The Neuroscience of Lifespan Integration Therapy

By Peggy Pace - much of this document has been excerpted from Pace's book:
Lifespan Integration: Connecting Ego States through Time.

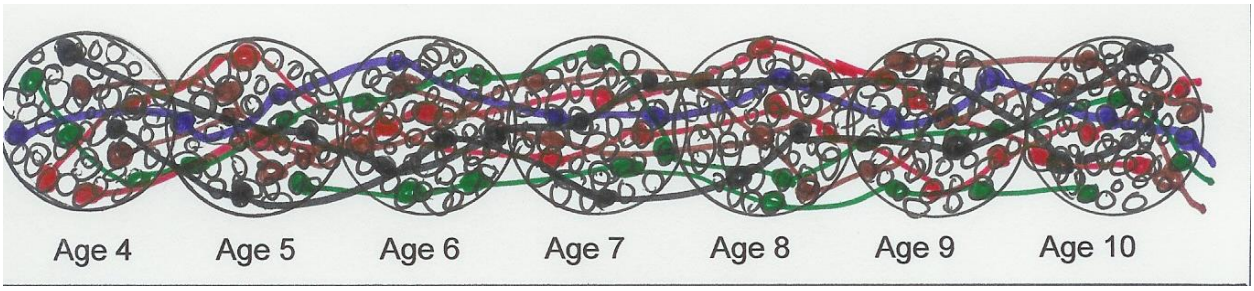
Repetitions of the LI Time Line allow the body-mind to re-organize.

Lifespan Integration therapy is based on the hypothesis that much psychological dysfunction results from insufficient neural organization. Due to trauma or neglect experienced during childhood, there may be a lack of connectivity between isolated neural networks which represent separate selves and self-states. Alternatively, problems could be caused by suboptimal integration between various regions and layers of the brain.

Through the process of repetitions of the LI Time Line, the self system becomes increasingly more and better organized both in space and in time. This increase in organization occurs in part due to the many shifts between selves and self-states which are required by repetitions of the LI Time Line. With repetitions of the Time Line, transitions between self states become more fluid. This fluidity also contributes to the stability of the self system.

> The stability of a system is dependent upon its capacity to transition between and thereby exist within a range of possible states….. (Schore, 2003, p. 93)

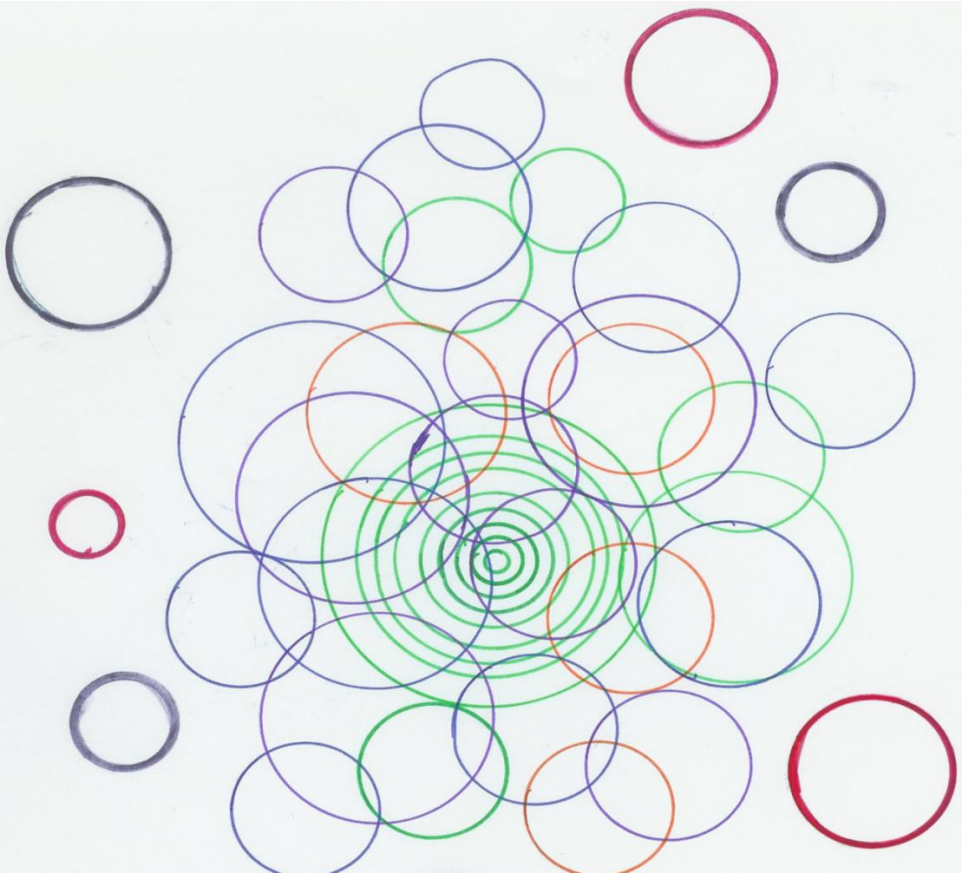
These shifts between multitudinous self states are made in the presence of a therapist whose calm and steady presence aids the client with emotional regulation and containment throughout the process. The therapist's body-mind coherence is transmitted to the client in the same way that a parent transmits coherence (or lack thereof) to her child. Repetitions of the client's Time Line of memory images reinforce the new neural states, and help to construct a more coherent life narrative. At the same time this builds a more solid core self.



