathetic and parasympathetic systems to balance more efficiently.

3. **The practitioner is touching the client with the intention to “be with what is”:** to compassionately attune and respond to the client without judgment or agenda. Listening, supportive touch stimulates the biochemistry of bonding and relaxation that brings both individuals’ nervous systems into close alignment with a bias toward relaxation (Uvnas-Moberg, 2003). The medium of supportive touch, and the right-hemisphere intention to “be with what is” allows for right-hemisphere to right-hemisphere *resonance* between practitioner and client; their psychobiological states are mutually interacting, allowing the two physically separate entities to become a part of one functioning whole (Siegel, 2012, p. 334).
4. **Because the client and practitioner are in an attuned relationship while the client is experiencing unacceptable or unfamiliar emotional material, the activation of the ventral branch of the parasympathetic vagus nerve may allow the client’s heart rate to increase for engagement, without triggering the fight or flight neurophysiology of protection initiated by the sympathetic branch of the autonomic nervous system.** Porges suggests that the **ventral vagus nerve** plays a major role in the human *social engagement system* (Porges, 2001). The ventral vagus nerve provides increased energy for intense engagement with others, and decreased energy for listening and receiving calmly. Mammals evolved this alternative to the autonomic nervous system so that they can maintain their levels of arousal within an optimal range, making social engagement stimulating or soothing rather than stressful (Porges, 2001). Hrossowyc (2009) suggests that we consider the *social engagement system*, which Porges reports is stimulated by oxytocin, to be our most evolved system of human protection, one which uses social engagement and connection instead of fight or flight behaviors.
5. **The practitioner is not fearful, but is in an engaged state of attention with a balance of arousal and relaxation.** Research shows that signals in the electromagnetic field of one person’s heart (ECG) can be picked up by the brain waves (EEG) of another person when they are physically close, especially when they are touching. This suggests the calmer heart rate of the practitioner may influence the client’s brain to increase parasympathetic relaxation (Institute of HeartMath, 2010). Intriguing studies on the heart indicate that the electromagnetic energy field of one person’s heart affects the functioning of another person’s heart, especially when the pair connects through touch (Pearsall, 1998). This suggests that the practitioner’s more regulated heart rate may regulate the client’s.
6. **The accepting quality of the touch, and the compassion conveyed in both voice tone and words may influence a prefrontal association area in the brain,** the orbitomedial prefrontal cortex (OMPFC), which uses this social information to inhibit the amygdala (assessment of threat or danger) and other subcortical structures, facilitating clients’ emotional self-regulation (Cozolino, 2006). When clients pay attention to the external resources of “loving-kindness” that the practitioner is providing, clients produce endogenous opiates that modulate the activity of their threat-assessment network. As clients access these external resources, the changes in their biochemistry helps them to stay within a “window of tolerance”; clients are able to tolerate arousal and pain with more clarity and attention in the subjective emotional present (Fogel, 2013, p. 162).
7. **When clients bring forth their authentic emotional states and these are received by the practitioner, the emotional communication can transform a threatening emotional experience into a challenge that one has the resources to deal with.** The body responds to a *challenge* with adrenaline, but not cortisol, so that the autonomic nervous system can more easily maintain and regain

the balance of “safe enough.”

- 8. Rosen Method touch and words give clients a constant dual focus for their attention.** This dual focus onto internal and external input alters how the mind processes information, and can prevent nervous system hyper-arousal from flooding the mind’s ability to process information (Siegel, 2012, p. 289). When clients focus part of their attention onto the practitioners’ reassurance and support, activation in the client’s neural threat-network diminishes, reducing their *anticipatory fear*. This means that clients’ *perception of threat will decrease before* the intensity of the experience decreases, moving the experience into their “window of tolerance.” Reassurance includes telling clients that the emotional state will crest and fall relatively quickly and not go on forever; suggesting that clients allow the intensity of the sensation to flow through the body rather than contracting against it; reminding clients that they have already experienced these feelings and sensations and survived; reminding clients that they have stopped the intensity of the experience in the past and that together, the client and practitioner know how to reduce the intensity of the experience whenever the client wants to.

Interpersonal nervous system regulation happens continuously during Rosen Method Bodywork sessions (Zettmar, 2011). When the client’s nervous system is in a balanced state of safety provided by an attuned client-practitioner relationship, the ventral vagus nerve is activated, expanding the client’s window of tolerance for emotional experience. If the client’s amygdala then tags a rising sensation or emotional feeling as potentially dangerous or threatening, that perception may now be reassessed by the client’s OMPFC as a challenge with which the client now has the resources to tolerate.

Patterns of neural activation are strengthened through repetition (Siegel, 2012, p. 196). The more frequently one accesses a state of safety in Rosen Method Bodywork sessions, the more likely it is that this state will be activated to one’s benefit in the future.

