

FROM THE NEUROSCIENCE OF MEMORY TO PSYCHOANALYTIC INTERACTION

Clinical Implications

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The neuroscience of memory enriches and expands our theory of psychoanalytic interaction. There are 2 broad modes of processing memory: implicit (never experienced in symbolic form) and explicit (which is symbolic). Memory is not a thing, but a process, activated by a retrieval cue that is either external or internal. Each memory is an amalgam of the memory itself and the retrieval cue. Using these phenomena derived from the neuroscience of memory, the authors argue that (a) the analyst acts as a retrieval cue making any memory a coconstructed phenomenon; (b) each memory is constructed, transformed, and expanded anew, incrementally leading to new networks and change; and (c) implicit memory, lacking symbolic content, is an underutilized component of psychoanalytic attention. Clinical examples are used as illustrations.

Freud's background in neurology influenced his thinking about psychoanalysis from the start. His *Project for a Scientific Psychology* (Freud, 1895/1966) was an attempt to ground the psychology of the mind in the biology of the brain. Over the first hundred years, however, psychoanalysis moved further and further from this goal. Many analysts viewed the mind (subjective experience) and the brain (physical structure) as separate domains of discourse that should not be united. Although some psychoanalysts still dismiss the impact of neuroscience on psychoanalysis as "Darwinian," the general view is changing. As we begin the second hundred years of psychoanalysis, there is a growing interest in allowing the findings of neuroscience to inform psychoanalytic views. Numerous contemporary theorists (Brothers, 1997; Kandel, 1999; Pally, 2000; Siegel, 1999; Vaughan, 1997) who bring together both fields describe a view of development as a dance between the influence of genetic programming and the influence of experience on the growth of brain cells and especially on the formation and maintenance of synaptic connections. Experience, in an average expectable environment, enables genetic programs to unfold and puts the fine

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tuning on the genetic framework. From this new perspective the brain itself is relationally constructed.

In this article we argue that although the biological and psychological cannot be equated, nonetheless biology can inform and expand psychoanalytic theory. Specifically, we address three aspects of memory, using concepts from neuroscience, and relate them to existing theory of clinical interactions: (a) Memory is an intersubjective event; (b) early memory, encoded and stored in a procedural, implicit form that is not directly accessible to consciousness, can be “seen” and “used” between patient and analyst; and (c) retrieval cues function both to activate memory and to shape and extend it.

Our intent is not to make literal translations between the neuroscientific theory of memory and clinical interaction. Rather we offer a neuroscientific view of memory as but another lens through which to view certain nonverbal aspects of clinical data. This view potentially extends and expands the psychoanalytic space, thereby increasing the possibilities for spontaneous and imaginative ways of working with patients. Three brief clinical vignettes illustrate different aspects of these points.

Contemporary Views of Memory

When a memory is formed, and also when it is recalled or associated to other knowledge, patterns of neuronal connections are called into play in many parts of the brain. Neuroscientists have not yet solved the “binding problem”—that is, of how these different parts of the memory are put together into a unitary conscious experience. Nevertheless, as psychoanalysts, we know that the parts are bound together into a subjective sense of a unified experience of remembering. This is true whether the memory is a fact or concept, such as the color, shape, and smell of an apple; whether it is how to do something, such as eating an apple; or whether it is a specific encounter, such as a day of picking apples with a friend, with all of its emotional, visual, auditory, tactile, linguistic, and other components. These types of memory are referred to as semantic, procedural, and episodic, respectively. Each is discussed further below.

The process of recalling a memory either implicitly or explicitly is activated by retrieval cues. The retrieval cue can be external or internal (nonconscious) and can trigger the memory through any one of its aspects (sensory, emotional, cognitive, and so on). Each time any of these aspects is recalled, the memory is constructed anew.

Categories of Memories

There are many different kinds of memory, falling into two broad categories: implicit and explicit. Implicit memory consists of things you know or do automatically without having the conscious experience of remembering. These memories can be high-level skills, such as riding a bike, ice skating, or driving a car, or they may be simple associations, such as the appearance of cat fur and the feel of it on your skin (Frackowiak, 1997; Kandel, Schwartz, & Jessell, 2000). Implicit memory includes learned motor patterns, conditioned reflexes, verbal priming, and “innate memory” (such as reflexive startle to a sudden loud sound).