The client's life narrative becomes more integrated and thus more coherent through many repetitions of the client's Time Line of memory cues in the presence of a coherent and emotionally attuned Lifespan Integration therapist.

After several repetitions of the Time Line of memories and images, the shifting between states becomes more fluid. Likewise, the client's autobiographical narrative becomes better organized and more coherent. The client begins to see himself as existing throughout a continuum of time and space. The client's memories begin to flow from one year to the next, becoming more inclusive with each repetition. The memories which surface spontaneously in this process will share the feeling tone of the targeted trauma. By following this emotional theme through time, the client gains insights about the defensive systems he has employed, and the patterns he has played out as a result of his interpretations of emotionally impactful events. From this detached state of awareness, the client is able and willing to drop archaic defenses, and to adopt new and more adaptive strategies.

Through the process of repetitions of the Time Line of memories and images, the client creates a global map of himself which spans time and space. Once this neural map is in place, the client is able to move through state transitions fluidly, and his memories become more organized across time. Once an individual has developed a neurological map of self that allows him to see himself as existing continuously throughout his entire lifespan, it is no longer possible for that individual to become frozen in time or even to be triggered by an implicit memory.



Repetitions of the Lifespan Integration Time Line result in a solid core self.

Research into brain development of infants and children has shown that some of the most important factors required for neural integration in the child are:

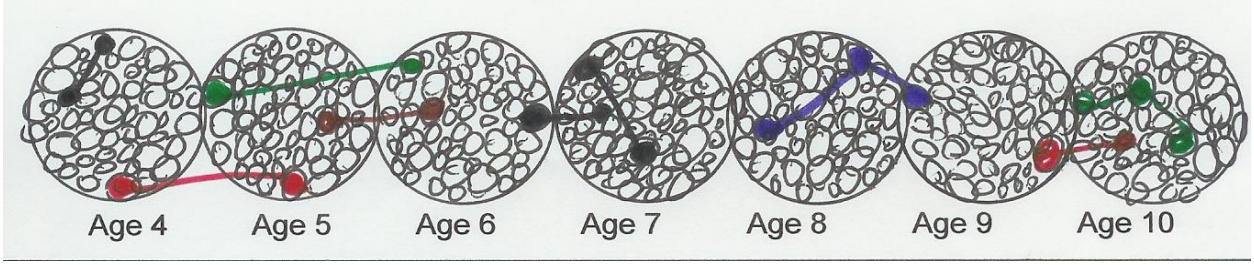
- a reciprocal and attuned relationship between parent and child,
- an exchange of energy and information between the minds of parent and child,
- the co-construction of the child's autobiographical narrative, and
- the establishment of an internal map of self across space and time within the developing child.

Difficulties with affect tolerance and affect regulation may be related to failures in neural integration during developmental periods. Schore (1994) suggests that:

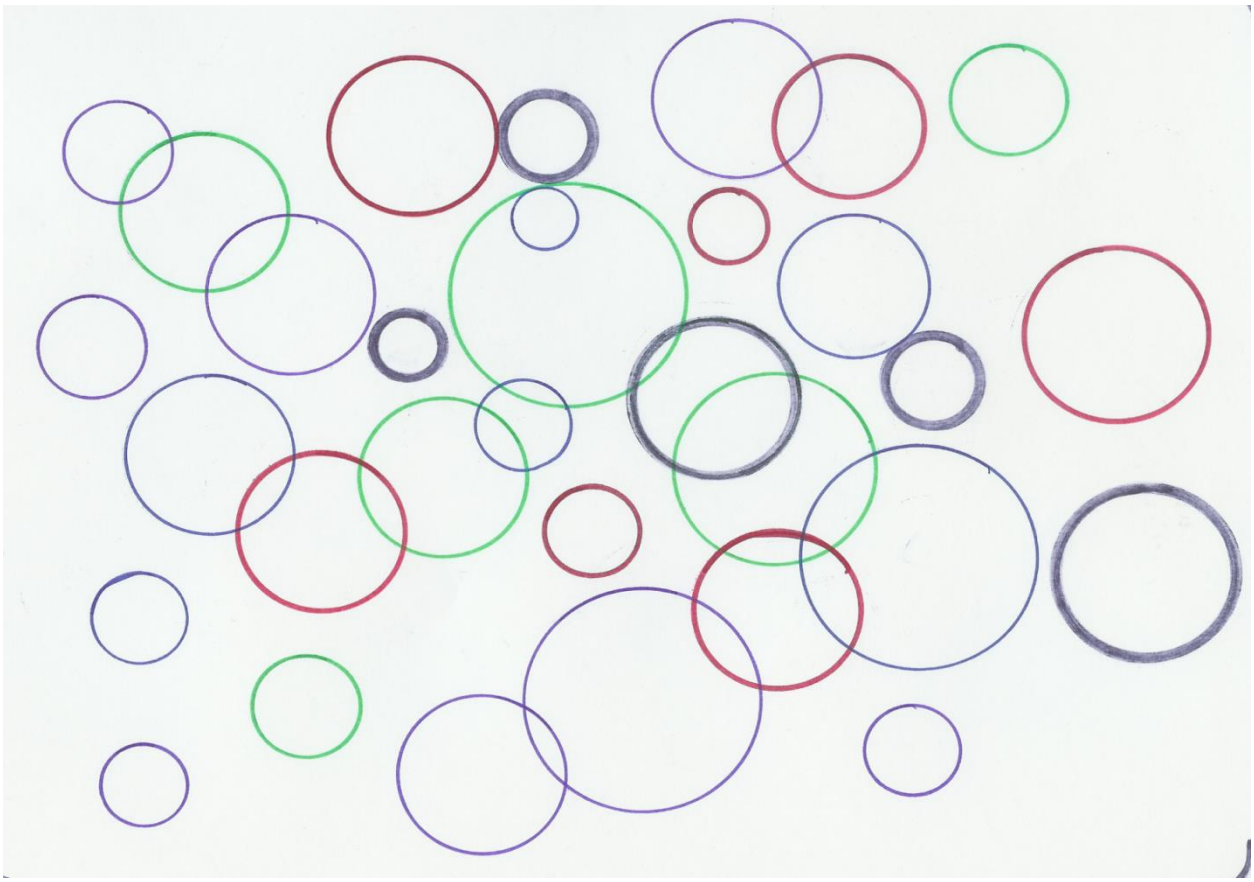
> the mother's external regulation of the infant's developing yet still immature emotional systems during particular critical periods may represent the essential factor that influences the experience-dependent growth of brain areas prospectively involved in self-regulation. (pp. 31-32)

The co-construction of autobiographical narratives is an important component of neural integration. When a child has no one with whom he or she can discuss a traumatic incident, it is likely that, without intervention, the implicit memory of the trauma will be held in a separated ego state throughout the lifespan. Cozolino (2002) points out that:

> early abuse may not only correlate with the lack of assistance of caretakers in the co-construction of coherent narratives about the self, it may also result in damage to neural structures required to organize cohesive narratives and the story of the self that will persist into adult life. (p.256)



Above diagram represents a lack of coherence in the life narrative. Life stories are not interconnected, resulting in a fragmented self system with no solid core.



This diagram represents a fragmented self system of separated neural networks. There is no solid core or 'center' of the self.

Lifespan Integration therapy increases internal coherence, eventually resulting in a more solid core self. Our most fragmented clients will need many sessions of Lifespan Integration Baseline protocol. Over time this work helps the client to build a solid self and positive self-regard.

Lifespan Integration can also be used to clear ingrained and automatic body-mind reactions to specific, explicitly remembered traumas. Clients' body-mind self-systems can 'learn' that an explicitly remembered trauma is over and in the past, even when these clients are somewhat fragmented. The most fragmented clients (DID and DDNOS) may become overly activated by Lifespan Integration therapy if the LI therapist is inexperienced. The therapist's ability to stay attuned to the client, and the therapist's ability to adjust the rate of movement through the Time Line memory cues in tune with the client will prevent the client from being re-traumatized. During the first sessions with complexly traumatized and fragmented clients, LI therapists use 4-limb activation and 'bouncing cues' to maintain clients within their windows of tolerance (WOTs). The therapist's attunement with the client is very much like the attunement between a parent and an infant. The knowledge of when to move faster and when to go slower through the Time Line, when to bounce cues and when to use 4-limb activation, is based on neuroscience and often feels counterintuitive to empathic therapists who have been

trained to use cognitive behavioral therapy and other more rational, left brain hemisphere methods.