The more often we access the nervous system balance of “safe enough” when bringing our awareness our embodied, felt experience in a Rosen Method Bodywork session, the more we come to trust and accept our inner experiences, and the more we trust the beneficial qualities of attuned relationships. With increased trust in ourselves and in positive relationships in our lives, we more regularly experience the “loving connection with ourselves, others and with all that there is” that Marion Rosen calls the “healing process.”

## PART TWO:

### The Reparative Relationship: Social Engagement and the Development of Emotion Regulation

The story of the ways that attuned nervous systems influence one another is the story of human social development. The interplay between two coregulating individuals’ nervous systems is present from birth and is what allows the infant to survive. Newborn infants are not born with the neural connectivity that regulates their autonomic nervous system to keep arousal within a tolerable range. When infants are frightened, distressed, or need something, if someone doesn’t provide help their agitation escalates until they run out of energy in exhaustion. Being in an attuned, coregulating relationship is the primary way that infants calm down, and feel safe, for the first years of their lives. The infant’s immature brain effectively “borrows” the adult’s OMPFC’s regulatory capabilities. We maintain a lifelong ability to use other people’s

help to balance our arousal and thus to feel safer and able to be more adaptively resourceful.

Another way of saying this is that *emotional arousal regulation has both internal and external pathways* (Siegel 2012). **Part One** of this article detailed the *external pathway* of “borrowing” or “resonating with” an attuned person’s emotional regulatory system to help regulate one’s own. **Part Two** discusses the *internal pathway* to developing a more resilient *emotional self-regulation network* which provides a wide “window of tolerance” for emotional experience. *These two pathways are related, because the brain uses the experiences of being emotionally regulated by others to build the neural connectivity of emotional self-regulation* (Schoore and Schoore, 2008).

The brain is said to be “plastic”: neural connectivity is a work in progress throughout life. Attuned, coregulating relationships, such as the Rosen Method Bodywork practitioner-client relationship, can stimulate *neural integration*: the linking of multiple pathways of information, such as embodied self-awareness, conceptual self-awareness, awareness of others and of the external environment (Siegel, 2012, p. 394). Neural integration can effect lasting changes in neural networks of emotional self-regulation. When our emotional self-regulation becomes more efficient and resilient, we are more able to respond flexibly and adaptively to whatever life throws at us. It also bolsters our ability to form and maintain rewarding relationships that nurture and support us. Both of these abilities are known to promote effective immune functioning by reducing the frequency and intensity of stress hormone production via sympathetic nervous system arousal (Fogel, 2013).

**Part Two** of this article draws on **Attachment Theory** and **Regulation Theory** to describe how the specific qualities of the *external emotional regulation* one receives is transformed into the neurophysiology of one’s *internal emotional self-regulation*.

## Regulatory Systems

Our bodies regulate many aspects of our internal environment to keep them within an optimal range, such as body temperature, and levels of blood sugar and carbon dioxide. The system of emotional self-regulation is just as essential to our health and well-being. Emotional self-regulation organizes our interactions with our social and physical worlds in ways that ensure our survival. This system mobilizes our responses to psychological and physical danger, and motivates us to engage in safe and rewarding interactions. Mammals have evolved a complex system of emotional self-regulation which allows us to nurture our young, live in social groups, and take the risks involved in learning new, adaptive behaviors over our life spans. Because of the links between emotional self-regulation and basic body functions of the internal environment that affect health, changes in emotional self-regulation impact the entire body and person.

## Emotional Self-Regulation

Emotional self-regulation is a process that modulates emotional arousal so that it remains within safe or tolerable limits, ensuring our ability to respond adaptively to situations. “Emotional self-regulation refers to the ability of the mind to alter the various components of emotional processing. How we experience the world, relate to others, find meaning in life are dependent upon how we have come to regulate [the arousal aspect of] our emotions” (Siegel, 2012, p 273).

Imagine walking alone along a lovely but remote country trail at dusk. Your sensory system brings you



the information that shadows are lengthening, and the air is cooling. Your stomach rumbles, and you shiver. Your sensory system is bringing you this information about your environment and about your sensations. Your emotional system interprets this information, and motivates you to get home, warm up and eat. The emotional system supplies you with more energy to walk more quickly and purposefully back to your car. The emotional regulatory system makes sure you have the right amount of energy needed to carry out the response – you don't suddenly begin racing wildly to your car – you simply turn back and use a faster pace.

Compare this experience with one in which you see a bear on that lovely country road. Now you are sprinting away, or holding yourself very quiet and still. The emotional regulatory system regulates your degree of arousal in response to the stimulus of the bear, keeping your arousal within a range that allows you to carry out a behavior that will best ensure your survival. Ideally, you will have enough energy to run from the bear or to still your movements so that the bear will not notice you. More energy than that will interfere with your ability to respond adaptively. Too much unregulated energy may cause you to scream uncontrollably, alerting the bear, or cause you to freeze involuntarily right in view of the bear. The emotional regulatory system regulates the degree of arousal in response to an internal or external stimulus. The degree of arousal is just one component in the mix of specific qualities of an emotional feeling like love or anger.

