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## "News from Neuroscience": Applications to Couple Therapy

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Consider the following scenario: A couple comes to a therapist, and, in presenting their complaints, the partners escalate so quickly that the therapist is left breathless and sidelined. Much of the literature in couple therapy focuses on how to empower both couple and therapist to translate and transform this gut-wrenching wild ride into a manageable process that can ultimately lead to greater calm, safety, and generosity within the couple. In recent years, findings from neuroscience have shed light on the workings of our emotional brain, and on the interplay between minds in intimate relationships. In this essay I will discuss how I integrate "interpersonal neurobiology" (Siegel, 1999) in my own work as a couple therapist (see also Fishbane, 2007).

In my practice, I utilize "news from neuroscience" in several ways. For one, learning about the brain can deepen our theories of human development, relationships, and therapy. The fundamental questions of what it means to be a human being, what we share with and how we differ from other mammals, how we end up on the "low road" of reactivity and how we can regain the "high road" of thoughtfulness and self-regulation – questions so central to therapy - are all addressed by neuroscience. Much of our relational/systemic theory in family therapy is validated by interpersonal neurobiology and its emphasis on how our social/emotional brains link up with each other. Second, findings from neurobiology help shape specific interventions I use in couple therapy. Finally, I incorporate neurobiology psychoeducationally - or "neuroeducationally" with couples, empowering them to understand and modulate their own reactions and behavior. I will explore these various influences of interpersonal neurobiology on my work as a couples therapist.

Neuroscience research makes it clear that, as humans, we are born to connect with others, and that it is through our connection with others that our brains get wired (Goleman, 2006; Siegel & Hartzell, 2003). Critical aspects of the development of the young child's brain depend on attunement and attachment between child and parents or caregivers (Schore, 2003; Siegel & Hartzell, 2003). In the interplay of genetics and experience, nature and nurture, our brains develop neuronal connections that underlie thought, emotion, and behavior. Our affective life is particularly influenced by our early environment, as the right hemisphere (responsible for much of our emotional life), functioning from birth, is most impacted by parental attunement or lack thereof. The left hemisphere, responsible for language and logic, develops later. Likewise, explicit memory is not available in the first years of life; implicit, preverbal memory registers our early life experiences, and this influences current reactions even though we may not be able to recall explicitly what has triggered our feelings.

As adults, we carry these implicit emotional memories into our current interpersonal interactions; they are particularly potent in our most intimate relationships. When partners become reactive with each other, one or both may be experiencing a triggering of old emotional memories. The flavor of these memories often makes the current escalation seem irrational; the client may not have words to put to his or her experience, may not explicitly recall a past trauma, and may try to justify an emotional reaction on the basis of current couple issues. In my experience, the more intense and irrational the reaction appears, the more likely there is an earlier

emotional or traumatic memory that has been activated. The memory may be from early childhood, from parental misattunement, abuse, or neglect. On the other hand, the memory may stem from a prior wound in the couple's relationship itself (Johnson, Makinen & Millikin, 2001), or from wounds from other relationships or life experiences. Even as the therapist may be befuddled by the power of the reaction, so may the other partner, who might be thinking, "I just forgot to tell her I'd be a half hour late coming home. What's the big deal?" The big deal is that ten years ago he had an affair; or that twenty years ago her father had a sudden heart attack and died. Or, a client may not recall having been sexually abused repeatedly as a child, yet panics when approached for sex today by the spouse. The power of these emotional memories, and the hold they can have on us, is often perplexing and upsetting to all involved.

These emotional memories tend to be processed and "remembered" in the amygdala, a part of the limbic (emotional) brain that we share with other mammals. In evolutionary terms, the amygdala functions to protect our survival; it is one of the brain areas that mediate the fight-or-flight response. The amygdala scans the environment for danger; its quick work is done without consulting the higher brain processes of the prefrontal cortex. The amygdala can identify a snake in the woods and prompt us to run before we even know that we are seeing a snake (or what passes for a snake but is really a shadow or a stick). This survival function is obviously crucial in the woods, in a dark alley, or any unsafe circumstance. However, our amygdala doesn't know that now we are in a mature love relationship and our lives are not necessarily at stake when we get hurt. When the amygdala gets a whiff of threat, it sends our bodies into high gear before we have a moment to collect ourselves. This is the neurobiological underpinning of the escalation in the couple therapist's office.

