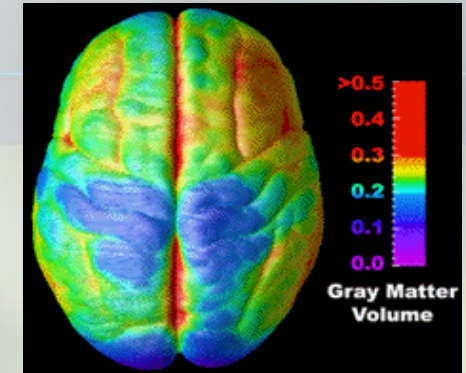
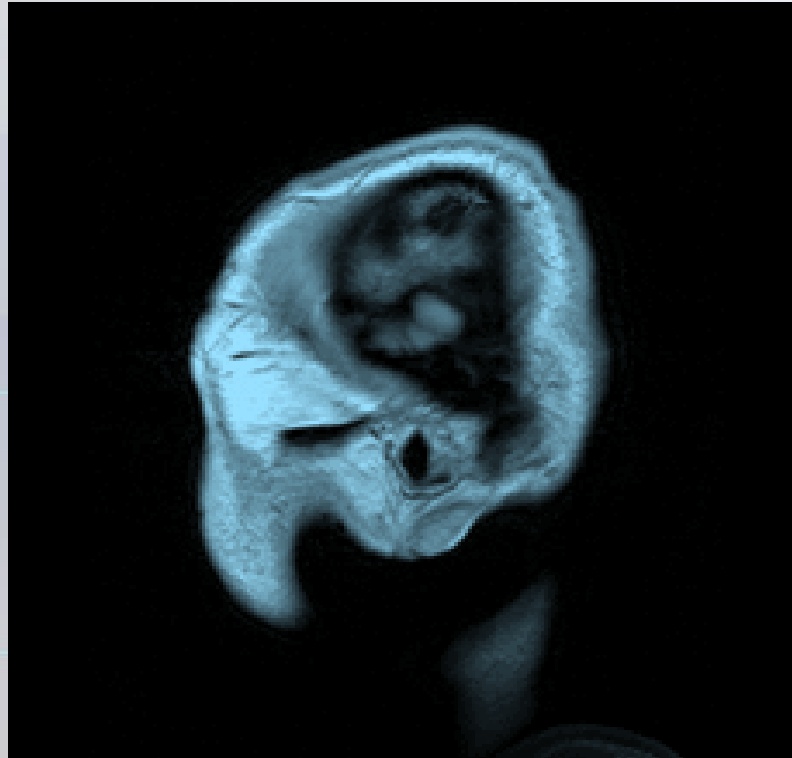
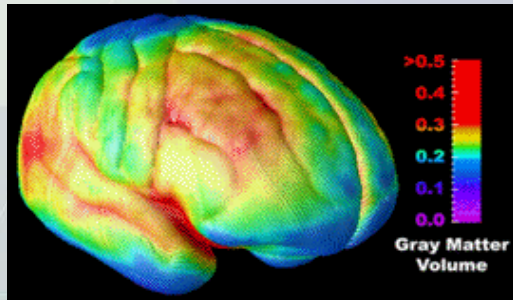
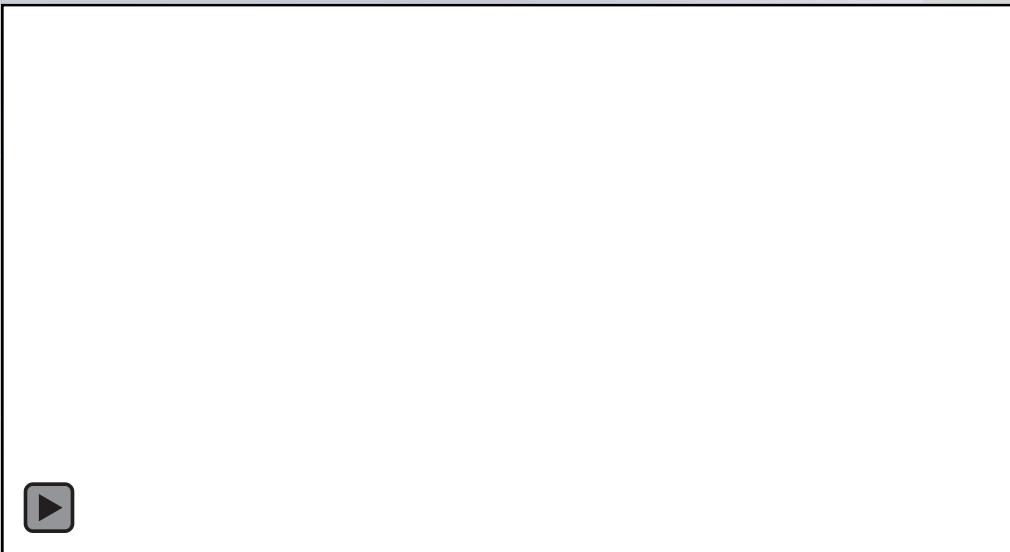
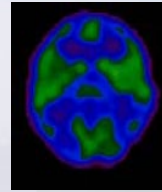
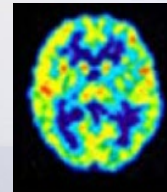
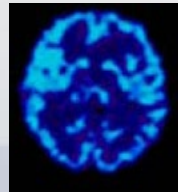
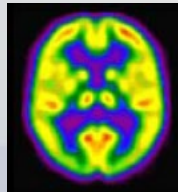
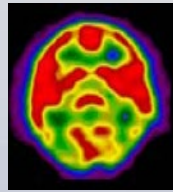


How Does Understanding the Brain Make Us Better EMDR Therapists?: Theoretical Update

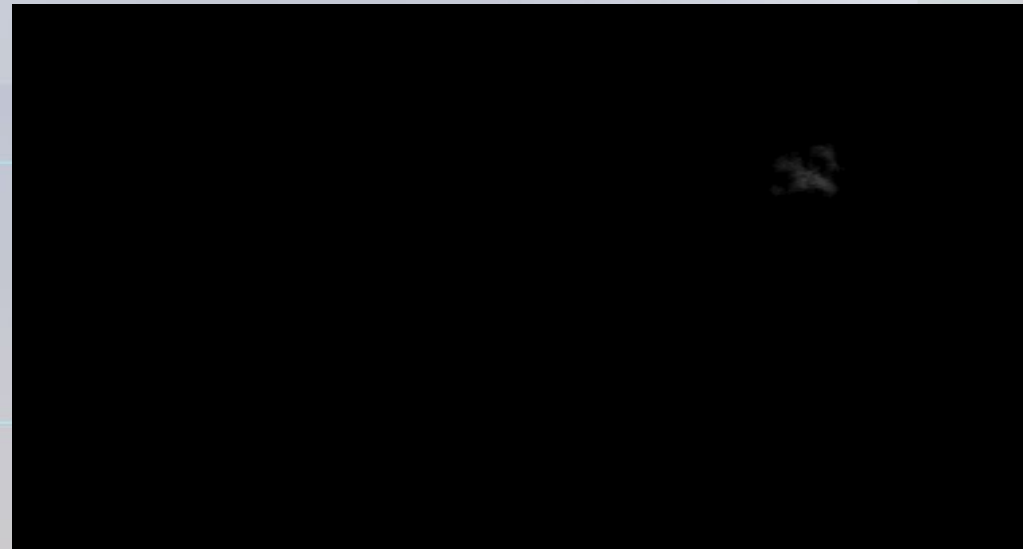
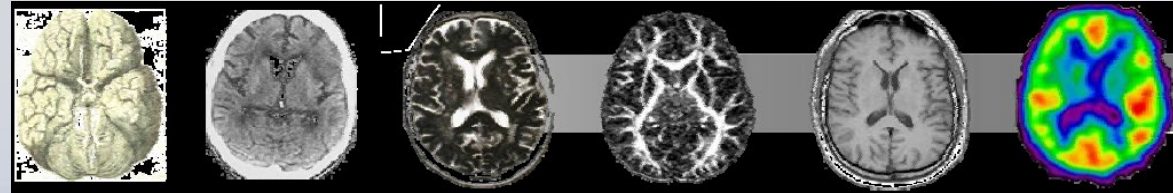


