

DAN SIEGEL– implicit memory - Quotes from Mindsight

Experience for the brain, means neural firing. When we have an experience, clusters of neurons are activated to send electrical signals down their long lengths. The gene activation and protein production triggered by neural firing can create new synapses, strengthen existing ones, alter the packets of neurotransmitters that are released or the receptors that receive their messages, and even stimulate the growth of new neurons. It can also thicken the insulating myelin sheath around connecting fibers, increasing the speed of electrical transmission.

Neurons that fire together, wire together... an experience becomes “encoded” by the firing of neurons in groups. The more often these neural clusters, or “neural net profiles,” fire, the more likely they are to fire together in the future.

The brain acts as an “anticipation machine” that continually prepares itself for the future based on what has happened in the past. Memories shape our current perceptions by creating a filter through which we automatically anticipate what will happen next. In this way, patterns we encode in memory actually bias our ongoing perceptions and change the way we interact with the world.

When we retrieve an encoded memory from storage, it does not necessarily enter our awareness as something coming from the past.

The kind of memory that enables us to ride the bike is called implicit memory; our ability to recall the day we were taught to ride is explicit memory.

Implicit memory can influence our present without our awareness that something from the past is affecting us.

IMPLICIT MEMORY: THE BASIC PUZZLE PIECES OF MENTAL EXPERIENCE

We encode implicit memory throughout our lives (singing to babies in the womb) Implicit memory encodes our **perceptions**, our **emotions**, our **bodily sensations**, and, as we get older, such behaviors as learning to walk, talk, or ride a bike.

Implicit memory also harnesses the brain’s **capacity to generalize** from experience, which is how we construct mental models from repeated events. The brain summarizes and combines similar events into one prototypical representation known as a schema..... If a little boy’s mother hugs him every evening when she comes home from work, he’ll have a model in his mind that his mother’s return will be filled with affection.

Implicit memory creates something called “priming,” in which the brain readies itself to respond in a certain fashion..... (The boy will) move his arms in anticipation when he hears her car in the driveway.

The 6 domains of implicit memory - perception, emotion, bodily sensation, behaviors, mental models, and priming - are like the basic puzzle pieces of the mind that form the foundation for how the past continues to influence us in the present. After an experience is “over” and we move ahead down the river of time, what remains are these synaptic linkages that shape and filter our present experiences and sensations.....the brain....continually readies us for the future.

3 UNIQUE FEATURES OF IMPLICIT MEMORY

- 1) You don't need to use focal, conscious attention for the creation.... of implicit memory
- 2) When an implicit memory emerges from storage, you do not have the sensation that something is being recalled from the past
- 3) Implicit memory does not require participation of a part of the brain called the hippocampus

Direct attention harnesses the hippocampus; indirect attention encodes the memory without the hippocampal involvement

Implicit-only memory is experienced in consciousness but is not “tagged” or felt as something emerging from the past. This is quite different from the idea of “unconscious memory” which implies something buried, inaccessible, or “repressed” and kept from everyday awareness. A reactivated implicit memory is fully conscious; it just lacks the sensation of recall.

The implicit mental models that each of us has filter our ongoing perceptions and prejudice our experiences.

Our implicit models can manifest as **a feeling in our bodies, an emotional reaction, a perceptual bias in our mind's eye, or a behavioral pattern of response.**

.....with mindsight we can begin to free ourselves from the powerful and insidious ways they create our here-and-now perceptions and beliefs. Seeing deeply and clearly into the inner world also gives us the opportunity to focus our awareness in a way that promotes the integration of memory. When memory is integrated, these implicit puzzle parts are linked together into the more complex – and flexible and adaptive – form of explicit memory.

When we retrieve an explicit memory, we do have the feeling that we are bringing something from the past into our awareness.

The hippocampus is the master puzzle piece assembler.....**it requires focused attention to activate the hippocampus.**

When the images and sensations of experience remain in “implicit-only” form, when they have not been integrated by the hippocampus, they remain in unassembled

neural disarray, they are not tagged as representations derived from the past, and they do not enter our life story as the unfolding narrative that explicitly defines who we are. Such implicit-only memories continue to shape the subjective feeling we have of our here-and-now realities, the **sense of who we are** moment to moment, but this influence is not accessible to our awareness. We have to assemble these implicit puzzle pieces into explicit form in order to be able to reflect on their impact on our lives.

Alcohol is notorious for being able to shut off the hippocampus temporarily.....rage can also shut off the hippocampus.....cortisol (is) a chemical that has been shown to block hippocampal function.

(with stress, with the release of cortisol)

Paradoxically, the same intense reaction that led to the blackout and to the blockage of explicit memories would simultaneously heighten the encoding of implicit memory by way of the amygdala's release of another flight-flight-freeze chemical - adrenaline. High levels of adrenaline act to sear into implicit memory traces of the original traumatic experience.

Here we see an explanation for the seemingly contradictory phenomena of PTSD - the fact that there is little or no explicit memory of the original event, yet the implicit memories that surface as flashback (or as other forms of free-floating implicit memory fragments) are incredibly vivid.....we can finally make sense of the juxtaposition of enhanced implicit memory and blocked explicit memory that occurs during trauma.

Implicit -only memories and other cutoffs in the mind could be at the root of hyper arousal symptoms and explosive emotions.....numbing, disconnection from bodily sensations.....

Before memories can be fully integrated into the cortex as part of permanent, explicit memory, they must go through a process called "consolidation" which seems to depend on the rapid-eye-movement (REM) phase of sleep.

When families do not offer a place for children to express their feelings and recall what happened after an overwhelming event, their implicit-only memories remain in dis-integrated form and they have no way to make sense of their experience.....the fragmented experience needed first to be integrated into explicit memory and then incorporated into a much larger sense of (self).

(the importance of dual focus awareness in resolving unresolved memory representations.) This means that while one focus of awareness is on the here and now, another is on the there and then.

Implicit-only memories can become the prisons that constrict our lives.

Unexamined implicit memories can shape our beliefs and our expectations. We may

be tempted to see these embedded emotional responses as “intuitions” or “gut reactions” that give us deep insight into our ongoing experience.....But such automatic responses may instead be leftover garbage from painful moments of our unexamined past, not worthy of being trusted to guide our decisions or actions. They can make us irrational over crepes. And they can tie us to painful past events that we’d never intentionally choose to re-create.

But when we integrate those embedded experiences into our present consciousness and recognize them as implicit memories – not valid intuitions or reasoned decisions – then we begin to offer ourselves the means to become awakened and active authors of our own life story.

RELATIONSHIPS

(There is) research demonstrating how crucial it is to our development to have at least some relationship[s] that are attuned, in which we feel we are held within another person’s internal world, in their head and in their heart. The neural networks around the heart and throughout the body are intimately interwoven with the resonance circuits in the brain - so whenever we “feel felt” by another it also helps us to develop the internal strength of self-regulation, to become focused, thoughtful, and resourceful.

Rebecca felt that her heart connection with her aunt had saved her.