Adult clients can be 'triggered' by implicit memories.

Adults who experienced or witnessed overwhelming and terrifying events when they were children, and who did not have adequate parental protection and support available, often do not have explicit memories of what happened to them. They will, however, have implicit (emotional and bodily) memories of these events stored in their neural systems. When implicit memories are triggered in the present, the individual 'remembers', but has no awareness that s/he is remembering anything. Along with the implicit memory, s/he may experience impulses to react defensively. These impulses may be experienced outside of conscious awareness, i.e. physiologically or somatically.

> The outcome for a victim who dissociates explicit from implicit processing is an impairment in autobiographical memory for at least certain aspects of the trauma. Implicit memory of the event is intact and includes intrusive elements such as behavioral impulses to flee, emotional reactions, bodily sensations, and intrusive images related to the trauma. (Siegel, 1999, p. 51)

How the traumatized child interprets what happened, i.e. the mental schema he or she uses to make sense of the trauma, may be ultimately even more destructive to the child's emerging sense of self than was the trauma itself. The child's interpretation is dependent upon: 1) the age and developmental stage of the child at the time of the traumatic event, and 2) the amount of emotional support and factual information which was available at the time of or soon after the traumatic event (usually from a loving and supportive adult), which could help the child make sense of the event.

> Early attachment experiences organize lasting schemas (within hidden layers) which, in turn, shape our experience of those around us throughout life. The degree of integration between verbal and emotional networks will determine whether or not we become aware of our emotions or can put them into words.
> (Cozolino, 2002, p. 162)

We know that when a child experiences severe trauma without sufficient support, self-states can remain frozen at the time of the trauma. When those states are triggered through activation of implicit memories, the individual feels as though he or she is re-experiencing the trauma in the present.

Neural systems are plastic (changeable).

Neural plasticity is the condition which exists when many neurons are firing at the same time. More neurons firing at the same time increases the likelihood that new synaptic firing patterns will occur. Both new learning, and changes in old patterns are more likely to occur under conditions of neural plasticity.

Until recently the prevailing view among neuroscientists was that the brain develops beginning shortly after conception and continuing throughout childhood. It was thought that once this developmental process was complete, there would be no further synaptic growth and certainly no possibility of ongoing neurogenesis.

> Now there is no question that the brain remodels itself throughout life, and that it retains the capacity to change itself as the result not only of passively experienced factors such as enriched environments, but also of changes in the ways we behave (taking up the violin) and the ways we think. (Schwartz & Begley, 2002, pp.253-254)

There is now ample evidence not only of brain plasticity but of the capacity of the cerebral cortex to reorganize itself. Neural networks are not static, but rather dynamic and changing. Changes in our experiences correlate with changes in our neural circuitry; however neural change is more likely to occur when we are attending to our experience and when we are emotionally engaged.