URI BERGMANN, Ph.D. - ubergmann@att.net

How Does Understanding the Brain Make Us Better EMDR Therapists?: Theoretical Update



How Does Understanding the Brain Make Us Better EMDR Therapists?: Theoretical Update

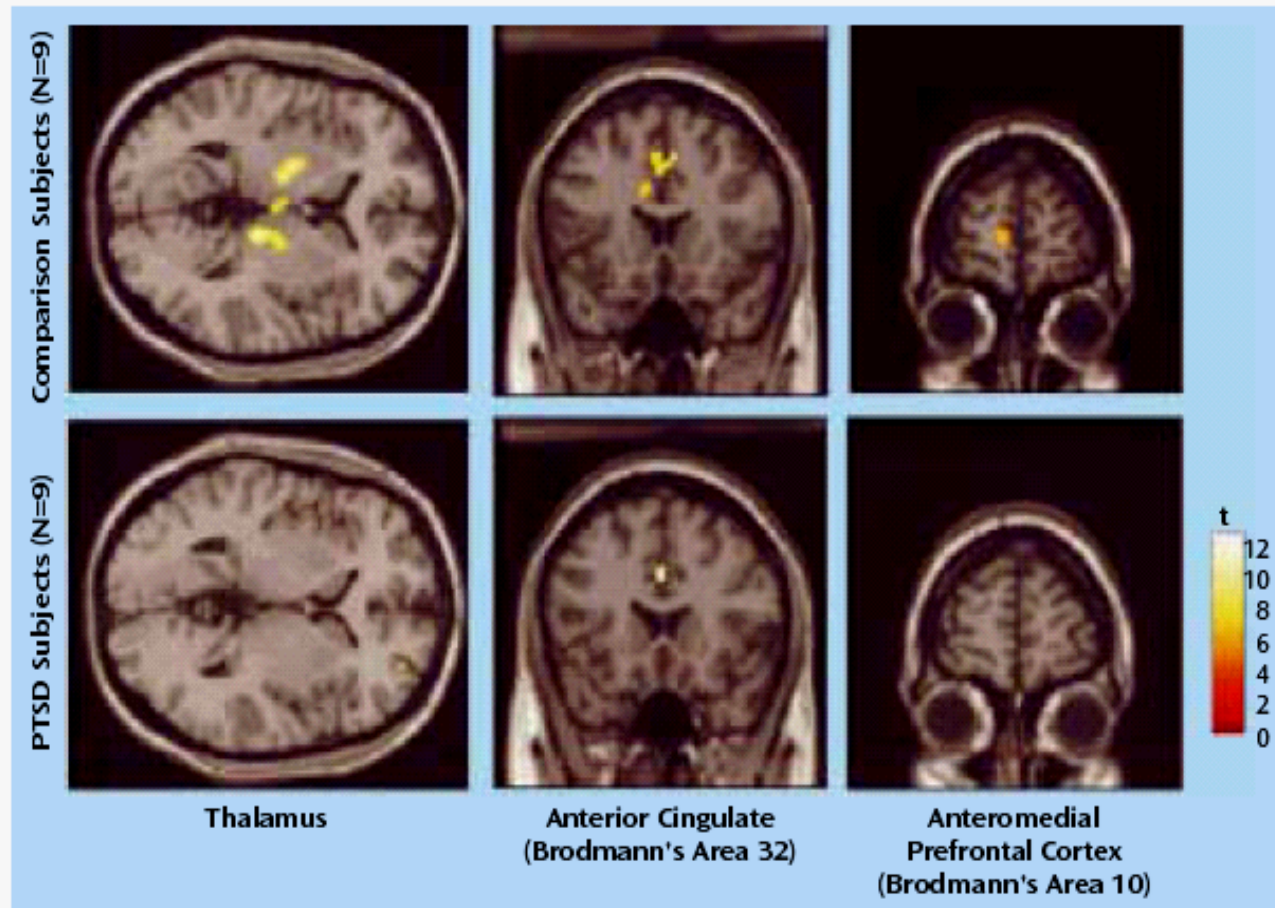


URI BERGMANN, Ph.D. - ubergmann@att.net

EMDR treatment and Type I PTSD

- ¥ Began in 1989 as EMD
- ¥ Target was the explicit memory of the incident
 - ¥ Phases 3, 4, 5, and 6
 - ¥ Were 1 to 3 90 minute sessions
 - ¥ If the event was recent
- ¥ Treatment was extended to five or six 90 minute sessions
 - ¥ Due to the recent event protocol

FIGURE 1. Brain Activation Sites^a in Traumatized Subjects With and Without PTSD



^a Areas of significantly ($p < 0.001$) increased activation during the final 30 seconds of a 60-second period of recalling a traumatic event, relative to average baseline activation 60 seconds before each recollection of the traumatic event, superimposed on T₁-weighted magnetic resonance imaging templates.

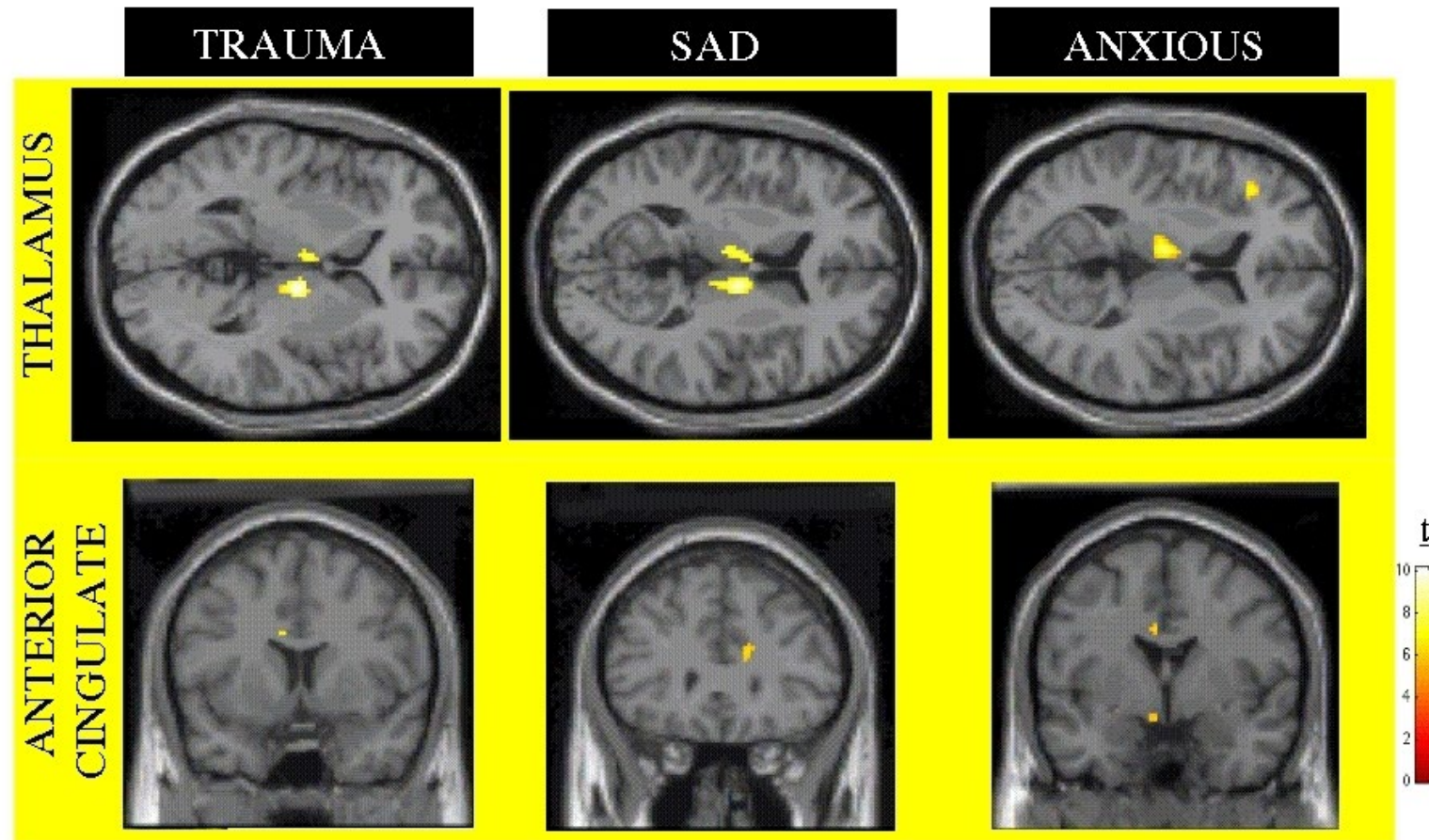
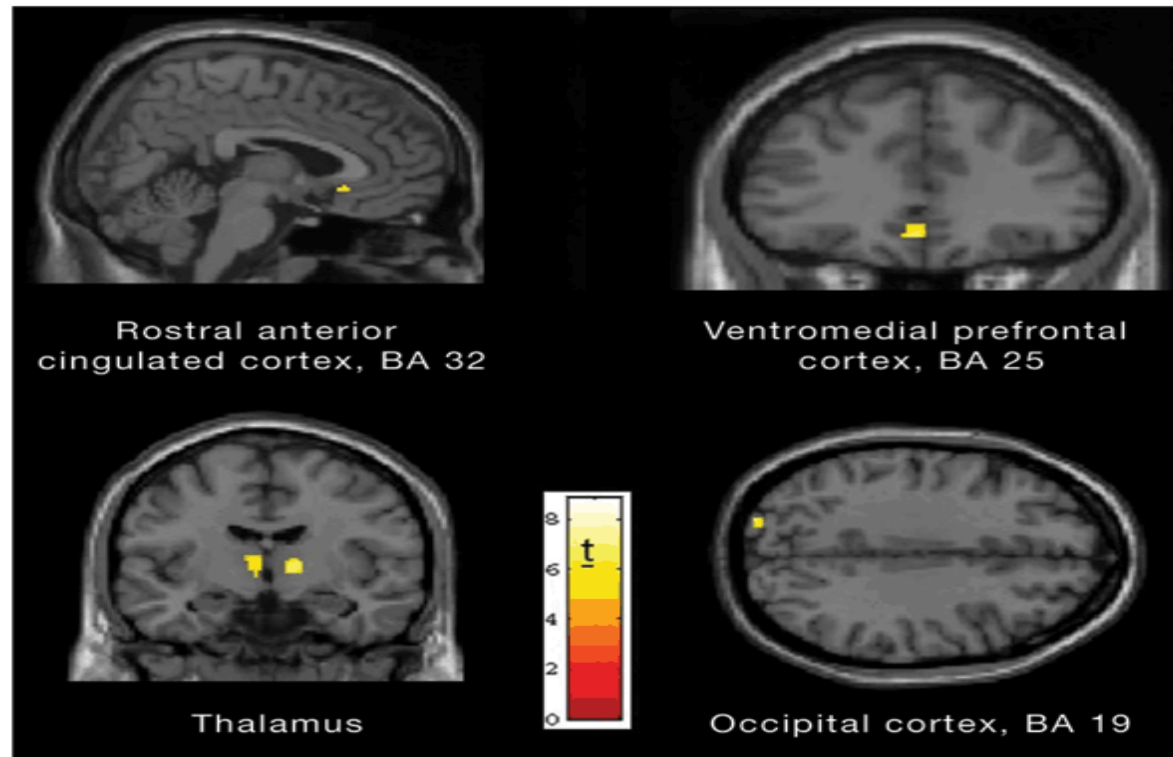