Explicit memories are ones that can be brought to consciousness, symbolized or verbalized. These memories are further categorized as either semantic or episodic. Semantic memories are of facts or concepts (such as that an apple is red). Episodic memories

are memories of events in which a person participated, one's personal history (such as "eating a great apple yesterday at my cousin's house"). Whereas *apple* is a concept or fact, a memory that embodies our own personal history is an episodic memory.

Terminology regarding memory, as for other brain functions, can be redundant and confusing. Explicit and implicit memories are also called *declarative* and *procedural*, although *procedural* also may refer just to the subset of implicit memories that involve motor patterns (Kandel et al., 2000). Emotional memories with emotional coloring—that is, automatically reliving the emotion—may be included as implicit. Feeling sad remembering a loss is different from remembering that you felt sad yesterday without reliving the feeling. One might also feel sad "for no reason" when a memory is triggered implicitly by a cue not consciously noticed; the content of the memory is not consciously noticed, but the feeling connected to the memory remains in consciousness. Traumatic memories may be remembered as flashbacks in which a personal episode is felt as relived.

Episodic, semantic, and implicit memories are stored in distributed parts of the brain. As a memory is replayed in one's mind, it activates some of the same systems that were active when the memory was encoded. Some of the brain locations are the same for each type of memory. For example, remembering *apple* involves activating visual areas of the cortex to image an apple, whether you are asked explicitly to visualize an apple or whether hunger brings to mind, unsolicited, an image of the apple you left in the refrigerator yesterday. But some brain areas are specific to particular types of memory. Without these brain areas, particular types of memory cannot be recalled. The formation of an explicit memory requires the hippocampus (part of the cerebral cortex), semantic memory requires the areas near the hippocampus (called the entorhinal cortex), procedural (implicit motoric) memories require the basal ganglia (subcortical motor centers; Kandel et al., 2000), and primitive emotional memories use the amygdala and other parts of the limbic system (Pally, 1997).

Implicit Memory

Our earliest memories are formed implicitly before the development of symbolic thinking. From birth forward the human infant is capable of forming motor and emotional memories (Pally, 1998). Although lacking symbolic representational capacity, the infant has many motoric and interactive experiences that get encoded as patterns and procedures, which constitute a portion of implicit memory. Emotional responses learned by conditioning also form a part of these implicit memories. These early memories are not directly accessible to consciousness through symbolic forms of thinking or communication. At a time when the infant's cerebral cortex is still immature, these implicit memories use subcortical areas such as the amygdala and other parts of the limbic system and basal ganglia and remain stored, in part, in these systems.

According to Damasio (1994), early emotions are experienced as felt states within the body, which he calls *somatic markers*, with a different set of bodily sensations corresponding to each felt emotion. Damasio believes the feedback from these body states is what is felt consciously as feelings. Other researchers believe that although the body is changed by an emotional reaction (i.e., the somatic expression or equivalent of a feeling), the feeling itself does not necessarily come from the somatic experience. In this view, feelings would come directly from processes within the brain (Damasio, 1994, p. 157). There is agreement, however, that throughout life, basic bodily emotional reactions continue to be elicited but in ways that are modified as more complex emotions emerge. Complex emotions use cortical areas in addition to the older subcortical ones.

Even early on, memories are state dependent, and this influences what they resonate with and how they later become transformed. Memories formed during certain states of arousal or during certain emotional states include these states as part of the memory. If this part of a memory pattern is activated—that is, the state or mood—it is more likely that the rest of the pattern will be activated. Thus, memories are more readily accessed when a similar state later on resonates with the state in which they were formed.

