

Resonance, Regulation and Revision: Rosen Method Meets the Growing Edge of Neurological Research

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Abstract

This article presents some of the recent research from the burgeoning field of neuroscience that supports what we do in Rosen Method Bodywork. Current neuroscience is confirming that deep listening, presence, and limbic resonance are powerful healing tools as they provide regulation and revision for human beings. The healing cascade of the human connection system, stimulated by the hormone oxytocin, regulates and revises our neurological health and our physiological functioning, modulating emotions, hormonal status, immune function, stability, and likely our fresh, creative thinking. Epigenetics, which says genes are not destiny, and brain plasticity, the ability of the brain to grow and change, may also be affected by Rosen Method touch. Turning off the fight/flight adrenaline system in the body and turning on this powerful physiological system of relationship, caring, and trust has far reaching implications for our physical and mental health and for our evolution as a species.

A recent program on public television titled "The New Medicine" stirred coverage in news media for suggesting putting "the care back into medical care," and for suggesting that the relationship between a caregiver and a client is an extremely important factor in healing. In Rosen Method, we have long understood the term **resonance**, the ability humans have to sense deeply the feeling state of another in relationship. In *Touching the Body, Healing the Soul*, Rosen Method Senior Teacher, Sandra Wooten, long ago referred to affective resonance in psychotherapy, as the matching that takes place on an emotional level between a client and a listener. But she states further, "In the physical, somatic realm of touch, I have coined the term, *somatic resonance* to define the matching that takes place with gentle, therapeutic (Rosen Method) touch between the client and the practitioner, allowing enhanced inward attention and perception for both" (Wooten, 1995, p 24). In Rosen Method, we know that when we touch someone sensitively and inquisitively, we can often sense the emotional state in the other, that

two people, even strangers, can be attuned to the inner state of each other through deep listening, and that this, in itself, is a powerful healing tool.

The idea of "limbic resonance" is getting a lot of attention currently by scientists like Thomas Lewis and Stephen Porges, and in such body psychotherapies as Hakomi Experiential Psychotherapy, Sensorimotor Psychotherapy, Somatic Experiencing and others. It seems this is something that human beings have always known how to do, and now we are remembering its importance. Though scientific confirmation has not been necessary to know the benefits of Rosen practice, I find it exciting that now neuroscience is confirming what we have long known or believed. Knowledge of the basic findings of neuroscience may also contribute in the long- run to Rosen practice.

Limbic Resonance

Thomas Lewis tells us that contact and connection, or physical and emotional closeness and connection, actually affect the physiology of

human beings in regulatory ways (Lewis et al., 2000). Neurological research in animals and in human beings shows that humans are wired for connection, i.e. we have neural circuits that foster interpersonal connection. According to Lewis, many of these circuits are located in the limbic system, the feeling part of the brain. The neocortex has a large part of the thinking, cognitive functions of the brain where abstraction, learning, and voluntary behavior reside. The limbic system, which evolved in mammals, has to do with socialization, social communication, care of the young, bonding, relational attachment, and play, i.e. with caring, and emotionality. From a young age, we need caring connections to promote healthy development of the limbic system. From research with both monkeys and infants, Lewis tells us that we mammals need relatedness or connection for our “neurophysiology to coalesce correctly.” We are designed this way, he says, for the “shaping physiologic force of love” (Lewis et al., 2000, p 218).

A mother who is functioning well with her child is attuned in both a feeling sense and a physiological sense, what Lewis calls “limbic resonance,” sensing the child’s inner state and responding appropriately. The mother’s contact with her infant affects the physiological state of the infant, and her physiology is affected as well by this contact, connection, and physical and emotional closeness. The child knows this instinctively, and senses the physiological need for the mother in times of stress or pain. Consider the ill child who wants to be held all the time, or the vigorous protest during times of separation. Lewis says, “The first part of emotional healing is being limbically known, having someone with a keen ear sense your melodic essence” (Lewis et al., 2000, p 170). In Rosen Method we might call this **presence**, being conscious and aware in the present moment, taking the whole of another in, listening deeply, attuning, sensing the feeling, sensing the essence, reflecting back.