Figure 1: Regions of activation during memory recall versus implicit baseline where the comparison group (n=10) shows greater activation than the PTSD group (n=10), $k > 10$.

PTSD

Figure
1

Regions where patients with PTSD (without major dissociation) exhibited less activation during traumatic memory recall than trauma-exposed controls without PTSD¹¹



PTSD, posttraumatic stress disorder.

Lanius & Hopper (2008). *Psychiatric Times*, 25(13)

EMDR treatment and Charactorological Presentations

- ¥ In 1991, EMD became EMDR
- ¥ We moved from exclusive focus on Type I PTSD
 - ¥ Complex PTSD
 - ¥ Attachment disorders
 - ¥ Neuroses

EMDR treatment and Characterological Presentations

- ¥ Target of Tx. Remained
 - ¥ Explicit/Declarative/Conscious memory
 - ¥ Length of Tx.
 - ¥ From short-term
 - ¥ To long-term

EMDR treatment and Characterological Presentations

¥ Shift

- ¥ From the centrality of the central nervous system
- ¥ To the centrality of the autonomic nervous system
- ¥ Characterological symptoms are driven by dysregulated autonomic states
- ¥ Dysregulated, implicit, nonconscious body-based states
- ¥ States, that conscious cognition alone can't access or change

THREADS

- ¥ **Basic anatomy**
- ¥ **The divided brain**
- ¥ **Poly-vagal affective systems**
- ¥ **Affective regulation**
- ¥ **Implicit neural networks**
- ¥ **Various systems of memory**
- ¥ **Implications for EMDR treatment**

Descarte's Error

¥ René Descartes (1644)



¥ *Dubito, ergo cogito* (I doubt, therefore I think).

¥ *Cogito, ergo sum* (I think, therefore, I am)

- ¥ In one turn of phrase, Descartes cemented the common perception of a fundamental split between the body and the mind.
- ¥ In a world obsessed with symbolic thought and abstraction
- ¥ In time, the fields of psychology and psychiatry, also, became hopelessly infatuated with the left hemisphere

Descarte's Error (1644)



- ¥ Behavioral, cognitive, and psychoanalytic therapies relied on the left hemisphere's
 - ¥ Linear, abstract, rigid, closed ended, and disembodied
 - Information processing
 - ¥ To repair emotional and relational difficulties
- ¥ Generated and mediated by the nonlinear, hyper-associative, open-ended and somatosensorial right hemisphere

Paradigm Shift

¥ **Paradigm shift**

¥ **From cognitive (left hemispheric) neuroscience**

¥ **To developmental and affective (right hemispheric) neuroscience**

¥ **A rapprochement between researchers and clinicians**

Paradigm Shift

- ¥ **Bodily based emotions**
- ¥ **Psychobiological states**
- ¥ **Are dominating research**
- ¥ **Signaling clinical practice to do the same**

Paradigm Shift

¥ Shift from...

¥ Interpretation & insight

¥ To relational & affective processes

The Divided Brain

- ¥ The right hemisphere has significantly greater portions of white matter than the left
 - ¥ The presence of more white matter in the right hemisphere
- ¥ Indicates enhanced information transfer across brain regions
 - ¥ Reflecting its attention to the global picture

The Divided Brain

- ¥ Due to the right hemisphere's greater white matter
 - ¥ Hence, greater degree of myelination
 - ¥ Facilitation of swift transfer of information
- ¥ Between the cortex and regions below the cortex
 - ¥ Limbic, midbrain, and brainstem
- ¥ Enhanced integration of a greater variety of increased types of information
- ¥ As compared to the more focally organized left hemisphere

The Divided Brain

- ¥ Due to the brain's wiring,
 - ¥ The left hemisphere
 - ¥ Prioritizes *local*/communication
 - ¥ And transfer of information
 - ¥ *Within* its regions

The Divided Brain

¥ Left hemisphere

¥ Closed

¥ Useful for static, fixed, and isolated information

¥ i.e. Science, Mathematics

¥ Therefore, narrow, sharply focused, attention

McGilchrist, I. (2009). *The Master and his Emissary*. Yale University Press

McGilchrist, I. (2021). *The Matter With Things: Our Brains, Our Delusions, and the Unmaking of the World*. London: Perspectiva Press

The Divided Brain & Insight

- ¥ Explicit insight is mediated by the left
- ¥ Useful for static, fixed, and isolated information
 - ¥ i.e. science & math
- ¥ Therefore, narrow, sharply focused, attention
- ¥ Implicit insight mediated by the right hemisphere.