Emotions may be viewed along an evolutionary continuum, with some brain centers and some primitive responses shared among many animals from the distant past to the present (Brothers, 1997; LeDoux, 1996). Although the human infant brain is capable of more complex and sophisticated responses than that of most animals, very early human responses use lower levels of brain function such as the limbic system, common to all mammals. Implicit memories may include concomitant motor responses such as freezing, fleeing, and fighting. That is, the memory is replayed as action. Such implicitly learned or innate responses are common across many species and may be triggered by cues and then their existence displayed in behavior. These behaviors are the indicators of the innate response or “memory.” Such responses can be seen readily in many animal species; for example, several species of birds freeze or run from the shape of a hawk wing held over them without ever having seen a hawk (Tinbergen, 1951). Shortly after birth, infant herd animals such as gazelles freeze to the ground in response to specific cues, thus avoiding detection by lions (Gould & Gould, 1999). One might call this an innate implicit “memory” based on past experiences of the species. The vervet monkey is predisposed to learn responses of climbing trees, scanning the ground, or running for cover, which it learns to associate to lions, snakes, and birds of prey, respectively (LeDoux, 1996, p. 237). A monkey learns on one exposure to fear an “s” shape, such as a snake or wiggling rope, if it experiences its mother’s fear.

Human infants also have species-wide response patterns. Infants come into the world with innate capacities for participating in human interaction (Beebe & Lachmann, 2002; Sameroff & Emde, 1989; Stern, 1977, 1985). They show a preference for two large dots within a larger oval, a form that resembles the human face. The human infant is designed to find the human face fascinating (Stern, 1977). Numerous studies from infant research document infant capacities to detect contingencies, discern patterns, and explore their environments and to organize these data (Beebe & Lachmann, 2002; Lichtenberg, 1989; Sameroff & Emde, 1989; Stern, 1977, 1985). Infants have innate capabilities to express aversion that are designed to signal the environment (caregiver) in order to evoke a remedial response. Lichtenberg (1989) documented the infant’s extraordinary repertoire of aversive responses: crying, exhibiting the startle response, becoming rigid or limp (loss of tonus), flailing, averting the head or eyes, and retreating into sleep.

In addition to species-wide responses, as the infant accumulates experiences and emotions with the primary caregiver, these events become encoded in procedural memory as procedures of self with other (Beebe & Lachmann, 2002; Siegel, 1999; Stern, 1977, 1985). These procedures (of the interaction of the unit) are stored as implicit memories. Later on, these “memories” may emerge as a change of state or other physiological change that the outside observer might not view, but the state might trigger a behavioral signal, such as a grimace, a head lowering, or an eye aversion, that was part of the original distressed interaction. Patterns of reactions elicited by certain cues are stored in the infant’s implicit memory system and become a part of the infant’s characterological way of responding.

Certain interactive sequences learned and remembered implicitly between caregiver and infant have been named and documented, such as the “chase and dodge” sequence

identified by Beebe and Stern (1997). In this sequence, an overstimulating, controlling mother attempts to force face-to-face interaction with the baby. The baby handles this by a dodge, averting his face 90°. Mother “chases” by following the baby’s head. The baby responds by dodging again, averting his head 180° in the opposite direction. Ultimately, the baby’s attempts fail to stop mother’s intrusion. The baby resorts to crying. There are many possible ways this kind of sequence might be transformed into adult behavior, such as a generalized avoidance of stimulation or a general dampening down of enthusiasm, just to name a couple.

Stern (1985) described another interactive pattern, called “Miss Sparkle Plenty.” In this scenario, a disinterested mother is unable or unwilling to join her daughter as the daughter escalates her own level of enjoyment and excitement. The daughter’s attempts to keep mother engaged with her as she becomes increasingly enthused and excited result in her own escalated excitement. As the daughter ratchets up the excitement, mother can be inconsistently engaged. In this sequence the daughter is always “sparkling.” This kind of character adaptation can easily continue into adulthood. These responses are not expressed in words but become powerful organizers of experience and become deeply embedded into the fabric of the personality (Grigsby & Hartlaub, 1994). As an example, a child sees a scowling face and, out of fear, immediately shuts down emotionally, averting his gaze and turning his head away. Later, as an older child, he finds that by joking around he can “erase” the scowl off the other’s face. He may have shut down anyway, but he is relieved that his joking changed the other’s look. As an adult, interacting with a random person who is perceived as scowling or potentially scowling, he automatically interacts by making a lot of jokes. The sequence just described is a procedure for dealing with a person scowling or potentially scowling. It includes emotion, procedural memories, and automatic observable behavior. The infant research literature is replete with interactive sequences. We may observe later expressions of these phenomena in treatment, yet often we do not consider how we might use these observations to work with these aspects of character directly.