An individual's ability to keep emotional arousal within a "window of tolerance" depends in part upon the process of neuroception. **Neuroception** is the ability of our nervous system to assess safety and threat and make appropriate adjustments to prepare our bodies to survive (Fogel, 2013, p 152). As for most of our basic survival functions, neuroception largely occurs below the level of conscious awareness.

Through a combination of inheritance and life experience, one's neuroception may become biased toward assessing many stimuli (situations) as threatening, even though, to an outside observer, there may be little or no threat. If the limbic system's amygdala, whose job it is to be the first in line to *assess threat*, is frequently activated by the neuroception system to send an alarm, the amygdala becomes sensitized or *primed* so that it takes less stimulation to activate it again (van der Kolk, 1996, p. 214-232). **Priming** causes neutral or mildly threatening stimuli to be assessed as more dangerous to one's safety than they actually are. When this is the case, one spends a good deal of time in the neurobiology of fight, flight or freeze, and less time in a more balanced state that permits flexibility of perception and behavior. The frequent arousal experience caused by the release of stress hormones from the sympathetic nervous system may lead to loss of self-control, to exhaustion and depletion of resources, and to compromised functioning of the immune system.

Alternatively, if one does not frequently assess stimuli (situations) as threatening, one spends more time in the nervous system balance of **safety**, which provides for those "healing" states of trust, connection, surrender and love. Frequent experience in the nervous system balance of safety allows us to adapt to life's challenges. We come to have a sustained trust in ourselves to use the potential and qualities of our emotional resources to enrich our lives. As mentioned previously, the more one accesses the "state of safety" in Rosen Method Bodywork sessions, the more likely it is that this state will be activated to one's benefit in the future.

### **The Emotional Self-Regulatory System develops through Attuned Relationships**

We are born with some elements of our emotional system well developed and ready to function. This is true for the amygdala, functional at eight months gestation, which assesses psychological and physical

threat and danger. We are *not* born with our emotional self-regulatory system in place; this system is *experience-dependent*. It grows from the experiences of receiving external emotional regulation from caregivers in the first years of our lives.

The interplay between two attuned people's nervous systems is present from birth. The brain of a newborn is vastly underdeveloped; it does not have the neural connectivity that regulates the autonomic nervous system to keep emotional arousal within a tolerable range. When infants are distressed or in need of something, their agitation continues until they collapse in exhaustion if someone doesn't regulate their arousal. The **external regulation** afforded by an attuned relationship is the primary way that infants calm down and feel safe. Throughout our lives, it is important for our health and well-being to be able to use other people's help to balance our arousal so that we feel safer and more able to cope.

"Emotional self-regulation requires the development after birth of *association areas in the prefrontal cortex* that translate and organize information from diverse systems in the brain. *Prefrontal* growth includes the maturation of axons down to the areas of the *vagal nerve*, the *hypothalamus* and the *medulla*, which are all involved with autonomic nervous system regulation" (Cozolino, 2006, p. 86).

"The *orbital-medial prefrontal cortex (OMPFC) association area* facilitates the regulation of bodily arousal by pushing down on an emotional clutch that disengages the sympathetic nervous system accelerator and activates the parasympathetic nervous system brake" (Siegel, 2012, p. 314).

"The *OMPFC* can inhibit the *amygdala* and other *subcortical* structures, thereby participating in emotional self-regulation. The *OMPFC's* connection to the *hypothalamus* (master gland of the hypothalamus-pituitary-adrenal (HPA) axis) allows it to integrate information from the external and internal worlds with the biochemical emotional motivation and reward system. These interconnections allow social information to be gathered from and transmitted back to all of the sensory systems in order to be immediately employed to guide perceptions, actions and interpersonal interactions" (Cozolino, 2006, p. 54).

The better the quality of the emotional regulation we received in our formative relationships, the better our own *OMPFC* becomes at modulating emotional arousal, maintaining and restoring us to the nervous system balance of *safety*. The quality of attuned care that we receive in the first three years of our lives largely determines how adaptable and resilient our system of emotional self-regulation becomes; the range of emotional experience we can tolerate; how easily we can look for support from others; and thus how much of our lives we are able to spend in the nervous system's "zone of safety."

It is not surprising that the qualities of attuned relationships, which can stimulate the development of networks of emotional self-regulation at any time of life, closely replicate the qualities found in those relationships that first calmed and soothed the infant (Schore and Schore, 2008). Infants who are fortunate enough to have emotionally well-balanced, attuned parents (caregivers) who cared for them with compassion, acceptance, mirroring, and consistent emotional regulation form *positive, secure attachment bonds* with their caregivers.

*The relationships that Rosen Method Bodywork practitioners create with clients employ the same elements of compassion, acceptance, mirroring and consistent emotional regulation that are found in positive attachments. By stimulating the same biochemical cascade of bonding and reward found in positive attachment relationships,*

and by protecting clients from intense, prolonged and overwhelming emotional states, Rosen Method Bodywork practitioners create an optimal relationship environment known to stimulate increased neural connectivity in emotional self-regulatory networks.