McGilchrist, I. (2009). *The Master and his Emissary*. Yale University Press

McGilchrist, I. (2021). *The Matter With Things: Our Brains, Our Delusions, and the Unmaking of the World*. London: Perspectiva Press

The Divided Brain

¥ Conscious vs. Unconscious

¥ Left mediates conscious elements of emotion & memory

¥ Left amygdala mediates conscious emotion

¥ Right amygdala mediates unconscious emotional information

The Divided Brain

¥ Right hemisphere

¥ Open

¥ Useful for exploring what we do not yet know

¥ Our inner lives and relationships

¥ Therefore, sustained, broad and open attention

¥ Learns best in a relational (non-dissociated) milieu

The Divided Brain

"If it is the right hemisphere that is vigilant for whatever it is that exists out there, *it alone can bring us something other than what we already know*. The left hemisphere deals with what it knows, and therefore prioritizes the expected - its process is predictive. It positively prefers what it knows. This makes it more efficient in routine situations... But less efficient than the right *wherever one's initial assumptions have to be revised, or when there is a need to distinguish old information from new material*."

Paradigm Shift

¥ Allan Schore (2012)

¥ “...Emotional communications between therapist and patient are at the psychobiological core of the therapeutic alliance...right brain-to right brain emotional processes are essential to development and psychopathology... hence also to psychotherapy.”

EMOTION vs. FEELINGS

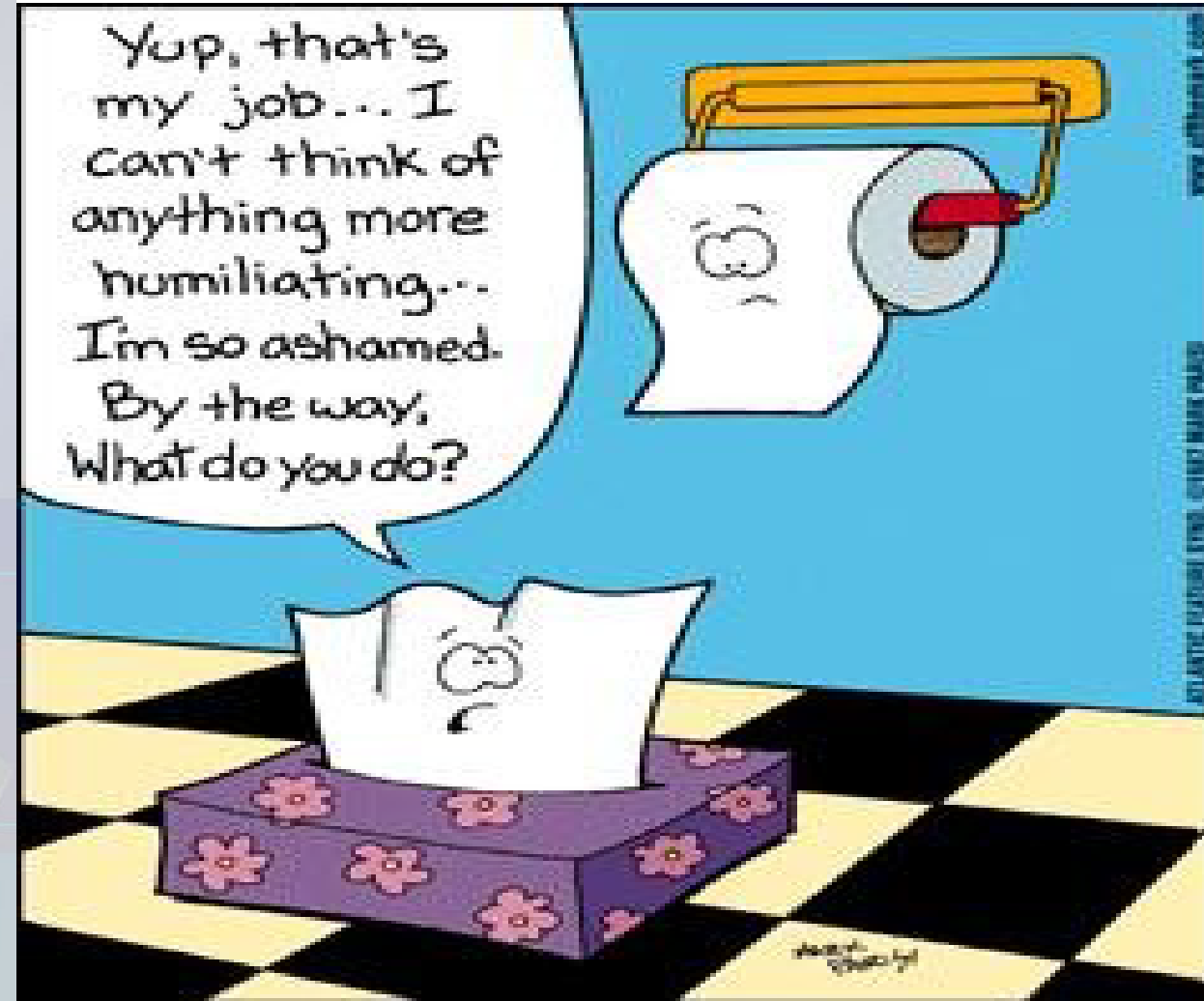
¥ Emotions

- ¥ Complex, largely automated programs
 - ¥ Fixed pre-set neural maps
- ¥ Mediated by biological emotional operating systems
- ¥ Constructed by and conserved through evolution.
 - ¥ Geared toward action
 - ¥ Composed of actions in our bodies
 - ¥ Facial expressions
 - ¥ Postures
- ¥ Changes in our viscera and internal physical environment..

EMOTION vs. FEELINGS

¥ Feelings

- ¥ Composite, reflectively conscious perceptions
 - ¥ Cognitive translations
 - ¥ Of what is happening in our body
 - ¥ While we are in the process of emoting
- ¥ Perceptions of our state of mind during that same period



Neural Networks

¥ **Central Executive Network**

¥ **Default Mode Network**

¥ **Salience Network**

Central Executive Network

¥ Networking areas of the...

¥ Dorsolateral Prefrontal Cortex

¥ Posterior Parietal Cortex

¥ Mediating information

¥ Conscious

¥ Cognitive

¥ Computational

Default Mode Network Network

- ¥ **An interconnected and anatomically defined, mostly right-hemispheric system**
- ¥ **Consisting of areas of the**
 - ¥ **Medial Temporal Lobe**
 - ¥ **Medial Prefrontal Cortex**
 - ¥ **Posterior Cingulate Cortex**
 - ¥ **Hippocampal areas**
 - ¥ **Medial, Lateral & Inferior Parietal Cortices**

Default Mode Network Network

¥ Mediates

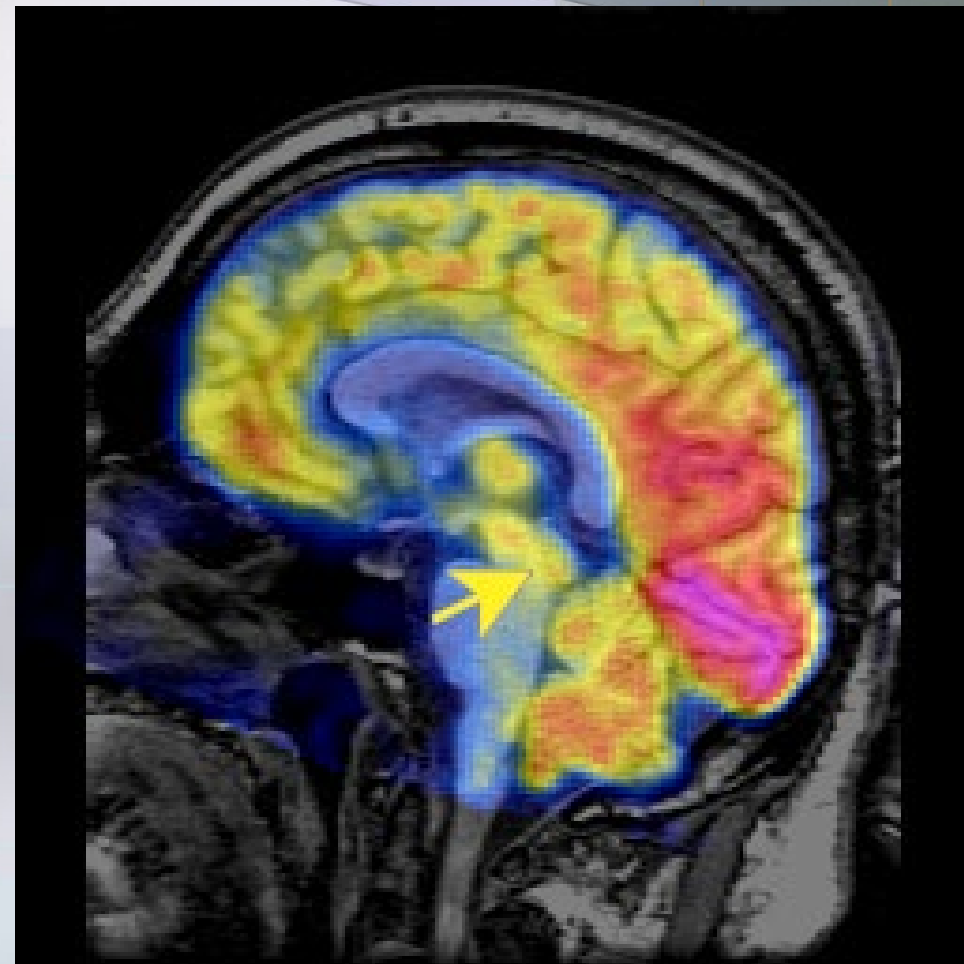
- ¥ Procedural self-referential affective memory
- ¥ Internal imaging
- ¥ Self representations/schemas
- ¥ Object representations
- ¥ Affective regulation
- ¥ Integration of affect & cognition
- ¥ Somatosensory representations
- ¥ Experience of an embodied sense of self