Implicit memories continue to form throughout life. They may influence thoughts and perceptions in ways that lead us to experience the world each time in the same way. Therapy offers new experiences that can make the implicit explicit (awareness of joking defense) or modify implicit memories (“sparkling” for attention may shift to a more subtle form of behavior such as appearing “upbeat” and spontaneous).

Explicit Memory

Explicit memory differs from implicit memory in at least two distinct ways: (a) It requires conscious awareness for encoding and (b) in the act of recalling the memory there is the conscious awareness of remembering. Although no one can say exactly when the capability for explicit memory begins, we do know that explicit memory requires the development of the higher regions of the brain, parts of the cerebral cortex including the hippocampus. These structures become functional as their neurons form connections over the first months and years of life. As more cortical neurons become interconnected, more complex memories can be formed, with many more associations, which are then encoded in patterns stored in these interconnections.

Emotions can also be experienced in more complex ways as the cortex develops. These more complex or, as Damasio (1994) says, *secondary* emotions integrate cortical functions and associations with the earlier and more archaic memories. These can then be stored as emotional memories or emotional aspects of memories.

Early implicit emotional experiences may be reworked as they become part of more complex, explicit emotional experiences. The new memories form connections between the implicit, explicit, verbal, and other aspects of the earlier experience. For example, early anxiety at separation may be generalized to other circumstances so the anxiety is triggered implicitly, experienced, and “remembered,” as it were, without conscious understanding of why. During later separation experiences the anxiety becomes part of explicit memory. To illustrate, one has the experience of feeling anxious while on vacation “for no reason” each time travel requires a train trip to the next city. Here an early separation anxiety reaction has generalized to the cue, leaving on the train. The implicitly remembered anxiety at separation has become amalgamated with the current situation. Anxiety is triggered by leaving for each new city.

An infantile motor response, such as turning one’s face away as an expression of aversion to mother’s looming face, may be reworked with the form of response changing over years. A cue that triggers eye aversion in a child may become transformed with later experiences into a belief that, for example, “it doesn’t pay to have much to do with authority figures.” Such beliefs may occur without the person understanding the tie to early experiences or to the underlying emotions. The implicitly remembered early response may show itself with the head aversion, while the explicit memory is the generalized attitude that it doesn’t pay to have much to do with authority figures. The nonverbal response (i.e., eye aversion) elicits reactions from others and thereby reinforces one’s developing conscious experience of what to expect from others.

Retrieval Cues

The process of recalling a memory begins with a retrieval cue that activates a memory in any one of the multiple memory systems. In the psychoanalytic situation, the analyst often offers retrieval cues. For purposes of this article, the analyst as retrieval cue is defined in a broad sense. It can be the context that is connected with the analyst. For example, it can be the space, the building, and the furniture. Or, it can be the person of the analyst herself, such as her looks or the way she sounds or smells or aspects of gender. Sometimes it is the analyst’s mood that is inferred or sensed that acts as the retrieval cue.

Retrieval cues may come from the patient herself. For example, some aspect of the patient’s inner experience (e.g., thought, feelings, mood, state) activates the old memory (Siegel, 1999), which then becomes amalgamated with the analyst and her context. The new memory then becomes an amalgam of the patient’s inner networks and the retrieval cue. Wherever it starts, the memory is a coconstruction related to input from the patient and analyst. Each is not an equal contributor to the patient’s memory. The memory belongs to the patient and encodes the patient’s experience. At the same time, it is extended, transformed, and changed each time through the experience with the analyst. Herein lies the notion of incremental change.

While we, as psychoanalysts, are familiar with the psychological aspects of memory development and reconstruction, recent advances in the neuroscience of neural networks and memory can expand our thinking about how our patients formed their memories and what happens when they rework them with us.

Neural Network Models of Memory

Neural network models offer new ways of thinking about memory. Neural network models, also called *connectionist* models, attempt to explain how the brain embodies the

mind using biologically based, neuronlike units (O'Reilly & Munakata, 2000, p. xxv). Neural nets are not a one-to-one match with brain physiology. Nevertheless, they offer plausible explanations for how aspects of our brains might work. These neural network models attempt to tease apart and explain how our minds are enabled and constrained by the structure of our brains, including the functions of memory.