Attention Enhances Neural Plasticity

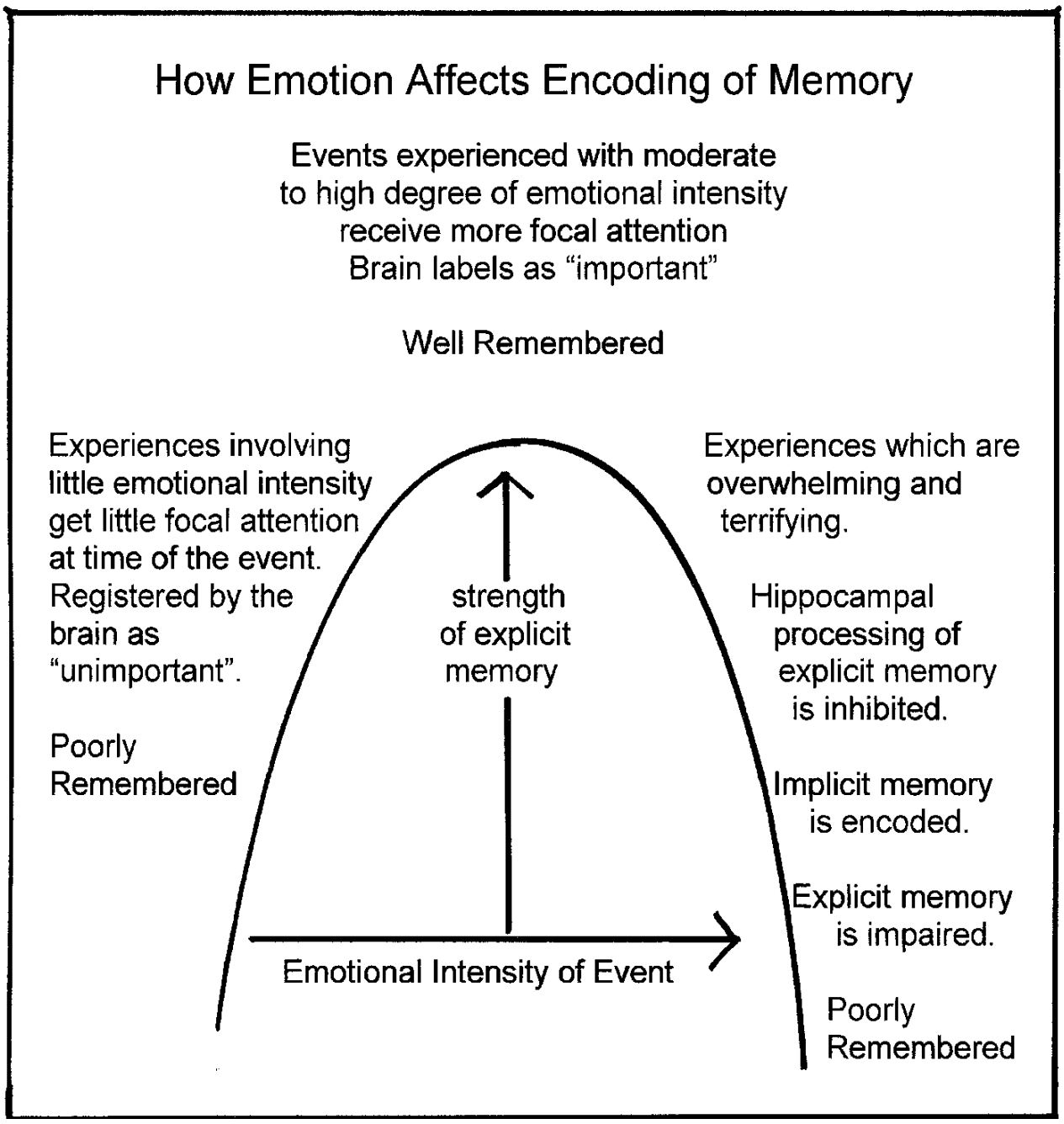
Recent research has shown that synaptic changes are more likely to happen when attention is focused. "Passive, unattended, or little-attended exercises are of limited value ….Plastic changes in brain representations are generated only when behaviors are specifically attended." (Schwartz & Begley, 2002, p.224, quoting Merzenich and Jenkins).

Emotion Enhances Neural Plasticity

Neural networks are more plastic when subjects are emotionally aroused. Research has shown us that learning and memory are enhanced when subjects are optimally emotionally engaged. LeDoux (2002) describes how emotions contribute to neural plasticity.

> [B]ecause more brain systems are typically active during emotional than during nonemotional states, and the intensity of arousal is greater, the opportunity for coordinated learning across brain systems is greater during emotional states. By coordinating parallel plasticity throughout the brain, emotional states promote the development and unification of the self.
> (p. 322)

Extremely intense emotional states overwhelm the body-mind system and can be re-traumatizing. These extreme emotional states inhibit hippocampal processing and can cause flooding or dissociation. Re-experiencing the intense emotions of a past trauma can re-traumatize the system. Encouraging clients to re-enter intense emotional states does not contribute to neural plasticity, does not 'release' the emotion, and does not contribute to healing. To prevent re-traumatization, LI therapists use 4-limb activation and bouncing cues with hyper or hypo activated clients. These techniques help to maintain clients within their windows of tolerance (WOT's).



The above diagram shows the effect of emotion on memory

Summary

In Lifespan Integration therapy the therapist and client in effect co-construct the client's life narrative. Repetitions of the client's timeline in the presence of an attuned therapist lead to increased integration and a more solid self structure. Repeated chronological excursions through time in the presence of an emotionally available and profoundly attuned therapist allow the client to create coherence among selves and self-states across time and across contexts.

As the client repeatedly views the 'movie' of his life, more positive memories and insights naturally begin to emerge. Neural plasticity is enhanced through the client's optimal emotional engagement as he 'views' his life. The client's ability to stay optimally emotionally engaged is facilitated by the therapist's containment and attunement. Neural plasticity is also enhanced as the client's attention stays focused on the memory images of his life including the accompanying smells, sounds, and bodily sensations which correspond to his changing emotional states. Due to the repetitive nature of the process, the new firing patterns between neurons and neural networks are reinforced.

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