Saliience Network

- ¥ **Composed of**
 - ¥ **The Anterior Insula – hub**
 - ¥ **Dorsal Anterior Cingulate Gyrus**
 - ¥ **Determines the emotional salience of information**
 - ¥ **Determines the activation of, either**
 - ¥ **The Central Executive Network, or**
 - ¥ **The Default Mode Network**

PAG & COLLICULI

- ¥ The superior colliculi and inferior colliculi
- ¥ Collectively, referred to as the Tectum
- ¥ The inferior colliculi mediate auditory & somatosensory information
- ¥ The superior colliculi, in conjunction with the PAG
 - ¥ Mediate integration of sensory information & affect
 - ¥ Producing raw/basic emotion
 - ¥ Producing primary consciousness



Autonomic Nervous System

- ¥ **Four branches of the ANS**
 - ¥ **Act to maintain homeostatic balance.**
 - ¥ **Sympathetic NS**
 - ¥ **Parasympathetic**
 - ¥ **Enteric NS (Gut Brain)**
 - ¥ **Intrinsic Cardiac NS (Heart Brain)**

Autonomic Nervous System

¥ Sympathetic Nervous System

¥ Energy Expanding – Arousal Mediating

¥ Mediating approach, fight or flight behavior

Autonomic Nervous System

¥ Parasympathetic Nervous System

- ¥ Energy Conserving/Homeostatic

- ¥ Calm Mediating

- ¥ Mediating avoidant, freeze or immobilizing behavior

Autonomic Nervous System

¥ Enteric Nervous System

- ¥ Autonomous control of the gastrointestinal system
- ¥ Strongly linked to interoception and emotion
- ¥ Mediates bidirectional signaling via the Vagus nerve
- ¥ Mediates traumatic affect

Interoception

- ❖ The process by which the nervous system
 - ❖ Senses
 - ❖ Interprets
 - ❖ Represents
- ❖ Internal bodily signals
 - ❖ Conscious
 - ❖ Representational
- ❖ Allows you to be aware
 - ❖ of your heartbeat
 - ❖ Tightness in your chest

Neuroception

- ❖ Through the processing of sensory information from the environment and from our viscera
 - ❖ Our nervous system continuously evaluates risk
 - ❖ Implicitly
 - ❖ Unconsciously
 - ❖ Evolution's neural wiring for the jungle
 - ❖ Limbic, at its highest level
 - ❖ But, mostly mediated at a midbrain and brainstem level
- ❖ Hence, neuroception (nonconscious) versus perception (conscious)

Autonomic Nervous System

¥ Intrinsic cardiac nervous system

¥ Mediates heart-rate-variability (HRV)

- ¥ Key marker of emotional flexibility and resilience
- ¥ Emotional regulation

¥ Respiratory Sinus Arrhythmia (RSA)

- ¥ The use of breath to increase HRV

Autonomic Nervous System

- **High HRV**
 - Greater flexibility/adaptability
 - Strong parasympathetic (vagal) influence
 - Associated with resilience, emotional regulation, and health
- **Low HRV**
 - Reduced adaptability
 - Sympathetic dominance or reduced vagal tone
 - Associated with stress, trauma, illness, and poorer outcomes

Autonomic Nervous System

¥ Bottom Line

- ¥ SNS – Mobilizes
- ¥ PNS – Restores
- ¥ ENS - Senses and regulates internal state (Gut)
- ¥ ICNS - Dynamically tunes cardiac output and emotional rhythm

BRAIN STEM AFFECT SYSTEMS

❖ Ascending Reticular Activation System

- A sympathetic system providing neural excitation and promotion of rapid mobilization for behaviors associated with fight and flight.

❖ Dorsal Vagal Complex

- An inflexible parasympathetic system promoting an immobilized freeze in functioning in response to danger.

❖ Ventral Vagal Complex

- A flexible parasympathetic system of inhibitory effect (a brake), promoting increased calm.

BRAIN STEM AFFECT SYSTEMS

❖ Ventral Vagal Complex

- At birth, regulates
 - Striated muscles of the head and face – social gesture
 - Facial muscles – emotional expression
 - Eyelids - gaze
 - Middle-ear muscles – extracting the human voice from the background
 - Larynx - vocalization
 - Pharynx - prosody
 - Muscles of mastication

BRAIN STEM AFFECT SYSTEMS

❖ Ventral Vagal Complex

- **Until the age of ~ 3 years**
 - **Mediates attachment, but not self-regulation**
- **The caregiver is still required to function as a ventral vagal regulator.**
 - **By 3 years of age, becomes sufficiently myelinated**
- **Utilizes the heart to begin to gently/finely regulate and balance affect, in the absence of the caregiver.**
- **Heart functions like a finely-tuned turbo, bi-directionally...**