Connectionist models offer a contemporary view of memory, consistent with advances in neuroscience, which holds that the brain stores patterns of activity that encode fragments of experience by increasing the strength of connections between neurons that fire during the experience (Schacter, 1996; Siegel, 1999). Memories are thus created in the brain by the formation of patterns of neuronal connections. The pattern for a given memory is distributed and stored across many neurons and even across several parts of the brain. This simultaneous encoding of the components of a memory is called *parallel distributed processing*. Parallel distributed processing appears to form an integral part of how our brains function.

It may not be obvious that memories can be formed implicitly, without conscious thought. Neuroscientists use neural network models in addition to anatomical studies to explore how our brains and minds function. Neural networks offer a detailed look, on a neuronal level, at how the synaptic connections that encode a memory can be formed and later reworked. Whereas a computer can be programmed to look for a particular pattern, or a person can explicitly look for a pattern, a neural network discerns patterns present in sets of data without explicit instruction. The network stores these patterns by altering connections between modeled neurons (representing synaptic changes). These patterns are learned implicitly, without any programmed instructions telling them which patterns to look for. Neural networks provide plausible models of how infants and adults form memories implicitly.

The Interface: Connectionism Meets Psychoanalysis

From a psychoanalytic point of view, Susan Vaughan (1997) in her book *The Talking Cure* described an example of how a parallel network might process memories. Whereas neural networks are real, Vaughan's examples are hypothetical and oversimplified for the sake of explaining the concepts. On a simplistic metaphorical level, she gives a descriptive example of parallel processing wherein several cooks working simultaneously make the different parts of a cake rather than one cook following one sequence of steps. The knowledge of how to bake a cake is distributed among the cooks. One might add that each cake will come out slightly different depending on the ingredients available that day, the mood of the various cooks, and so on.

Vaughan (1997) then offers a more detailed example of how parallel distributed processing works. She describes a hypothetical model with 16 neurodes, each of which represents features of the perceived image. Several versions of a Cheshire Cat, a Mock Turtle, and a White Rabbit are presented to the network. A subset of these neurodes "fires" in response to each image, and these neurodes then alter their interconnections (weights representing synaptic strengths) to favor the same subset pattern firing together again. This follows the Hebbian rule, "What fires together wires together" (Hebb, 1949). To elaborate on Vaughan's example, the first cat image might activate neurodes for pointed ears, a long tail, brown, furry, and whiskers. The next cat might activate pointed ears, a long tail, furry, calico, and eats cat food. The third might activate pointed ears, a long tail, furry, and meows. As more examples are presented to the network, the connections continue to be

modified, strengthening the ones that fire together. After a number of inputs, a prototype cat emerges, because the strongest connections will be between those features common to all, or most, cats. If further inputs of mock turtles and white rabbits are fed in, the network will also come to favor those prototypes, thus forming the categories Cat, Turtle, and Rabbit. When an unknown animal or part of one, such as “hops and long ears,” is presented, its input features will tend to fire the pattern it most resembles, the rabbit. “Hard shell” would activate the turtle prototype pattern. In this way the network learns to recognize patterns in the inputs, to form categories, and to fill in the whole from a part. This process occurs without any explicit rules given, just lots of examples.

Although input features like pointed ears and whiskers are hypothetical, made up for this example, our biological perceptual systems do, in fact, extract features. For example, our visual systems extract line orientation, color, motion, and other features in the initial steps of visual processing. Hence Vaughan’s example, although hypothetical, is plausible.

Networks like Vaughan’s spontaneously generalize, as prototypes emerge, and so do human brains. When we learn to read, we see many examples of the letters *a*, *b*, and so on, which vary a great deal in size, color, thickness, font, and, with script, in handwriting and position within a word. As the brain is fed thousands of alphabet letters, the category *a* emerges on the basis of what all or most *a*’s have in common. Once the brain is trained on these thousands of examples, it can generalize to many as yet unseen variations in font and handwriting. Similarly, as the brain is fed many examples of animals, categories emerge according to the sets of features most common to each category (e.g., cat, dog, pig). Once the categories are learned, seeing a cat of a new color expands the category to include it. In addition, if shown part of a cat, we fill in and know the whole cat is there.