The idea of this mutual regulation via limbic resonance is supported by very interesting recent research by Michael Meaney, co-director of the Sackler Program for Epigenetics and Psychobiology at McGill University, who studied rats with varying levels of maternal licking and grooming

(Meaney, 2001; Fish, Shahrokh, Bagot, Calji, Bredy, Szyf, & Meaney, 2004; Swan, 1997). Rats with attentive mothers grow up with more receptors for neurotransmitters that inhibit the activity of the amygdala, and fewer for stress hormones like adrenalin and corticotropin releasing hormones. The amygdala is the part of the limbic system that senses and conveys fear responses.

Rats raised with high maternal contact, lots of licking and grooming, grow up with adequate but lower responses to stress hormonally and so are less fearful, more curious, and more exploratory. Those with low physical contact grow up to have more receptors for stress hormones and are more timid, more withdrawing, and more fearful in novel situations. Low physical contact pups grow up to be low contact mothers (Fish et al., 2004).

Meaney’s research further shows that in rats, low physical contact affects epigenetic changes. **Epigenetics** is the idea, supported in some of the newest genetic research, that “DNA is Not Destiny” (Fish et al, 2004, Watters, 2006). While the DNA sequence is not changed, epigenetics is the process by which environmental factors and chemical modification of inherited genes can affect whether a particular gene is expressed or not expressed, silenced or activated like an on/off switch for genetic expression. Meaney tested the methylation of a gene important to the stress response. Methylation is a chemical marker of an epigenetic process, i.e. the state of methylation is critical to gene activity and to whether the gene expresses. He found distinct differences, after birth, in methylation patterns between pups with high licking mothers and low licking mothers. Before birth there is normally no methylation, so the difference in genetic expression happens after birth according to low or high physical contact. Equally interesting is that low contact pups showed reversal of the effects when they were placed later in life with high physical contact mothers, or into nurturing, playful, low stress “social” situations around healthier rats. Physical contact as late as adolescence still changes the epigenetic processes, suggesting that the adverse effects of low physical contact are reversible by more physical contact later (Meaney, 2001; Fish et al., 2004; Swan, 1997).

Meaney's research suggests that genes responsible for controlling the stress hormonal response are epigenetically regulated by maternal care, in particular, the physical contact of licking and grooming. This means that the way the genetic material is expressed is affected, and that these epigenetic changes can be altered later. I suggest that this is what Lewis calls "revision", revising the physiology through contact and connection (Lewis et al., 2000).

What if physical contact and touch actually reverses the effects of stress responses that occurred in human infancy and childhood as well as in rats? Lewis suggests this regulation and revision involves more than just touch for humans, however. It involves touch with a limbic resonance, what Sandra Wooten calls "somatic resonance," a presence with a relationship to the feeling state of the other. Lewis calls this "somatic concordance" not just normal, but necessary for human development (Lewis et al., 2000).

"Without rich limbic resonance, a child doesn't discover how to sense with his limbic brain, how to tune in to the emotional channel, and apprehend himself and others. Without sufficient opportunity for limbic regulation he cannot internalize emotional balance. Children thus handicapped grow up to become fragile adults who remain uncertain of their own identities, cannot modulate their emotions and fall prey to chaos when stress threatens" (Lewis et al., 2000, p. 210).

Lewis goes on to say that anxiety and depression are the consequences of disconnection. Monkeys deprived of early limbic regulation lose billions of neurons they would ordinarily develop in caring environments. They suffer neural disorganization and lose the capacity to modulate aggression. If the isolation stretches out, and they survive physically, they are marked by lethargic despair with the accompanying outpouring of stress hormones and neurotransmitters with unpredictable negative physical effects. Moreso, "they become erratically, unpredictably and chaotically vicious" (Lewis et al., 2000, p. 218). Lewis describes the limbically damaged human, seriously neglected, seriously deprived of human care, or living largely without physical and social contact and connection,

without limbic regulation and revision, as deadly: "a functionally reptilian organism armed with the cunning of a neocortical brain, lacking compunction about harming others" (Lewis et al., 2000, p.218). He challenges us to imagine and act on how society might be different if we were intolerant of childhood abuse and neglect. Parents, and the physicians and others who guide them, need to understand the importance of emotional presence and resonance, holding, and gentle, contactful touch.