Our sense of threat in an intimate relation-

ship is not always a distortion, however. There are certainly real dangers — of physical or emotional abuse, for example — that must be addressed on their own terms. Even in these circumstances, in addition to maximizing safety, the therapist may need to help clients harness their "thinking brains" to evaluate, plan, and respond most successfully.

As humans, we are blessed not just with an amygdala, but also with more complex brain functions for processing our emotional lives. Among the gear with which we are outfitted is the prefrontal cortex (PFC), the seat of reasoning, reflection, and judgment. It is the PFC that we call upon as therapists - both our own and the partners' PFCs. When we ask couples to take a time out, breathe, meditate, reflect, or journal, we are calling on this part of the brain. The PFC - especially the orbitofrontal cortex - is wired to communicate with the amygdala and calm it down. For some clients, the PFC underfunctions due to a history of early abuse or neglect, which can actually damage brain circuits. Furthermore, even in a healthy brain, the links from amygdala up to PFC are stronger than from PFC to amygdala (LeDoux, 1996). Thus we so often experience meltdowns, moments when our higher brains are not in control, and we are at the mercy of our emotional reactivity.

The PFC has been called the "high road" (LeDoux, 1996; Siegel & Hartzell, 2003) as it allows us to make thoughtful choices — and also because it is located higher in the brain and developed more recently in evolution. The "low road" is identified with limbic functioning, often the amygdala, and involves automatic appraisals, outside of awareness, that can lead to impulsive, reactive behavior (LeDoux, 1996; Siegel & Hartzell, 2003). The "low road" language sounds a bit disparaging of our emotional/limbic brain, which, in fact, is crucial for social processing, including such skills as nonconscious empathy (Damasio, 1994; Gladwell, 2005). What is most important

for healthy functioning is integration, the ability to coordinate limbic system and PFC, left and right hemispheres, thought and feeling, mind and body (Siegel, 2007).

The amygdala is "quick to learn and slow to forget" (Cozolino, 2006, p. 318). It holds emotional memories, probably forever (LeDoux, 1996). Therapy and healing, then, do not entail erasing painful memories in the amygdala. Rather, what is involved is strengthening the PFC and its connections to the amygdala, so we can learn to self-soothe and self-regulate even in moments of stress, when the amygdala is activated.

For many clients, both self-attunement – reading their own emotions – and self-soothing are impossible tasks. They may have never learned to read emotions, their own or others', and due to misattuned, abusive, or overindulgent early family experiences, may not know how to self-regulate or calm themselves when upset. Instead, such clients often look to their partner to calm them down, to understand, hold, and love them, even when they are most difficult and attacking. Clients tend to be hurt when their partner disappoints in this job description. Teaching such clients how to self-regulate is empowering for the individual and vital for the couple's well-being.

Using imagery can be a useful technique to help clients learn to calm down when agitated. Specifically, I ask clients to image their amygdala getting worked up, and their PFC coming in like a good parent to empathically contain and soothe the amygdala. This process is similar to Schwartz's (1995) Internal Family Systems (IFS) approach, in which the therapist promotes a dialogue within the client between Self and parts. If clients have a hard time enlisting their loving Self/PFC to soothe themselves, yet are relatively empathic with their own (actual) child, I ask them to imagine calming their upset inner child as if it were their own child. Clients appreciate this work, as it empowers them to access a more

compassionate state within themselves. As with IFS parts work, clients come to see that they are not one with their dysfunction, that when a part of their brain is stirred up, another, soothing part can be called upon. Like externalization (White & Epston, 1990), this process helps free clients from a sense of shame, promotes curiosity, and allows for a new story of the self to emerge.