MEMORY SYSTEMS

- ¥ PERCEPTUAL REPRESENTATIONAL

- ¥ aka NONDECLARATIVE

 - ¥ Implicit

 - ¥ Unconscious

 - ¥ Somatosensorial

 - ¥ Non-verbal

- ¥ EPISODIC

 - ¥ Explicit

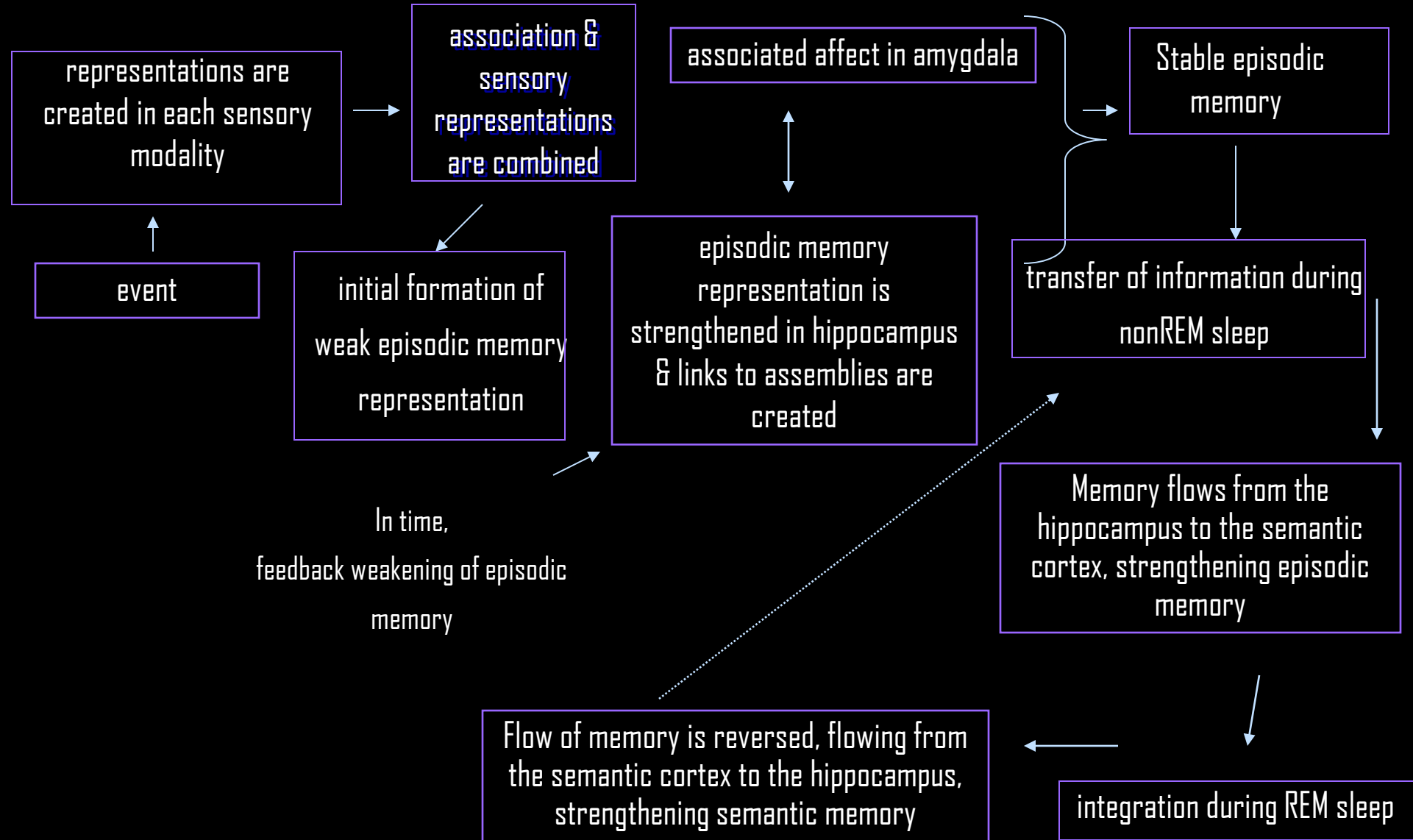
 - ¥ Procedural

- ¥ SEMANTIC

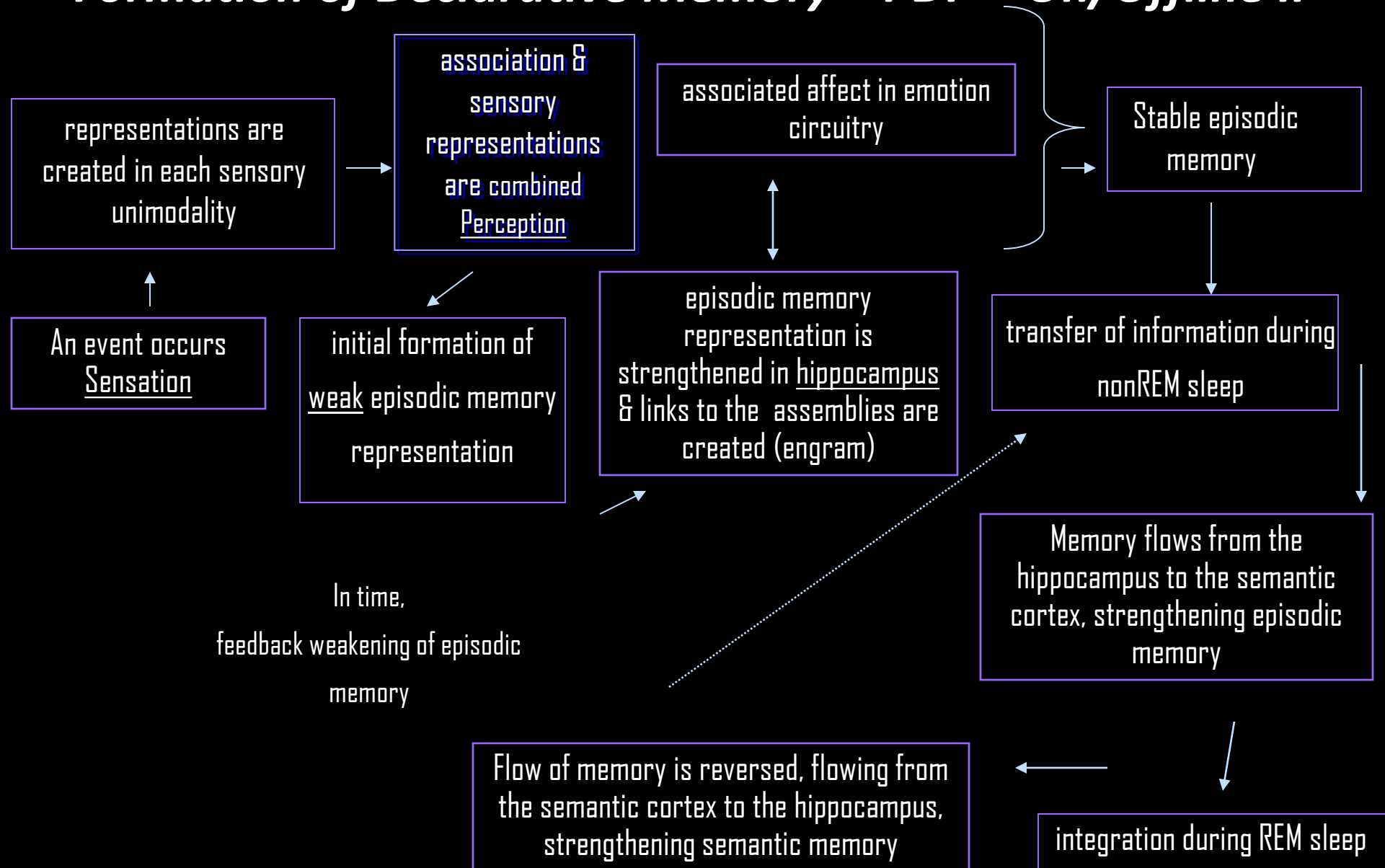
 - ¥ Hyper-associative

 - ¥ Meaning

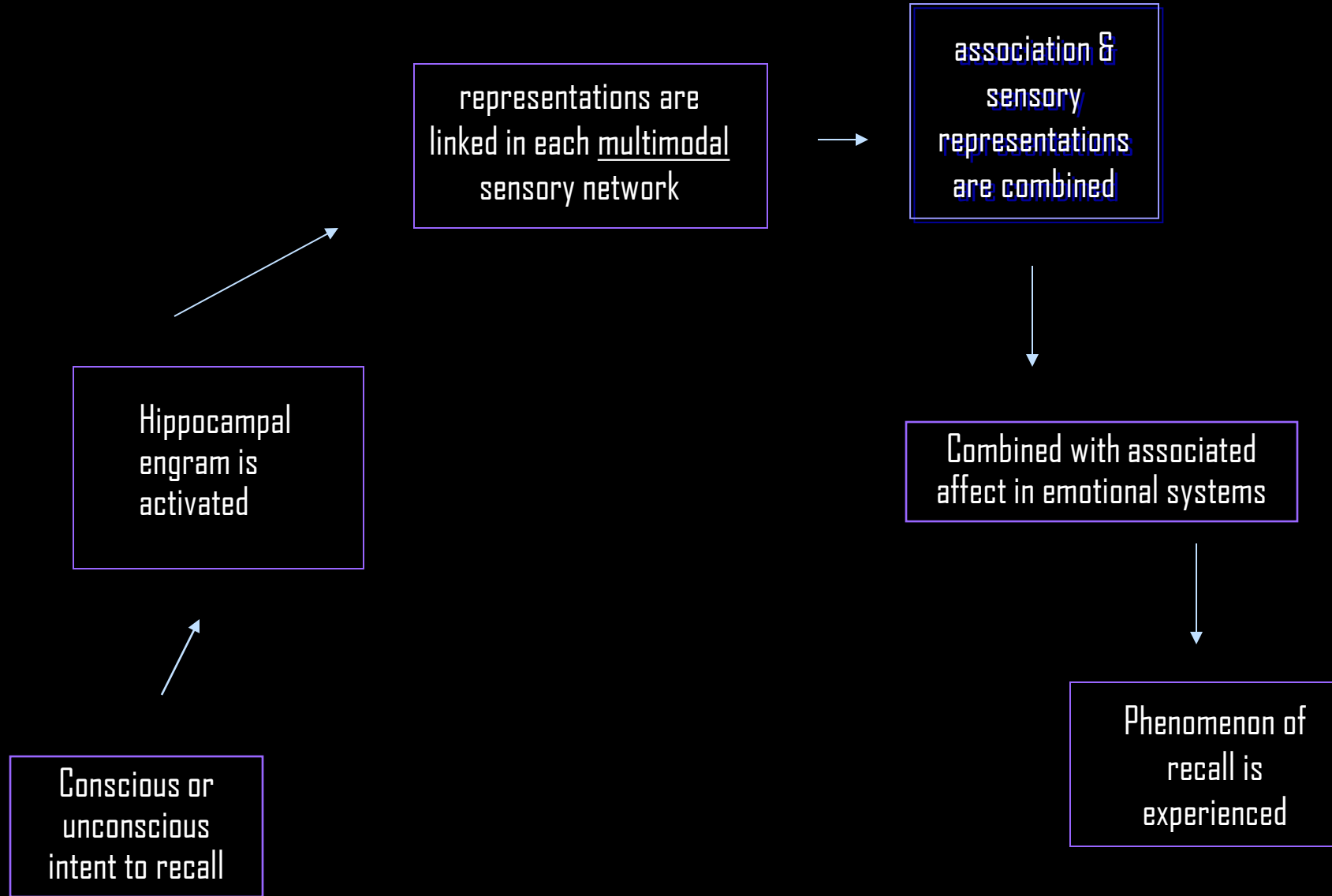
Formation of Declarative Memory – PDP – On/Offline IP