In support of the above paragraph, the next section takes a detailed look at how attachment bonds are formed, and how these bonds in turn stimulate the growth of emotional regulatory networks. There are parallels between the optimal developmental conditions described by neurologists and developmental psychologists and the “safe container” of relationship that Rosen practitioners seek to provide for their clients.

### **Born to Bond: Innate Social Reflexes and Chemical Rewards**

As previously mentioned, infants are not born with the neural connectivity that enables their nervous systems to regulate the degree of emotional arousal with which they respond to their ever changing internal and external environments. Infants cannot restore themselves to the state of nervous system balance we are calling the **safety state** without external help from others.

What infants are born with is a *predisposition to bond* with their caregivers to have their needs met and to be protected from danger (Siegel, 2012, p. 91). Their predisposition to bond ensures they do all they can to get the care and protection they need to survive. The infant’s brain *expects attachment*. This expectation is the brain’s predisposition to use *experience* for growth and development. For example, just as we have a *visual system*, we have an *attachment system*. In our *visual system*, genes instruct specific neural circuits to be created in the presence of particular types of visual experience, and the maintenance of those circuits requires ongoing stimulation in the form of light. Without the stimulation of light, those circuits will atrophy. In the *attachment system*, genes instruct neural circuits to be created in the presence of appropriate caregiving and social attunement that will allow the infant to engage with and respond to others. The maintenance and development of those circuits require stimulation in the form of attuned interactions with caregivers (Cozolino, 2006, p. 70).

“Virtually from birth, babies are not mere lumps of clay but active communicators seeking their own intensely urgent goals. The two-way emotional message system between a baby and her caretaker represents her lifeline: the route through which all the traffic passes to get her basic needs fulfilled. Babies need to be tiny masters at managing their caretakers through an elaborate, built-in system of eyes contacted and avoided, smiles, cries; lacking that social interaction, babies can remain miserable and even die from neglect” (Goleman, 2006, p. 163).

Newborns come equipped with an array of motor reflexes designed to get and keep their parents’ attention so that their needs can be met (Cozolino, 2006, p. 97). For example, within a few hours after birth, newborns orient their eyes through a brainstem reflex that locks the infant’s gaze with its parents. This eye lock increases the **endorphin** and **dopamine** levels in both parent and child, giving them both an internally generated dose of rewarding biochemicals. Conversely, when the gaze is broken, separating the dyad, endorphin and dopamine levels fall. This dance of proximity and distance, contact and lack of contact, provides both parent and child with alternating rushes of well-being and distress, teaching them that to be close feels good and to be separated does not feel as good (Cozolino, 2006, p. 101).

Along with the growing ability to hold its parent’s gaze is the increasing infant’s ability to discriminate between happy, sad and surprised facial expressions and the motor skills to mimic them. The parent is

also wired to automatically mirror the infant's expressions and vocalizations. This mirroring dyad is up and running a few hours after birth (Cozolino, 2006, p.101).

A parent instinctively talks to the infant in the lilting, sing-song "motherese" cadences that create pleasurable excitement in her baby. When baby becomes overexcited or distressed, the parent responds to these cues with soothing nurturance. It really is as if these two share one nervous system: when baby is distressed, the parent gets flooded with distress chemicals, and in soothing baby, soothes herself. Nursing, caressing, and calming voice tones stimulate the release of chemicals of pleasure, relaxation, trust and bonding (**endorphins, oxytocin** and **vasopressin**) in both the parent and child, bringing the infant's and parents' nervous system into a peaceful state (Goleman, 2006, p. 164).

The infant's sympathetic nervous system (arousal) becomes activated in her parent's presence, energizing the infant for interactive play. Positive stimulation by the parent triggers the production of **corticotrophin-releasing factor (CRF)** by the infant's **hypothalamus**, which in response stimulates the production of the rewarding biochemical **dopamine** (Cozolino, 2006, 101-103).

**Looping** is the term that Goleman uses to refer to the interactive dance of a parent and child. "Watch the protoconversation between a parent and infant and you will see a finely orchestrated emotional dance, one in which the partners switch in taking the lead. In a very real sense, the emotions of the infant direct what the parent does as much as the parent directs the infant. Their exquisite responsiveness to each other indicated that their loop operates in both directions, a primal emotional highway" (Goleman, 2006, p. 164).

These attuned, loving interactions which utilize smell pheromones, vocal pacing and tone, soothing touch and containment, emotional expressions and eye contact, release the biochemicals of pleasure, relaxation and reward that give the infant a sense of having a "secure base" (Bowlby, 1988). These biochemicals may circulate through the infant's body almost continuously, evoking the infant's feeling that everything is all right: what Erik Erikson calls an infant's "basic sense of trust" in the world (Goleman, 2006, p. 164).