Another imagery technique I have developed is "the fence exercise" (Fishbane, 2005). For example, in the course of couple therapy, it emerges that Maria loses herself and becomes agitated when her husband or mother becomes anxious or sad. Maria tries to make them feel better; when she fails, she gets angry at them. Maria's boundaries are highly porous in both relationships. I ask Maria to imagine that her mother is her neighbor, with a fence between their yards. The fence is not a brick barricade; like most fences, it is in part symbolic. While one can see over it, it demarcates a boundary between the two yards. I suggest that if the neighbor gardens in a way that Maria feels is problematic—putting sun-loving flowers in the shade, for instance-Maria may or may not choose to offer advice to the neighbor. But if the neighbor ignores the advice, Maria can still enjoy her own garden; her summer doesn't have to be ruined because of her neighbor's horticultural mistakes. If, of course, the neighbor plants poison ivy that will creep into Maria's yard, Maria needs to protect herself. Clients find this exercise helpful. Maria reports to me, "I put my mother on her side of the fence this week;" Maria was able to let her mother be without losing her own footing. As she developed greater differentiation (Bowen, 1978) and self-regulation, Maria became less angry and more compassionate toward her mother and husband, and she was able to stay calm in the face of their turbulence. The fence exercise facilitates healthy boundaries, and from that place clients can afford to be more generous and curious in their intimate relationships.

Research has shown that imagining doing an activity can activate the same neural circuits as actually doing the activity (Doidge, 2007). I would hypothesize that both the imagined PFC/amygdala dialogue and the fence exercise activate brain circuits of reflection and thoughtfulness that allow the client to take a step back from automatic reactivity, and that through these and other practices, synaptic connections between PFC and amygdala are indeed being strengthened. If this is the case, then conjuring the image of brain circuitry can help create and strengthen that very circuitry. In any case, it certainly helps clients make more thoughtful choices and feel less victimized in their intimate relationships.

This internal imagery work facilitates self-empathy, which includes being able to read one's own emotions. In the neuroscience literature, emotions are considered nonconscious and embodied; we "read" our own body's signals, and then give words to the experience. "Feelings" result from this conscious labeling of our body experience (LeDoux, 1996). Many of the body cues come from our gut. The vagus nerve carries information from the gut to the brain, giving literal punch to the expression "gut feeling." Clients who have not learned to label their own emotions are handicapped in their relational lives. This is especially the case for men who have been socialized away from awareness of emotion, and for members of both genders who were not raised with attunement. These clients may have sudden upsurges of rage without knowing why. In such cases I help clients tune into the prodromal body cues before the anger, and learn to give words to these subtler emotions. Siegel (2007) suggests that mindfulness meditation facilitates "intrapersonal attunement," which he posits may utilize the same "resonance circuitry" in the brain as interpersonal attunement. Research shows the beneficial effect meditation can have, facilitating positive and resilient mood states (Davidson, 2004; Siegel, 2007).

In addition to self-empathy, we help couples in

therapy develop greater empathy for each other. The neuroscience literature has much to say about this interpersonal resonance. The human brain is wired to attune to others, to read social cues, facial expressions, and the intentions of our fellow humans. These capacities are considered part of our evolutionary survival mechanism; they utilize the social circuits of the emotional brain. Among the more fascinating discoveries in recent years are "mirror neurons," which activate a resonance in our brain when we see someone else do or feel something. Through this process we can feel what another feels "from the inside out" (Siegel & Hartzell, 2003).

One of the most delightful aspects of falling in love is looking in our lover's eyes and "feeling felt" (Siegel & Hartzell, 2003), understood, and cherished. Unfortunately, couples seeking therapy have often lost that magic mirroring; looking into each other's eyes, they see instead disconfirmation and rejection. Part of our work is to help the partners see each other with more generous eyes. Facilitating empathy and helping clients calm their amygdala go hand in hand in therapy. Just a look from one's partner can set off alarm bells which lead to the low road and which block empathy entirely. I find that interventions like the Speaker/Listener technique facilitate both calm and empathy, as partners learn to listen to each other in dialogue rather than prepare their rebuttal in debate. The shift in the room is palpable as each shifts from self-protective modes of discourse to an openness to the other. The eye contact in this exercise is key; hopefully partners are conveying in their eyes a desire to understand - a remnant of their initial, loving mirroring - rather than the piercing glance of enmity with which they may have come to the session.