Formation of Declarative Memory – PDP – On/Offline IP

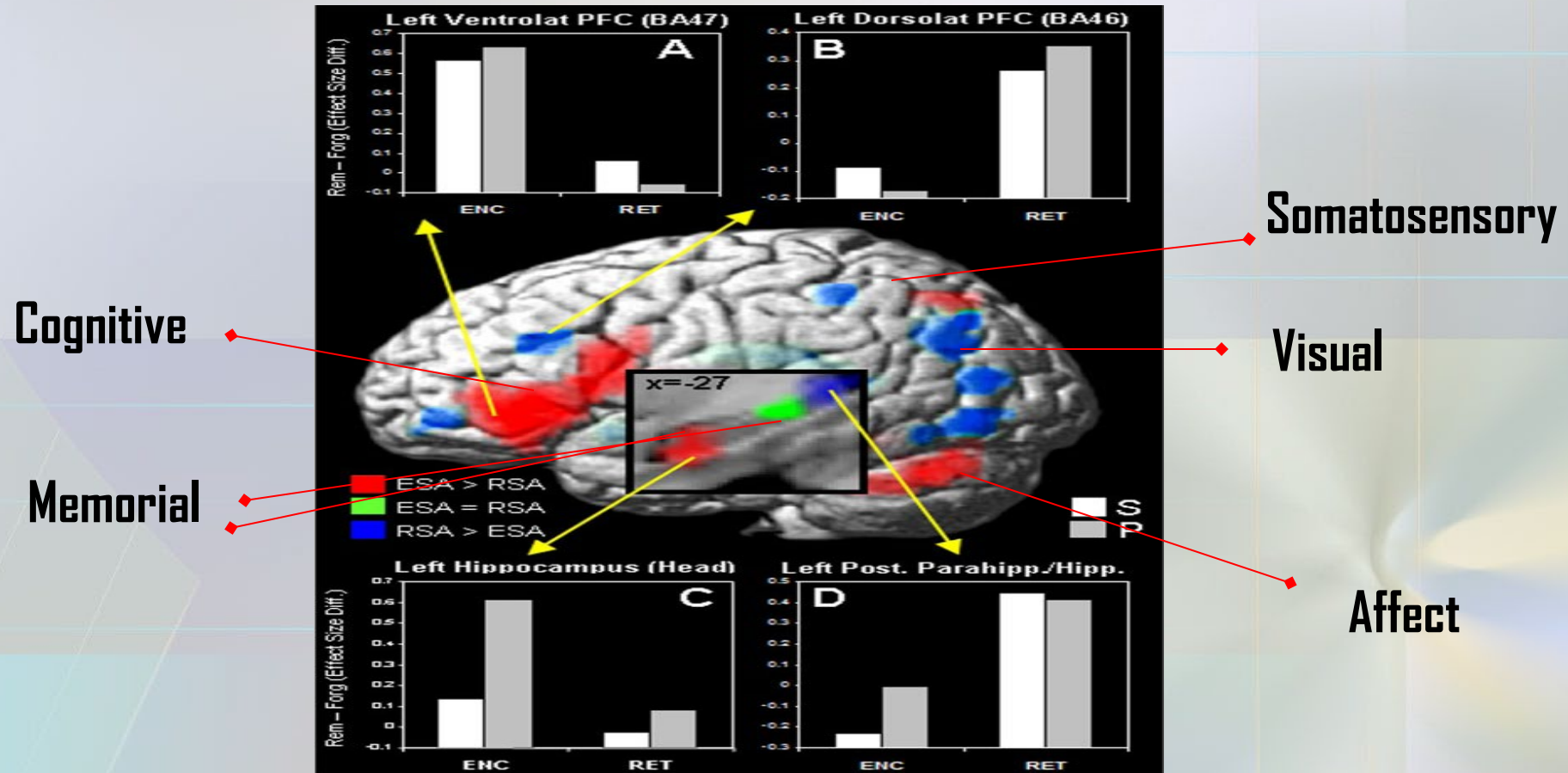


Process of Declarative/Episodic Recall...Remembering



ENCODING vs. RETRIEVAL OF MEMORY

Semantic and Perceptual Memory Combined Data



Transfer-Appropriate Processing (TAP)

- ¥ **Memories are represented in terms of the neural operations which were engaged when the event was initially encoded/processed.**
- ¥ **Successful memory retrieval occurs when those earlier operations are recapitulated...**

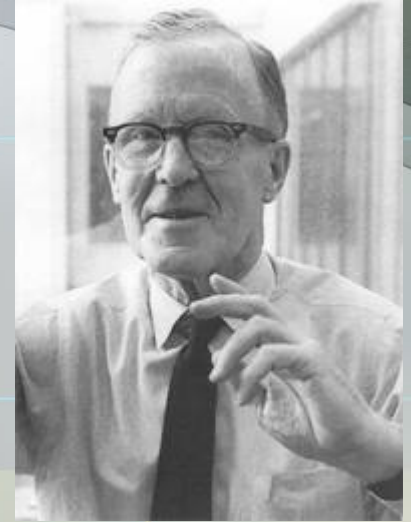
Cortical Reinstatement Model

¥ The memory/recollection of an event occurs when a pattern of cortical activity/linkages corresponding to the encoding of the event is reinstated by activation of a hippocampally-mediated recreation/relinking of that pattern.

Alvarez, P. & Squire, L. R. (1994). Memory consolidation and medial temporal lobe: a simple network model. *Proceedings of the National Academy of Sciences*, 91, 7041-7025.

DONALD HEBB, 1949

¥ Hebbian Learning - "any two cells or systems of cells that are repeatedly active, at the same time, will tend to become 'associated' so that activity in one facilitates activity in the other"...



"Cells that fire together, wire together."



Shatz, C. J. (1992). The developing brain. *Scientific American*, 267(3), 60-67.

THE BINDING PROBLEM and the SOLUTION - 40 HZ GAMMA BAND OSCILLATION

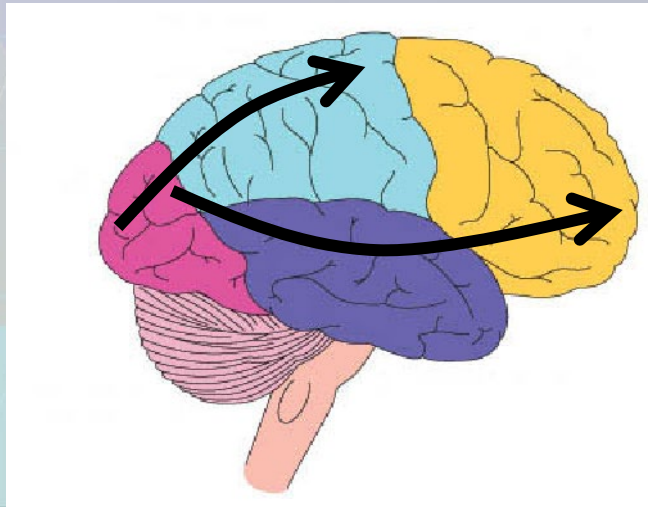


- ¥ Generated by thalamic and cortical interneurons.
- ¥ Prevalent throughout the nervous system.
- ¥ Move in rostra – caudal waves.
- ¥ Mediates global – temporal mapping by --
 - ¥ scanning for, targeting and synchronizing
 - ¥ various neuronal assemblies – oscillating at their own frequencies.
- ¥ Binding them, coherently and temporally...