Winnicott (1971) utilizes the term **holding environment** to describe how the "good enough mother" aligns with, and then helps to regulate, the child's levels of emotional arousal, physical sensations and motor movements, all the while recognizing the infant as a separate person, with his/her own motivations, desires and needs. Winnicott defines the "ordinary devoted mother" as "good enough": the ability to have a sufficient supply of attuned, loving interactions which lay down the foundations of health in her infant. Winnicott's concept of "good enough" emphasizes that that parent need not be perfect, and of course, he or she cannot be perfectly attuned and on hand for every need of her baby.

At first, the holding environment is the physical contact which holds, engages, energizes and soothes the infant's body/mind through touch, voice, and an awareness of the baby's sensitivities regarding sensory input and other physical needs (warmth, food, fluids). These ministrations provide repeated experiences of comfort and safety, and establish the infant's initial sense of self which is grounded in the body. "The primary sensations at the beginning of life are physiological and tactile, and the primary form of communication immediately after birth between parent and child is through touch. The sense of self is, first and foremost, a bodily sense experienced not through language, but through the sensations and movement of the body" (Ogden, Minton, Pain, 2006, p. 42).

*Rosen Method Bodywork practitioners create a "safe container" for their clients as they attune to and externally regulate clients' levels of arousal through constant physical contact of listening, responsive touch and voice*



tone. The qualities of Rosen Method's "safe container" parallel the "holding environment" that the "good enough mother" maintains for her infant.

The parent who attunes well with the child is able to modulate her child's levels of arousal as she brings the child up into excitement and down into calmness. As the parent actively engages in playful experiences with the child, he or she repeatedly pairs states of high arousal with interpersonal relatedness and pleasure, which helps the child learn to tolerate rapid and wide shifts in arousal (Cozolino, 2006, p. 87). As the parent (caregiver) repeatedly brings the baby up into excitement and down into peaceful safety, specific neural pathways are activated in which existing neural connections are strengthened, and new neural connections are created, to form the neurobiological networks of emotional self-regulation. "The ability to move from dysregulation to regulation develops a well-functioning emotional self-regulatory system, which allows for positive social engagement and emotion resilience: the rapid recovery from stress" (Cozolino, 2006, p. 87).

*In Rosen Bodywork sessions, practitioners repeatedly help clients' nervous systems move from dysregulation (agitated, highly defensive, dissociated) to regulation, stimulating increased connectivity in networks of emotional self-regulation.*

"Good enough" parents not only regulate the psychobiological states of their infants, but activate the growth of the infant's brain through their emotional availability and reciprocal interactions. Dopamine, oxytocin, endogenous opiates and other rewarding neurochemicals produced by both parent and child during attuned interactions do more than strengthen their bond through washes of pleasure. These neurochemicals are centrally involved in the regulation of the brain's metabolic energy levels and the maturation of the cerebral cortex, as well as the emotional systems (Schoore, 1997). This biochemical cascade activates the birth of new neurons, protein synthesis and neural growth which forms the infant's emotional self-regulatory networks (Emde, 1988).

The following paragraphs list the ways in which the biochemicals of positive attachment determine the infant's psychobiology by determining their number of amount of **binding (receptor) sites** on the amygdala, hippocampus and hypothalamus-pituitary-adrenal (HPA) axis. Binding (receptor) sites are protein molecules on or within the cell that recognize and respond to the body's chemical messages (hormones, neurotransmitters). Like a key fitting into a lock and opening a door, the body's chemical messengers attach to a receptor site and trigger a change (activation, inhibition) in the functioning of the cell.

*Due to the plasticity of the brain, the production of dopamine, oxytocin and endogenous opiates during positive attachment experiences within a Rosen Method Bodywork session may contribute to the formation of additional binding sites in the emotional self-regulatory network at any time of life.*

The infant's initial pathways for emotional self-regulation develop from the early attachment experiences which produce cascades of neurohormones (endorphins, dopamine, oxytocin, prolactin, vasopressin) that stimulate the growth and connectivity of neural networks which can inhibit the amygdala (Cozolino, 2006, p.116). As previously mentioned, infants are born with a fully functional amygdala, which is the area of the limbic system that sounds the alarm in the face of potentially threatening events and gears up the autonomic nervous system for emergency responses.

The central nucleus of the amygdala has a high density of endorphin (endogenous opioid) receptors: the presence of opioids inhibits the amygdala's activity of signaling alarm. Inhibition of the amygdala allows one to feel happier, calmer, safer and less vigilant. Additionally, circulating opioids reduce pain and create

feelings of well-being, pleasure and elation; opioids are chemical relatives of heroin and cocaine with similar effects (Cozolino, 2006, p. 116). This endogenous opioid system may be why some individuals come to use self-injury as a means of emotional regulation. The analgesic effects of the release of opioids into the bloodstream as a result of cutting, burning and other self-injurious behaviors may account for the reported sense of calm and relief (Cozolino, 2006, p. 117-118).