Some clients find empathy a foreign language. The person learning empathy may work his or her way through the left brain to try to understand the other. For example, a husband, struggling to

understand his wife's experience, might learn to say to himself, "If I were my wife right now, with all I know about her, how might I be feeling?" This process may frustrate the partner, to whom this seems artificial, wooden, and painfully slow. Using a "neuroeducational" approach, I normalize the awkwardness and slow pace of the learner, as well as the frustration of the partner, thus validating the experience of both. Framing empathy as a skill that can be learned is reassuring to both partners. Atkinson (2005) refers to therapists as coaches, teachers of "emotional literacy." I find that eventually clients get the hang of empathy more naturally, as their brains rewire for more efficient, less effortful attunement.

Looking into our partner's eyes and feeling what they feel is not always salutary. What we find there may send us into reactive orbit. Neuroscience has shown that our ability to resonate with others, to feel what they feel, is a mixed blessing. Due to "emotional contagion" (Goleman, 2006), we can be driven into reactivity by others. Perhaps mirror neurons are implicated in this as well. Witnessing our partner become angry, defensive, or accusatory may activate similar circuits in our own brains, leading to escalations such as our struggling couple in the opening of this essay. Partners set each other off, as they escalate into a "dance of parts" (Fishbane & Lessing, 2000).

There are serious health implications of our ability to drive each other into agitated states. Gottman's "limbic tango" (Goleman, 1995, p. 141) describes the dance of a wife raising conflictual issues, leading to escalation of the husband's heart rate and physiological flooding, leading to his shutdown or stonewalling, leading to her distressed heart rate. This all happens in an instant, and can result in long-term emotional and physical distress for one or both. Research identifies that nurturing relationships promote physical and mental health, while "toxic relationships

are as major a risk factor for disease and death as are smoking, high blood pressure, or cholesterol, obesity, and physical inactivity" (Goleman, 2006, p. 224). Clearly, the stakes in relationships are very high.

The skills of empathy and self-empathy are components of relationship empowerment, which includes Goleman's notions of emotional and social intelligence (1995, 2006). In facilitating relational empowerment, I offer clients "tools for your toolbox" (Fishbane, 2007), specific social/emotional skills that engage the other in a mutually respectful manner. Men are particularly appreciative of the "tools" and empowerment language, as many males are suspicious of therapy as a "soft," female endeavor, for the weak and vulnerable. Men are often at a disadvantage in relationships, not having learned to read others' or their own emotions. Framing these tools as skills to be mastered makes the project manageable, as we operationalize specific abilities that increase the client's relational competence. I find that when clients feel relationally empowered, they are less likely to resort to "power over" tactics with their partner.

As one of these relational tools, I encourage partners to learn how to "make a relational claim" (Fishbane, 2001) with each other. This entails speaking one's needs, while holding the needs of the other and of the relationship at the same time. It means having a voice without obliterating the other. Given that our culture encourages debate rather than dialogue, it is not surprising that so many couples don't know how to do this. In teaching skills of dialogue, we are challenging the "power over" assumptions many couples hold in their relationship, in which win/lose negotiations dominate. While recognizing power differences-based in financial, physical power, or other differentials—I also introduce the idea of "power to" (Goodrich, 1991) and "power with" (Jordan et al., 1991). "Power to" includes selfmastery, the ability to be thoughtful in one's relational life. It is epitomized by the Roman stoic philosopher Seneca's statement, "He is most powerful who has power over himself" (Seneca, Letters to Lucilius, 90.34, Loeb Classical Library). "Power to" requires integration of higher and lower brain regions, bringing thoughtfulness and emotion together. It bears much in common with differentiation of self. "Power with" reflects a mutuality of concern, and the nonzero sum game that is crucial to a successful intimate relationship.