Humans are good at recognizing patterns, forming categories, and self-organizing. We all generalize to form a prototype *cat*. But the particular meaning of *Cheshire cat* for each individual is different, depending on the personal, autobiographical experiences associated with it. We form associations, specific to our individual experience, such as the Cheshire cat with a big toothy grin in an illustration in an old musty book in grandmother’s summer cabin. On a more clinical level we form categories of people such as *safe* or *dangerous*, extracting personality characteristics and applying them to people we meet.

Memories are also different for the same individual depending on the context or retrieval cues that call up the memory. Thus, although a fact or episode may generally “look” the same from time to time, the memory is, in fact, reconfigured and reconstructed anew each time it is remembered. Discussing *Alice in Wonderland* with one’s analyst or reading it to one’s child would each, in different ways, bring associations that would add to and modify the old ones.

Daniel Schacter (1996) stated this in his book *Searching for Memory*:

the “memory” in a neural network model is not simply an activated engram . . . it is a unique pattern that emerges from the pooled contributions of the cue and the engram. A neural network combines information in the present environment with patterns that have been stored in the past, and the resulting mixture of the two is what the network remembers. (p. 71)

Memory never exists in pure form. Whether it is a personal memory of an episode with a friend or factual knowledge of the world, it is both activated and transformed with input from the retrieval cue.

Implications for Psychoanalysis

The neuroscientific view of memory strongly suggests that memory is an intersubjective event. For an analysand, each activation of a memory is an amalgam of the patient’s inner

network and the analyst acting as a retrieval cue. In combining the old memory and the new experience, a new construction is created. This new construction in a different context revises and extends the network that encodes the memory. With many such revisions and expansions, new experiences and expectations are created. This is hardly a new idea. Psychoanalysis rests on incremental changes and a “working through” process. The neuroscience of memory explains how it may occur (Vaughan, 1997).

Because of the emphasis in psychoanalysis on verbal interpretation, therapeutic data derived from implicit, procedural memory are underutilized. Implicit procedural memory is never symbolic or verbal, yet it offers important clues on how the patient experiences self with other. These memories are not recalled but rather are expressed through emotional states and motor behaviors or sequences. These aspects of experience include body postures and orientation, facial mirroring, arousal and distress, and implicit interaction sequences, just to name a few.

Siegel (1999), in a very readable book on the subject, put it succinctly:

We must keep in mind that only a part of memory can be translated into language based on packets of information people use to tell their stories to others. Learning to be open to many layers of communication is a fundamental part of getting to know another person's life. (p. 43)

In opening up these other layers for communication and understanding, we potentially extend and expand our clinical understanding and interventions.

Clinical Vignettes

Three clinical vignettes follow. They are offered to demonstrate some ways that this view of memory can be incorporated into our clinical thinking. In presenting this material, we are isolating and highlighting only one aspect of very complex treatments. Attention to psychodynamics and self-object longings were salient aspects of all of these treatments. Those aspects of the cases are not presented here. We are not suggesting that we know what is happening in these patients' brains. Rather, we are suggesting a slightly different way of thinking about therapeutic interaction, in order to expand the repertoire of working with nonverbal behavior in psychoanalysis.¹

Phillip: Treatment Interrupted and Resumed: The Analyst as a Retrieval Cue

In this vignette, the patient selected me out of a list of 10 because I functioned as a powerful retrieval cue. This allowed a previous treatment to “continue” even though the analyst was different.

Phillip, in his late 20s, saw me for consultation in his quest to find a new therapist. He had been in treatment with a therapist whom for many years he had liked and admired. The treatment ended abruptly after a cataclysmic, disruptive period. Traumatized by the ending, Phillip waited a year before seeking treatment again to resolve his lifelong career dilemma. Phillip described his therapist as “crazy.” He reported numerous bizarre interactions that suggested serious boundary violations, although there was no sexual abuse. Vowing not to get “conned” again, Phillip had a list of 10 therapists to interview in his quest for a new therapist; I was number two on the list. Phillip quickly seemed to form a

¹Cases are presented in the first person by Judith Rustin.

deep attachment to me. He said he found our initial consultation helpful; he liked me. He stretched the initial consultation to four sessions before he reluctantly pulled himself away to continue his shopping expedition for a new therapist.