### Oxytocin Binding Sites

The biohormone oxytocin is produced in both mother and child during nursing and other physical bonding experiences (Uvnas-Moberg, 2003). Oxytocin is a hormone and neurotransmitter that is found only in mammals. Oxytocin activates parental and affiliative behavior in both men and women, and inhibits irritability and aggressiveness. In conditions of safety, the hypothalamus (master gland) secretes hormones that lead the pituitary to secrete oxytocin, which is released into the blood stream (Uvnas-Moberg, 2003). In some situations, oxytocin can stimulate caretaking and bonding behaviors even in times of stress and threat by lowering blood pressure and heart-rate. "Oxytocin works together with endogenous opioids and the parasympathetic nervous system to engender states of normal engagement and restoration" (Fogel 2013, p. 159).

*Nurturing touch stimulates oxytocin production, making it an important factor in Rosen Method Bodywork client's process of relaxation, interpersonal bonding and trust. (Uvnas-Moberg, 2003).*

There are a large number of oxytocin and vasopressin binding sites on many areas of the amygdala. This allows the presence of oxytocin and vasopressin to *inhibit* the fear/anxiety signaling of the amygdala. Animal studies show that rats raised with close maternal contact, and who received lots of licking and grooming, develop and retain a greater number of receptors for oxytocin than those with less physical contact (Lewis et al. 2000, p. 218). Oxytocin works most efficiently to inhibit the amygdala when the amygdala has numerous oxytocin receptors. The more receptors there are, the less circulating oxytocin is needed to inhibit the amygdala's signaling of alarm. "The large number of oxytocin and vasopressin binding sites in many areas of the amygdala plays a role in de-conditioning fear responses, restoring autonomic regulation, and reducing hypothalamus-pituitary-adrenal (HPA) activation (the stress response)" (Cozolino, 2006, p. 118-119).

Oxytocin interacts with dopamine receptors to *block habituation* of dopamine (Cozolino, 2006, p. 119). This means that the "rewarding, feel good" biochemical dopamine can sustain its full effect on the bonding pair over time. Taken together, the dopamine and oxytocin produced in the parent-child dyad, along with the inhibition of the amygdala's scanning for danger, creates and sustains feelings of love, safety, well-being and peaceful relaxation that Erickson (1950) calls *basic trust*: the sense that everything is all right in our world. Hrossowyc (2009) cites oxytocin as a central player in the **trust** system in the body which depends upon the functioning of the ventral vagus parasympathetic nerve which will be described later in this article. Porges (2001) proposes that this trust system, or **human connection system** is stimulated by oxytocin.

### Cortisol Binding Sites

Happy, excited attuned interactions stimulate the growth of *cortisol receptors* on the cells of the amygdala, hippocampus and components of the hypothalamus-pituitary-adrenal axis (the stress response network). These cellular receptors diminish the stress experience and its potentially negative impact on the body (Cozolino, 2006). The more cortisol receptors we have in our stress response networks, the less cortisol

is needed for the stress response. Because cortisol can cause cellular damage when levels are high and sustained, it is healthier to be producing the minimum amount of cortisol needed in situations of threat or danger. Especially in the infant, high levels of stress hormones lead to excessive death of neurons (*overpruning*) in the crucial pathways that develop to regulate emotional arousal (Siegel, 2012, p. 75). Cortisol is a blood sugar molecule that can remain in the blood stream for up to thirty minutes before its effect diminishes through degradation; meaning that the biochemical stress response lingers in the body even after the danger may have passed.

### Neural Networks of Bonding and Self-Regulation

The initial developmental pathways to self-regulation, through circulating biochemicals and the cellular receptor-site formation described above, occur within the physical closeness of the parent-child relationship. As the infant matures, she develops the capacity to experience safety and security *without* direct physical contact with the parent: eye contact and vocalizations can bridge the gap. Eventually, the child can hold a concept of mother or father in her mind/body: an “internalized mother,” which she can then use to help soothe herself in times of stress even when the actual parent may not be present (Cozolino, 2006, p. 114).

### Executive Center for Attachment and Emotional Regulation: The OMPFC

The networks of sensory, visceral, somatic and emotional implicit memories of early interactions with the parent or caregiver repeatedly help the young child move from dysregulation to regulation. This neural network connects the **thalamus** (the relay area that organizes input from the sight and sound of the parent); the **amygala** (emotional appraisal - safe or dangerous); and the brain stem area called the **medulla**, the **HPA axis and parasympathetic vagus nerve** (regulation of body states like safety, calm, excitement, distress, agitation) in the right hemisphere **orbital medial prefrontal cortex [OMPFC]** (Cozolino 2006, p. 114). The child’s neural networks of emotional self-regulation develop from the experiences of being regulated by parents. The quality of the external emotional regulation that the child receives from a parent/caregiver directly determines the quality of the internal self-regulation that the child develops (Schore, 1994; Cozolino, 2006, p. 166).