Lewis reminds us that children don't grow up to be fully self-regulating, even with good contact as infants and children. Adults are still social animals, requiring stabilization outside themselves. Physiological stability means finding people who regulate you well and staying by them. (Lewis et al, 2000). Babies know this instinctually, and it is why they don't want to be left alone. It is why hurts around attachment, abandonment, and aloneness are so big in the adults we see as clients. Rosen work is so powerful, helpful, and effective as it re-creates a special experience of limbic resonance, regulation and revision, a deep, resonating connection providing neural lessons missed earlier, and changing neural pathways. And what if it also provides a revision of genetic expression? In Rosen work these are all happening:

- There is **resonance**, in the Rosen practitioner's deep, listening presence, attending to, really tuning in to someone, "catching the melodic essence", the client being limbically known, reflected, and the client "knowing," sensing himself/herself.
- There is **regulation**, with the change happening in the breath, in the release of body tension, in increased circulation and aliveness, in relaxation, the body working as it should, physiology regulating itself through resonance. Limbic regulation thus allows the ability to modulate emotions, neurophysiology, hormonal status, immune function, sleep rhythms and stability (Lewis et al, 2000).
- There is **revision**, changing one another's brains through limbic revision. The Rosen

therapist supports the client to bring long repressed emotions into consciousness, and these are received and affirmed by the therapist without judgment. The Rosen therapist supports the client to bring unconscious behavior patterns into consciousness where there is choice about them, even if the choice has to be made consistently and persistently against long-standing neural patterning and conditioning. Neurobiologist and author Candace Pert tells us that the more we exercise choice against our neural patterning, the more we “exercise” that part of our brain that makes us uniquely human: our free will, the freedom to choose against conditioned neural patterning. And the more we exercise our free will against one pattern, the freer we are to choose against all of our conditioned patterning (Pert, 1999; 2006). And there is the possibility of epigenetic changes described by Meaney and colleagues.

The possibility of “limbic revision” indicates that the therapist needs to do her own work, get her own mental and emotional house in order, because the client regulates and revises to and through the therapist. As much as we in Rosen Method would like to not have to pay attention to the “clinical relationship”, and do not consider ourselves mental health therapists, the clinical relationship is already there, a vital part of the work. And it is crucially important that Rosen is taught experientially. We learn the work by doing it and by receiving it, revising and regulating our own physiology and neural pathways. In this way we meet the “...urgent necessity of the therapist to get his own house in order. His patients are coming to stay, and they may have to live there for the rest of their lives” (Lewis et al., 2000, p. 187).

Oxytocin And The Human Connection System

Science is just beginning to explore the physiological importance of human connection and Rosen work has been indirectly involved in some of the scientific research into the human connection system in Sweden. The oxytocin

cascade is an understudied part of this system, just beginning to get a lot of scientific attention. Kerstin Uvnas-Moberg is a researcher from Sweden who published many scientific articles on this hormone and its subsequent cascade, and also a book called *The Oxytocin Factor: Tapping the hormone of calm, love, and healing* (Uvnas-Moberg, 2003). It is worth noting that in Sweden, the book was titled *Calm and Stillness Though Touch*.

While studying attachment and mother infant bonding, Uvnas-Moberg became fascinated by oxytocin, which is both a hormone and a neurotransmitter. Knowing it is stimulated by touch, she researched the effects of touch on the production of this bonding, relaxation hormone. She used massage practitioners in her research, some of whom are also Rosen practitioners, though they did not use Rosen Method in the sessions that were in the studies. I first heard about Uvnas-Moberg’s research before the book was published in English, from her good friend, Swedish Rosen Senior Teacher Annika Minnbergh, in her lecture at Calistoga, California, in 2001 at one of the first international Rosen gatherings.

There has also been more research of this connection hormone by scientists in the US including Susan Carter, who did a study about oxytocin levels in the species of voles, small rodents like mice, who mate for life. Carter is the wife of Stephen Porges, who developed the polyvagal theory, and the theory of the social engagement system, or human connection system facilitated by the vagus nerve and the oxytocin cascade. The polyvagal theory postulates that humans have three hierarchical systems of protection in the body, the freeze system, the fight/flight system and the social engagement system. The social engagement system, or the human connection system, was the latest to evolve, and Porges suggests it is really a whole complex physical system of communication and connection facilitated by the ventral or front part of vagus nerve, and stimulated by oxytocin. He suggests that fight /flight is connected to the central part of the vagus, which comes to the area of the diaphragm, and that the freeze system is connected to the dorsal part of the vagus nerve, which comes in to the lower part of the spine (Porges, 2001; 2006).