Phillip called every few weeks to keep me apprised of the status of his “shopping” and to check in to make sure that I still had openings in my schedule for him if he opted to start treatment with me. I was both bemused and fascinated by this. I would have liked to flatter myself that it was my clinical skills that were so compelling, but I knew on some fundamental level that this was probably not the case. Eventually Phillip settled into a twice-weekly treatment with me. Over the next 4 years, in two stages, I discovered sources for his attachment and attraction to me.

About a year and a half into the treatment, I presented Phillip to a supervision group I was in. As I presented the beginnings described above, the seminar leader commented that he sensed in me a “sane, strong” woman. I took this with a grain of salt, but it did have some resonance. Through the course of the treatment, I now knew that Phillip felt he functioned to supply his vulnerable mother’s narcissistic needs. He frequently referred to his previous therapist as “crazy” while noting my “good training” and “solidness.” He viewed me as able to fulfill his longings for an idealized source of strength.

Two years after the supervision group described above, I met Phillip and his girlfriend at the theater. In the following session Phillip told me his girlfriend was shocked when she met me because of the striking resemblance I bore to his previous therapist. Phillip confirmed we looked very much alike. For me the whole beginning of the treatment then fit together. My physical appearance, so similar to the previous therapist’s, functioned as the retrieval cue for his attachment to the previous therapist and enabled him to reinvest in treatment with me. He was not beginning a new treatment; rather, he was continuing his therapy with a “sane” person. I think it is possible that Phillip would not have resumed treatment so readily had I not been both familiar (in appearance) and different (in Phillip’s view of me as sane and solid). Phillip had not given conscious thought to the resemblance.

*Michael: The Averter (Implicit
Procedural Communication)*

In the next vignette, procedural, motor memory through body posture was the primary mode of therapeutic communication, despite the fact that the patient was a successful English professor, facile and fluent with verbal communication.

Michael, an affectively alive, engaged, and engaging man in his early 30s, sat with his body facing me, but he held his head at a 45° angle. It was as if his right cheek was talking to my right cheek. I quickly learned that this body posture was present in most of his social and professional interactions and proved to be a source of great embarrassment to him. He was distressed and puzzled by the behavior but couldn’t explain it.

Michael’s mother, a marginally functional woman, suffered from bipolar illness. Her moods, particularly her intense anxiety and noisy depressions, filled the household. To this day, the intensity of mother’s emotions makes it difficult to have interactions with her in which her emotions are not center stage. I conceptualized to myself that Michael’s 45° head avert was his procedural way of being with another person. It seemed to me that the head avert was Michael’s way of blocking out mother’s intense feelings, literally to get them out of his face while trying to regulate his own arousal in looking at the other.

Although we worked with many aspects of Michael’s life, the head aversion and inability to look at someone face to face kept coming up as Michael interacted with peers, colleagues, and supervisors. We first looked at it in the transference, because it was

omnipresent. On the most conscious level, Michael believed that if he looked at me when he talked, it would interfere with his being able to describe his story, to get the facts out. Consistent with his obsessive personality organization, a story was often disconnected from its concomitant affects. By not looking at me, Michael was able to rely on his dissociative defenses and describe the facts and details of an event. This led to the second theme, namely, Michael's conviction that feelings were not to be expressed or revealed. This was related to his father's mandate "Never reveal your vulnerability," which had been reinforced by a strict parochial school education. When I interpreted to him that by showing me only one side of his face he was also showing me only one side of him, namely the logical and rational side, he smiled knowingly. This interpretation resonated for him.

An important repetitive theme was Michael's conviction that he should never reveal any needs or desires, because they would only become frustrated and thwarted. One never got what one asked for anyway, so needing and wanting anything were natural setups for profound disappointment.

As these various themes were addressed in treatment, Michael was able to look at me for brief periods of time. One day when he was talking, I found him looking at me instead of looking away. He was complaining of telling his mother something, and as usual, although she liked what he did she verbalized her criticism of all the things he didn't do. He gazed into my eyes while he told me how he confronted her with this lifelong pattern. I said he seemed to need and want my affirmation for what he had done. He sheepishly agreed. I then went further and suggested that perhaps he couldn't look at me or others while he spoke because he desperately wanted to be admired and affirmed by me and others and yet always expected to get negation and criticism.