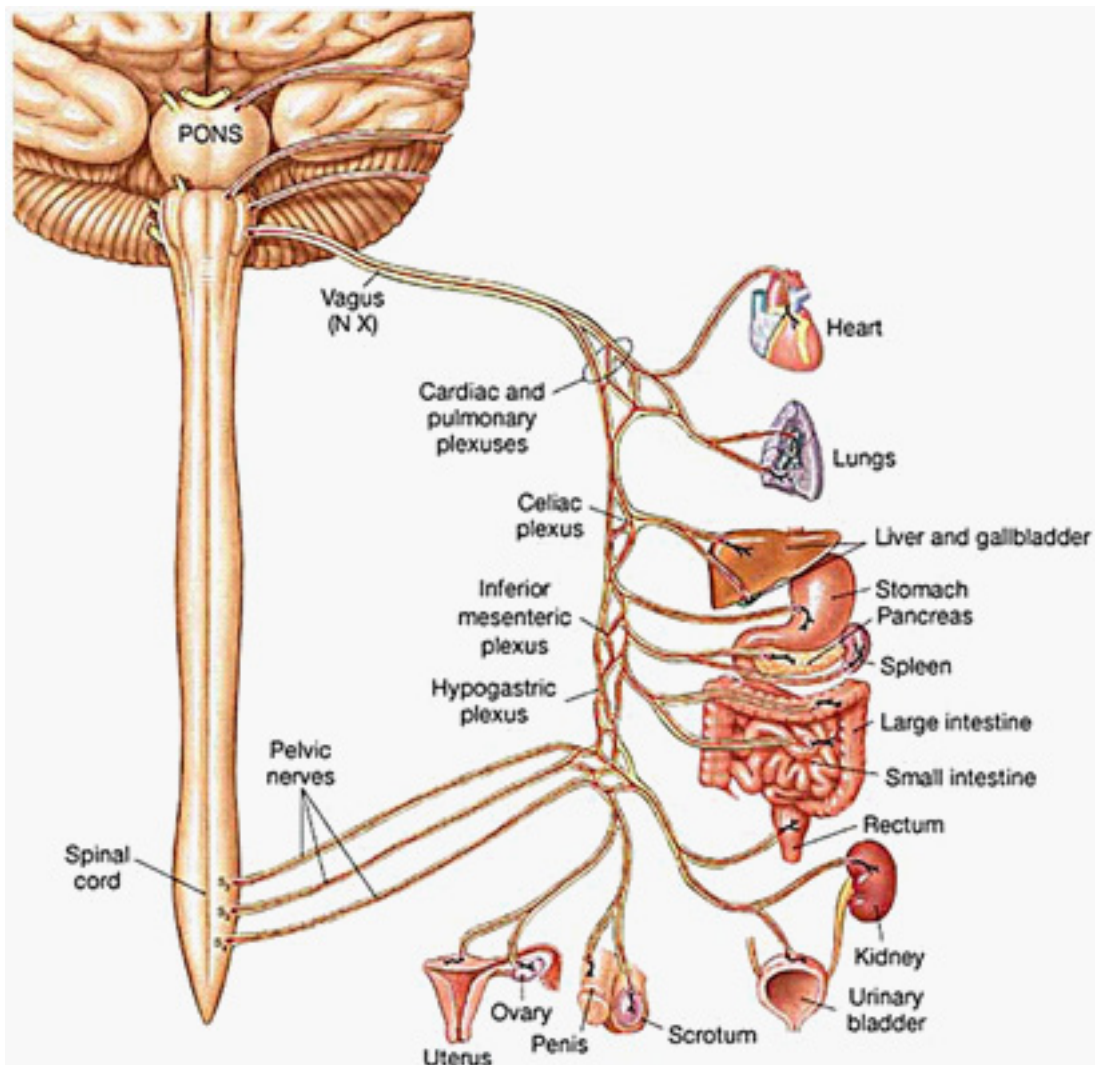
The OMPFC is the first region of the frontal lobe to develop, and it is larger in the right hemisphere (Cozolino, 2006, p. 71). Because of its location, it functions as a bridge between the limbic system and the neocortex. The OMPFC carries out more complex appraisals of safety and threat than does the amygdala, because it receives much more physiological, social and emotional information. The OMPFC is able to organize a more nuanced response to situations through inhibition of the amygdala’s activity and through the functioning of the ventral vagus nerve. “The OMPFC is the executive center of the right hemisphere networks of attachment, social relationships, emotional regulation and higher level input into bodily homeostasis. These network systems are built during childhood in an experience-dependent manner through the attunement and connections of the right hemisphere of the parent and child” (Cozolino, 2006, p. 72).

### Neural Network of Social Engagement System: Ventral Vagus Nerve

In addition to the reciprocal connection that the OMPFC and the amygdala develop after birth, the OMPFC develops a tight connection to a branch of the *parasympathetic vagus nerve* that exerts an inhibitory, modulatory, or calming influence on sympathetic nervous system arousal. Porges (2001) labels this aspect of the emotional regulation network the **social engagement system**. It is also known as the *trust system* and

the *human connection system* (Hrossowyc, 2009).