Carter and Uvnas-Moberg have published together about oxytocin and bonding, and are friends. Porges's work is related.

Thus, the oxytocin cascade is proposed as part of a whole physiological system in the body we are just beginning to understand. This is the study of human connection, and the physiological system that supports human connection, or social engagement. We know a lot about the fight/flight and the freeze systems in the body, and it is time we learn as much about the human connection system, or the social engagement system.

If one thinks of this social engagement or human connection system as a biological system in the body, and as the latest to evolve in humans, then one might say it is evolutionary for humans that it is being studied now in human history and that we are just beginning to understand its importance and its workings. Even if we are not so proficient at it, it is part of the design, available to develop and bring into consciousness. According to these researchers of the oxytocin cascade and the social engagement system, oxytocin is the bonding hormone, highly activated at birth and in nursing mothers. It is not just a female hormone, however, but present in both females and males (Uvnas-Moberg, 2003). It is the hormone that helps a parent get up many times in the middle of the night, not go completely crazy, and still love her baby.

But when adrenalin is high, the oxytocin sites shut down (Minnbergh, 2001; Uvnas-Moberg, 2003). Adrenalin is about firing up the musculature and organs for fight or flight capability. Often, intense physical tension and pain in the body is a result of chronic activation of this system, and the result of a chronic production of stress hormones such as adrenalin, cortisol, and noradrenalin.

These stress hormones have many beneficial effects as they facilitate the fight/flight response. When needed, they stimulate increased cardiac output, increased blood pressure, and increased heart rate to do the strong physical tasks we require. But these effects can be unnecessarily sustained and lead to a sustained stress response. The increase in blood pressure and heart rate can be sustained even when no longer needed, or when the limbic brain perceives threat that isn't there anymore. These

chemicals are harsh on the body when sustained over long periods, and can produce chronic tension and physical pain and wear the body down. Other potentially adverse effects of these hormones include adverse effects on the heart, increased blood glucose, increased blood pressure, decreased memory, negative effects on sleep, impaired immune function, and they are linked to higher rates of weight gain and obesity. Persistent or sustained increases in stress hormones also suppress non-essential functions in a fight/flight situation, or a perceived fight/flight situation. Even in a perceived flight/fight situation, there can be adverse effects on the digestive system, reproductive system, and growth processes (McMahon, 2009; Minnbergh, 2007).

From stem cell research, Bruce Lipton found that cells responding to stress or fear do not grow (Lipton, 2005). The body turns off any nonessential activity, like digesting your food, if it thinks you have to pay attention to fighting or fleeing, even if the threat is only perceived, not really happening in present time.

There is also new research from Nuno Sousa and colleagues in the Life and Health Sciences Foundation in Portugal that shows chronic stress in rats produces what looks like "thinking in a rut", repeating the same patterned, ineffective behavior again and again. Sousa found parts of the brain that are associated with executive functions and goal-directed behavior had shriveled in chronically stressed rats, and those parts of neural circuits linked to habit formation had grown. "Behaviors become habitual faster in stressed animals than in the controls, and worse, the stressed animals can't shift back to goal directed-behaviors when that would be the better approach" (Angier, 2009). Sousa's research supports the idea that when we are in chronic stress, we are more likely to rely on distressed, patterned behavior rather than fresh, clear, creative thinking.

Sousa also found, as Meaney's studies did, that taking the stressed rats out of the stressful situation and putting them "on vacation" with healthier comrades, even for just 4 weeks, helped them to rewire, and use innovative skills again. "Atrophied synaptic connections in the decisive regions of the prefrontal cortex resprouted, while

the overgrown dendritic vines of the habit-prone sensorimotor striatum retreated" (Angier, 2009).

This plasticity in the brain is another aspect of our newly understood neural circuitry and a finding in many new research studies. Bruce McEwen, head of the neuroendocrinology lab at Rockefeller University, describes the brain as "...a very resilient and plastic organ. Dendrites and synapses retract and reform, and reversible remodeling can occur throughout life" (Angier, 2009).