This intervention was the turning point in Michael's use of his face aversion. From that day forward, Michael was able to look at me full face throughout the session, scanning my face, looking into my eyes with everything he told me. Once this happened we were able to begin talking about the interactive nature of the face avert—namely, that my thoughts about him and mostly my moods and feelings, real or imagined by him, had profound effects on him and his thoughts and feelings. The 45° head avert was Michael's creative compromise between engagement and disengagement.

Although we were able to unpack the themes in Michael's unusual body posture, I came to understand that Michael, despite his verbal fluency, actually communicated more through this procedural and action modality. This was a very valuable insight for me as we continued to work together. Because of his verbal sophistication, it was easy to go with the verbal stream of the clinical process when in fact his more important communications were in the procedural, motor realm of behavior.

Marjorie: The Dampening of Arousal (Implicit, Emotional Memory)

In this vignette, Marjorie showed extreme dampening of arousal, in effect "playing dead" to avoid sadistic attacks by both mother and father. This appeared to derive from the early freeze response documented by neuroscientists and infant researchers.

For the first several years of treatment, Marjorie sat for long periods of time in stony silence with her head lowered to the side (tucked into the pocket created by her head and shoulder) and her eyes averted. Questions I asked in what was for me an unusually soft, quiet voice rarely if ever drew a verbal response. Instead, I felt her shrink even further into her distant shell. I experienced this nonverbal communication as an extreme response to

terror and viewed it as her attempt to “play dead.” As I came to understand her history and, for her, the profound danger of existing, I was able to tolerate the stony, impassive silences, the quietness, the lack of response, and the affective deadness of this treatment. I matched her dampened affect with my own. Although others refer to this response as prescriptive, or not authentic, I viewed it as an effective therapeutic intervention. For me, it was an interpretation, in a different realm of communication. I believed that in matching her arousal state, I was meeting her at the level at which she was most comfortable interacting.

Over time, this way of working resulted in a reasonable dialogue between us. I was able to make periodic reflections, interpretations, and suggestions. However, I always had to keep my affect, for me, measured and modulated. As Marjorie improved, as she became more alive and interacted more satisfyingly and successfully in the world, I would periodically forget myself. Enthusiasm would enter my voice as I might comment on some behavior that represented a developmental achievement. At those moments, I noted Marjorie would close her eyes and withdraw into silence. She seemed to be shutting me out by closing her eyes and by sitting impassively, looking dead. This looked to me like the classic freeze response.

After numerous experiences like this, I finally brought to her attention that she closed her eyes and withdrew every time I said something positive to her with some enthusiasm in my voice. Surprisingly, she knew exactly what I was talking about. She told me that every positive and enthusiastic comment I made to her felt like “a lit cigarette touching [her] flesh and searing [her] skin.” She was at a loss to explain this. Associations revealed that her mother was a chain smoker; although she did not recall ever being burned by her mother, she did remember some horrible physical abuse at the hands of her mother. Although she was having a new experience with me, any strong positive affect from me probably activated her longings to be closer to me while simultaneously activating the danger of being close to a woman. Over time she gradually learned that my words and closeness to me did not have to burn her.

Summary and Conclusions: Implications for Psychoanalysis

We have reviewed some of the current findings and theories of the neuroscience of memory. These findings strongly suggest that memory is an intersubjective event based on an amalgam of the internal encoded experiences of the patient and the external retrieval cues provided by the analyst and external events. Patient and analyst coconstruct memories each time, expanding and extending the neuronal networks. In each recollection the memory is constructed anew and is slightly transformed; herein lies the concept of incremental change and working through. This is not a new idea in psychoanalysis. The neuroscience of memory explains how this happens.

A further implication of the neuroscience of memory suggests that implicit, procedural memory, which is expressed in motor sequences, body postures, facial mirroring, and distress and arousal states, is a neglected aspect of psychoanalytic discourse. It can open areas of previously untapped and hard to get at material that may not be accessible through symbolic and verbal discourse. Yet like explicit symbolic memory, implicit memory is transformed when it is addressed. Sometimes implicit memory can be brought into the verbal exchange. Attention to this aspect of memory expands the range of psychoanalytic discourse.

Finally, this view of memory offers a new lens through which to view clinical inter-

action, expanding and widening the psychoanalytic space for creative and spontaneous interventions.

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