When partners do get reactive or defensive with each other, I use "news from neuroscience" to normalize this reaction as part of our evolutionary brain heritage when we feel attacked. At the same time, I challenge clients to call upon their higher brain functions so they are not at the mercy of their own instinctual reactions. This combination of normalizing and challenging is crucial in my work with couples. For example, in exploring a couple's vulnerability cycle (Scheinkman & Fishbane, 2004), I identify their mutually recursive vulnerabilities and survival strategies. While normalizing self-protective mechanisms such as criticism and withdrawal when a partner feels vulnerable, I also point out the self-defeating nature of these mechanisms. Externalizing the couple's dance and each partner's survivalstrategies allows for greater empathy, thoughtfulness, and choice.

Along with "neuroeducation," I explore with couples the natural life cycle of relationships and their shifting neurobiological characteristics. According to Fisher (2004), there are three distinct phases in love relationships, each with its own brain circuitry and hormones, and each with its own evolutionary purpose. She denotes these as Lust, fired mostly by testosterone, whose purpose is to get people interested in mating in general; Romantic Love, powered by dopamine and norepinephrine, whose purpose is to settle on a particular mate; and Attachment, fueled by oxy-

tocin and vasopressin, whose purpose is to keep the parents together long enough to rear their young beyond infancy. (Fisher doesn't address how this evolutionary paradigm would apply to childless couples.)

In addition to helping couples understand the normal processes of the life cycle of love, I reframe disconnection as a normative relationship process. Connection and disconnection, rupture and repair, are part of the natural ebb and flow in any intimate relationship. Gottman's (1999) research, for example, shows that both happy and unhappy couples experience conflict, and it is how the happy couples repair their conflicts that distinguish them from unhappy couples. Framing repair and apology as part of relational intelligence and relational power rather than as indices of "losing" a fight is crucial for couples. Apology is a major tool in the relational toolbox. Gottman's 20-minute rule - that couples should take a break when in an angry escalation and reunite after they have calmed down – makes neurobiological sense. The couple return to each other without their inflamed amygdalas running the show.

Couple therapists deal with the tension between change and no-change with our clients. Our field has produced tomes on the topic of "resistance." Neuroscience sheds light on this dynamic so central to our work. On the one hand, habits and personality characteristics are formed early in life, and are reflected in brain wiring. Hebb's Law, "neurons that fire together wire together" (Siegel, 1999, p. 26) captures the neuronal basis for the tenacity of our habits. The more we do, think, or feel something, the more likely we are to do so in the future. We literally become stuck in our own neuronal ruts. While this is adaptive much of the time, in that so much of our functioning is automatic and smooth, it is also the basis for the difficulty in overcoming unproductive habits and behaviors.

On the other hand, we are not doomed peren-

nially to repeat the past. In the last decade, it has become clear that the adult brain can and does change. Neuroplasticity (the creation of new neuronal connections) and neurogenesis (the growth of new neurons) allow us to change throughout the life cycle (Begley, 2007; Doidge, 2007). This is the neural basis for our business, the process of change in therapy. I find it helpful to share the news both of Hebb's Law and of neuroplasticity with clients who are struggling with change. When a client asks, "Can an old dog learn new tricks? Can I change?" I have an intelligent answer based in neuroscience. The answer is yes, but it requires a lot of effort and repetition of new habits; "massed practice" is a vital condition of rewiring in the human brain (Doidge, 2007). For new neuronal connections to take hold via Hebb's Law, the new behaviors need to be practiced over and over again until they become automatic. In times of stress, fatigue, or illness, the old patterns may re-emerge. Anticipating this helps clients not become discouraged with their own backsliding. Our role as therapists includes lending hope to clients. The hope we offer about change is tempered with a reliance on practice and overlearning of new habits so they can become natural.