Porges calls the ventral branch of the vagus nerve (10th cranial nerve) that develops after birth the **smart vagus**, or **vagal brake**. The smart vagus interacts with the sinoatrial node of the heart to decrease or increase heart rate *without* activating the fight or flight response of the sympathetic nervous system. The smart vagus allows us to engage with others by talking and expressing ourselves energetically, and to disengage by listening and receiving peacefully. The smart vagus keeps our level of arousal within an optimal range so that our social engagement is stimulating or soothing rather than stressful (Porges, 2001; Cozolino, 2006, p. 88-92).



**Figure 2. Pathway of Vagus Nerve.** Source: [www.prweb.com/releases/prweb1068924.htm](http://www.prweb.com/releases/prweb1068924.htm)

As shown in Figure 2, the vagus nerve is not a single nerve, but a complex, bidirectional, neural feed-back system. It consists of sensory and motor fibers, and provides the brain with monitoring functions and control over many bodily systems in support of homeostatic regulation. Motor fibers of the vagus nerve originate in the brain stem's **nucleus ambiguus** and **dorsal motor nucleus**. The nucleus ambiguus, with projections to the heart, soft palate, larynx and bronchi, is involved with the ventral vagus in processing emotion, motion and interpersonal communication. The dorsal motor nucleus, with projections to the trachea, lungs and gastrointestinal tract, helps to regulate respiration and digestion.



The ability of the smart vagus to regulate the heart and other target organs is called *vagal tone*, and can be observed in infants as young as three months. In fact, the quality of the vagal tone measured at three months of age predicts later quality of attachment and other socio-emotional patterns (Fogel, 2013). As previously mentioned, Porges suggests that the development and functioning of the smart vagus is stimulated by oxytocin (Porges, 2001; Hrossowyc, 2009).

The quality of vagal tone that we each develop results from the emotional regulation we experienced with our caregivers: our attachment histories become translated into moment to moment bodily experience. The development of the smart vagus, along with growth of neural circuitry involving the OMPFC that can inhibit the amygdala, shows us how early attachment patterns become biological structures. The better the vagal tone, the easier it is to fully experience and then to recover from wide ranges of emotional flavors and intensities. Good vagal tone provides the child, and later the adult, with the capacity to tolerate, process, and transform even difficult experiences into opportunities for growth (Cozolino, 2006, p. 88-92).

*Translated into the language of body-centered therapy, the better the vagal tone, the more possible it is to be open to our experiences in the present moment and to process and modulate them, because good vagal tone confers a wide window of tolerance for emotional states. By dampening both sympathetic (hyper-arousal) and dorsal vagal (hypo-arousal) activation, good vagal tone helps maintain or return one's emotional arousal to a window of tolerance.*

Good vagal tone contributes to allowing us to use our verbal thoughts to track and understand our feelings and our environment during stressful events. When there is no reliable vagal brake the sympathetic nervous system becomes predominant and calls the shots. When the sympathetic nervous system is dysregulated and becomes highly activated: 1) the functioning of the OMPFC may be compromised; 2) the functioning of the *dorsomedial prefrontal cortex (DMPFC)* which regulates thought and language about ourselves may be compromised; 3) the functioning of the verbal areas in the left hemisphere may be compromised; and 4) the functioning of the *ventromedial prefrontal cortex (VMPFC)* which regulates our embodied self-awareness may be compromised (Fogel, 2013). In addition, the impairment of the functioning of the aforementioned neural networks leads to incomplete and/or highly-charged memory encoding of these dysregulated moments in implicit (bodily, emotional) and explicit (verbal autobiographical) memory systems (Siegel, 2012, p. 78). These are the type of disconnected, incoherent memory fragments that form during traumatic events.

“Good enough” parents can stimulate the development of optimal vagal tone by being well attuned to their infants, consistently meeting their needs so that the infant’s nervous system is not in prolonged states of high arousal from distress or overexcitement (Cozolino, 2006, p. 88-93). The repetition of moderate arousal and timely soothing allows the smart vagus to develop. Good vagal tone means one can cope with stress well, which in turn fosters good immune system functioning, positive emotional states and secure relationships, as well as the ability to be “good enough” parents in turn for their children (Cozolino, 2006, p. 88-93).

*Rosen Method Bodywork practitioners stimulate the release of oxytocin through positive touch, and modulate clients' states of hyper- or hypo-arousal, both of which are known to stimulate the development of good vagal tone.*

## Conclusion

Positive experiences of interpersonal engagement, such as those found in Rosen Method Bodywork sessions, provide the external regulation that stimulates the development of improved systems of emotional self-regulation and social engagement through: 1) increased binding sites for dopamine, oxytocin and endogenous opiates which inhibit the activation of fear circuitry and increase the safety and pleasure of interpersonal bonding; 2) the development of a more effective executive center (OMPFC) for emotional self-regulation; 3) the strengthening of good vagal tone, and 4) enhanced embodied self-awareness. Through these gains, Rosen Method clients become more able to sustain rewarding relationships in their lives, and more able to maintain and regain the nervous system balance that allows them to take on new challenges for a richer life.

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