In contrast to the stress responses, oxytocin and the oxytocin cascade -- stimulated through touch, connection, and presence, and possibly regulated by the vagus nerve -- is about calm, nourish, digest, relax, restore, connect and grow: the **trust** system in the body. Give it to roosters and they act like mother hens, showing nurturing behavior. Give it to rats and they come out of their cages with less fear, recognize their littermates, and socialize with other rats less fearfully. Give it to stockbrokers and they are not afraid of risks and act more trusting with their money.

The oxytocin cascade, or the human connection system, is about stress release, pain release, and it plays a larger role than we have known in the recovery from illness, injury and disease. It may also play a role in creating fresh, innovative responses, new possibilities, and clearer thinking. Moberg describes it as an open loop, one that feeds upon itself. The more you have, the more you get. Then the more you connect with others, the more of this neurotransmitter is stimulated, the whole cascade is stimulated again, so then the more you are able to connect, to yourself, to others, to something larger than yourself. (Uvnas-Moberg 2003; Minnbergh, 2001).

If you think of this as a protection system in the body, the implications of this theory are great: social engagement and connection as the highest most evolved form of human protection rather than the adrenalin/fight/flight system in the body, one which possibly produces fresh, innovative thinking, and even more human connection, than other patterned responses.

Moberg's research shows oxytocin is elevated after sessions of touch therapy, but it goes back down. After 4 sessions, it tends to go up and stay

elevated. After 7 sessions, it tends to stay elevated for longer periods. And the research shows it is best stimulated by gentle touch, not heavy, deep tissue work, and especially by stroking on the belly. (Minnbergh, 2001). Uvnas-Moberg also found that the oxytocin levels in the practitioner increase as well through contactful touch.

We know this healing cascade is stimulated largely by touch with other humans, by doing fun things, by being with other people, by connecting. It is also stimulated by alcohol, nicotine, and the process of smoking, and by high fat foods (comfort foods) (Uvnas-Moberg, 2003). So if you are not getting your social connection system stimulated any other way, have no other way of turning off the adrenalin or fight/flight system in the body, then you may turn to one of these less healthy alternatives. It is not surprising that these are addictive substitutes for something else that the body needs.

In Porges' polyvagal theory, we learn that humans have inherited three forms of protection: The first and most evolved form of protection is the ability to connect in relationship to other humans through complex and instantly read facial expressions and the human voice, this connection system being regulated by the upper end of the vagus nerve and stimulated by oxytocin. Fight/flight is the second level of protection in this evolutionary hierarchy. The freeze response, going numb, going unconscious, checking out, withdrawing, isolating or dissociating is the third and most primitive. (Porges, 2001; 2006).

Each of these is a necessary form of protection for the human. We need to know how to go unconscious in an accident, for example, to conserve all resources for the tremendous job of healing that has to happen, and also to withstand the pain. But chronic numbness or chronic unconscious living, chronic isolation, chronic aggression or fighting, chronic stress is obviously not life-enhancing for humans, and physically harmful.

Porges theorizes from research with autistic children that relaxing areas where the vagus nerve comes close to the surface, i.e. the occipital ridge, the back and sides of the neck, the face, especially around the ears, and of course, the diaphragm, can help turn on the social engagement system. These

are all areas we commonly work in Rosen Method. Porges uses sound waves to relax the vagus nerve through the ears in autistic children (Porges, 2001; 2006). Rosen Method uses touch, presence, and limbic resonance to relax the whole body, which likely turns on this system. Perhaps when the vagus nerve can function well, uninhibited by muscular tension, the social engagement system or human connection system may be encouraged to function well also.

Conclusion

So relationship, through the healing cascade of the human connection system, regulates and revises our neurological health and our physiological functioning. In loving and caring, in connecting through touch or otherwise, we modulate each other's emotions, neurophysiology, hormonal status, immune function, sleep rhythms, and stability. When you find someone who regulates you well, someone with whom you feel good, with whom you can share at least some physical closeness and touch, around whom you can revise, then stick with that person. And that is why your clients should stick with you.

We know, and neuroscience is confirming, the importance of touch and caring, and of understanding and stimulating this biological system in the body, for recovery from illness, disease, injury, but also for human development and peace in the world. We can use touch, presence and limbic resonance for the evolution of a new human species that will use connection to other human beings as its first form of protection. Through touch, and also through the connection that is the essence of Rosen work, we are stimulating a whole physiological system in the body, the physiological system of trust, and human connection, facilitating the evolution of the human species toward more and deeper intimacy, connection and safety.

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