Some clients are suspicious of behaviors, thoughts, or feelings that seem artificial, not natural or "from the heart." I explain that new behaviors, which both create and are maintained by new neuronal connections, will feel awkward at first, until they are overlearned. Eventually, they will feel natural as they become automatic. This "love (or change) takes work" philosophy comes as a surprise to some clients, who subscribe to a "love should just flow" or "love means never having to say you're sorry" philosophy.

When changes do take hold, the new behaviors and skills are reflected in changes in the brain. Neuroscientists note that learning — including the learning at the heart of psychotherapy — involves

new neuronal connections (Doidge, 2007; Kandel, 1998). This helps explain the phenomenon I often experience with clients, that changes they are working on in one relationship — say, with a spouse — carry over into other relationships — for example, with parents, child, or boss. The changes of self in relationship become synergistic, as the client builds on new capacities in different contexts.

Couple therapy that utilizes interpersonal neurobiology facilitates "limbic revision" (Lewis et al., 2000), a rewiring of the emotional brain. This is not about simple behavior change, nor is it achieved through strategic manipulation. It is deep, collaborative work, based on safety and respect. Clients feel they can risk limbic change when they feel accepted and respected rather than shamed or blamed by the therapist. Partners are encouraged to develop a new, more generous stance with each other as well.

The approach to couple therapy described here is based on a collaborative relationship between therapist and clients. Neuroeducation facilitates a transparency in the work, in which therapist and couple work as partners for change. Teaching clients about their own brain functioning is empowering. The constantly evolving field of interpersonal neurobiology can enhance our work as couple therapists, deepening our understanding of the profoundly social nature of the human being, and pointing to clinical interventions that help both couple and therapist make informed choices. This work helps clients and therapists feel less overwhelmed by the reactivity in the room, and more capable of facilitating and maintaining change.

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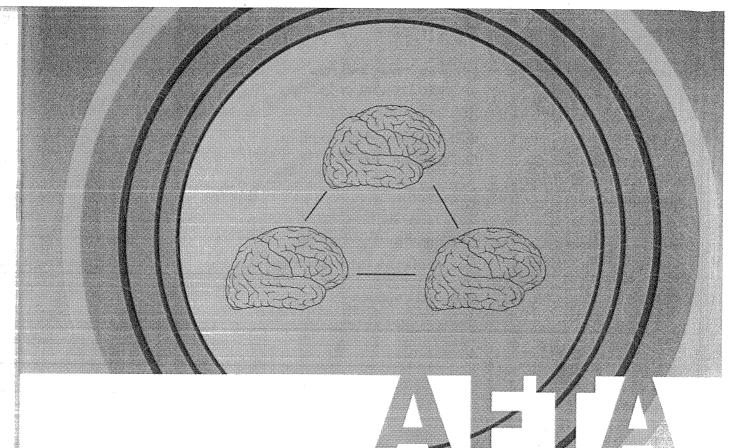
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## **Abstracts**

## "News from Neuroscience": Applications to Couple Therapy

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This article offers ways to integrate findings from interpersonal neurobiology into the practice of couple therapy. Three aspects of "news from neuroscience" are proposed to aid the clinician: updating our theories of development and change; specific interventions with couples; and "neuroeducation," teaching clients about their own brain functioning to enhance their relational growth and empowerment. The impact of experience—particularly early experience—on brain development is explored, with an emphasis on safe and attuned connection with caregivers for healthy functioning of the emotional brain. The power of implicit memories, from childhood or prior relational experiences, to affect current couple functioning is underscored, clarifying the often mystifying moments of escalation and reactivity in couples' relationships. The importance of helping clients learn to utilize "high road" brain centers of calm and thoughtfulness to soothe "low road" reactivity of the emotional brain is discussed. Techniques to facilitate self-soothing, empathy, and emotional intelligence are explored. Clients are offered "tools for your toolbox," specific strategies for relational competence and empowerment. The dynamics of change and no-change are explored in terms of neuroscience data on neuronal connections. Finally, the importance of safety, trust, and collaboration in the therapeutic relationship is underscored, in order for clients to risk the difficult work of rewiring their emotional brains in order to improve their intimate relationships.



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