ROSTRA – CAUDAL 40 HZ OSCILLATION

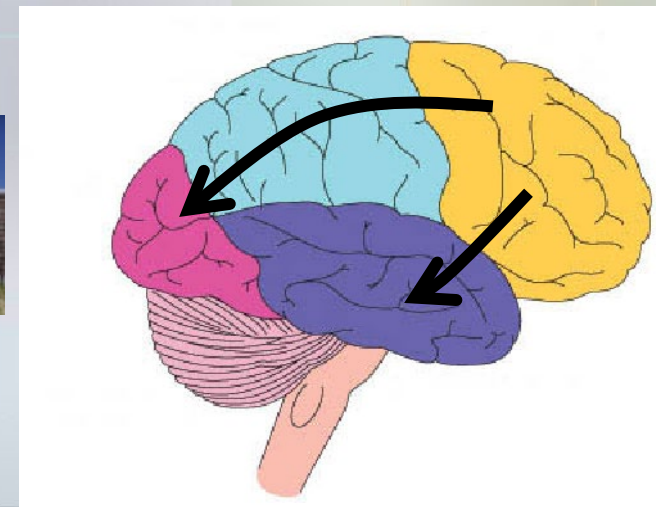
Perceiving/Encoding

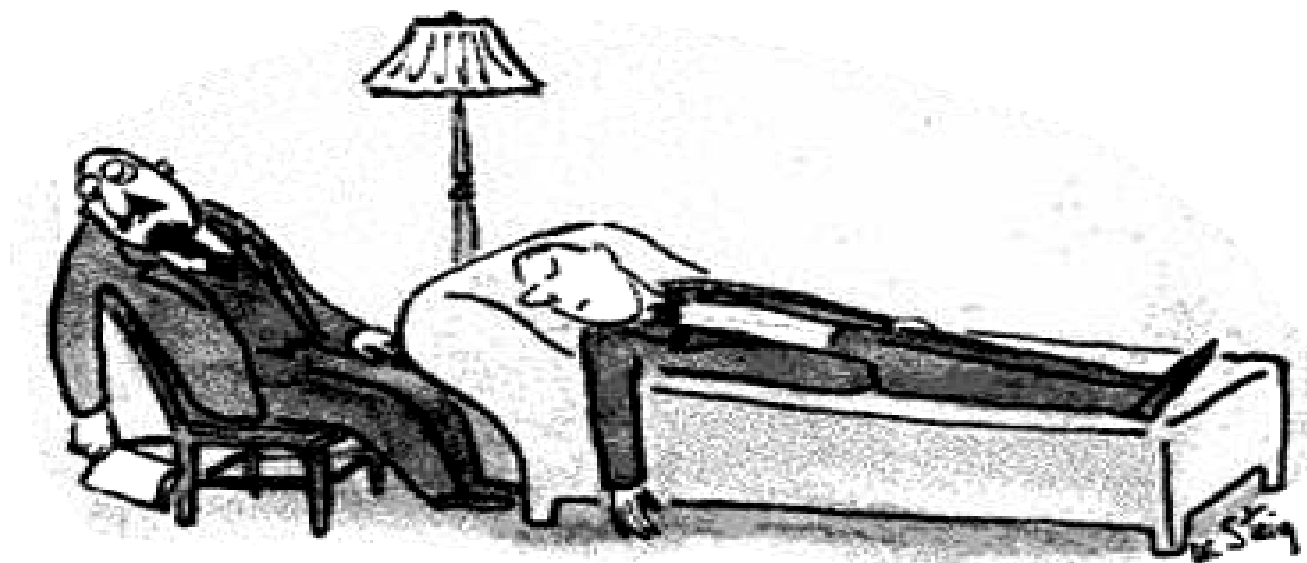
**Occipital gamma provides
a drive to association and memorial areas
facilitating linked synaptic encoding**



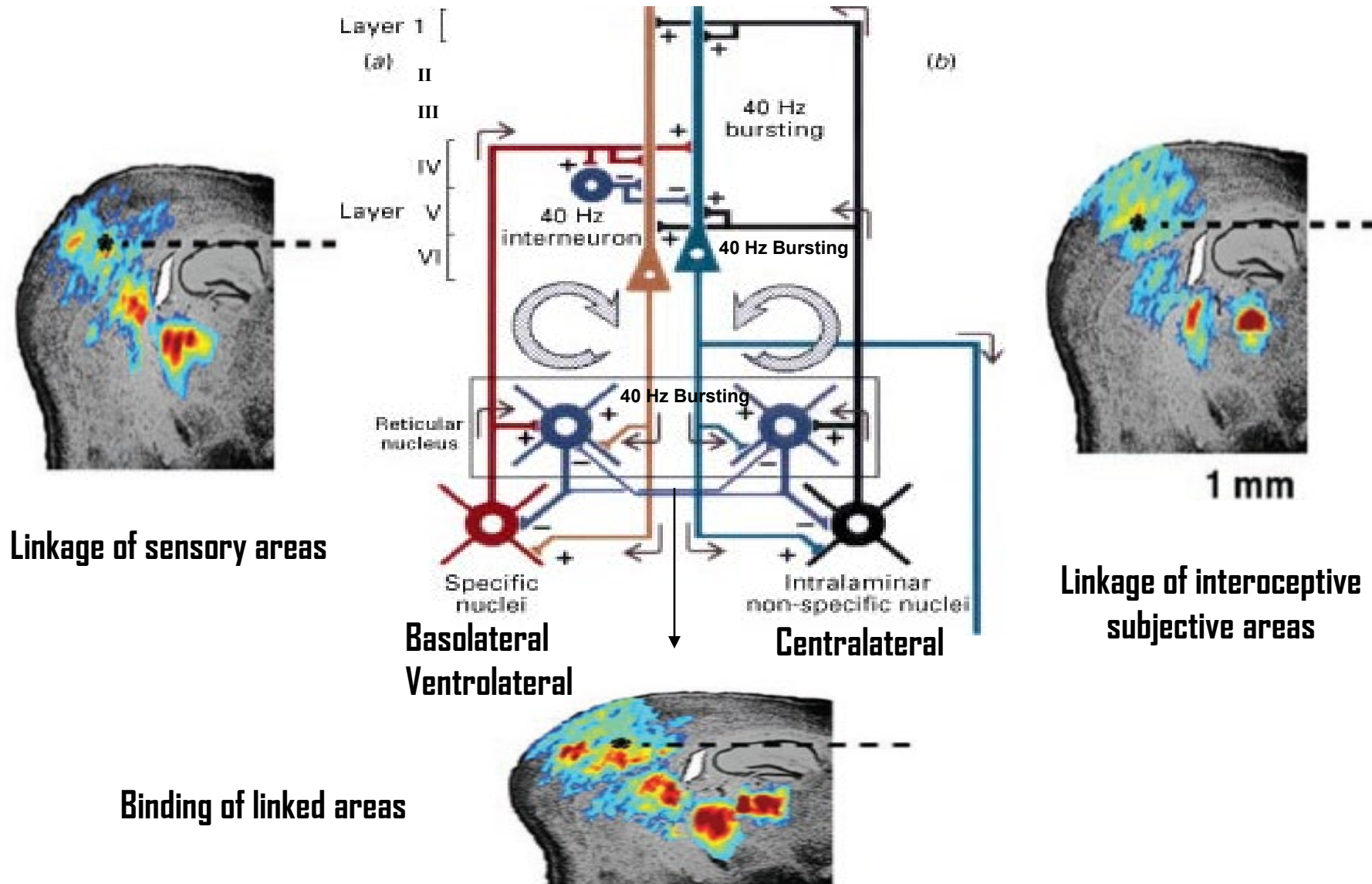
Recognizing/Remembering

**Gamma reflects a
'pattern completion' process
relinking needed synaptic encoding)**

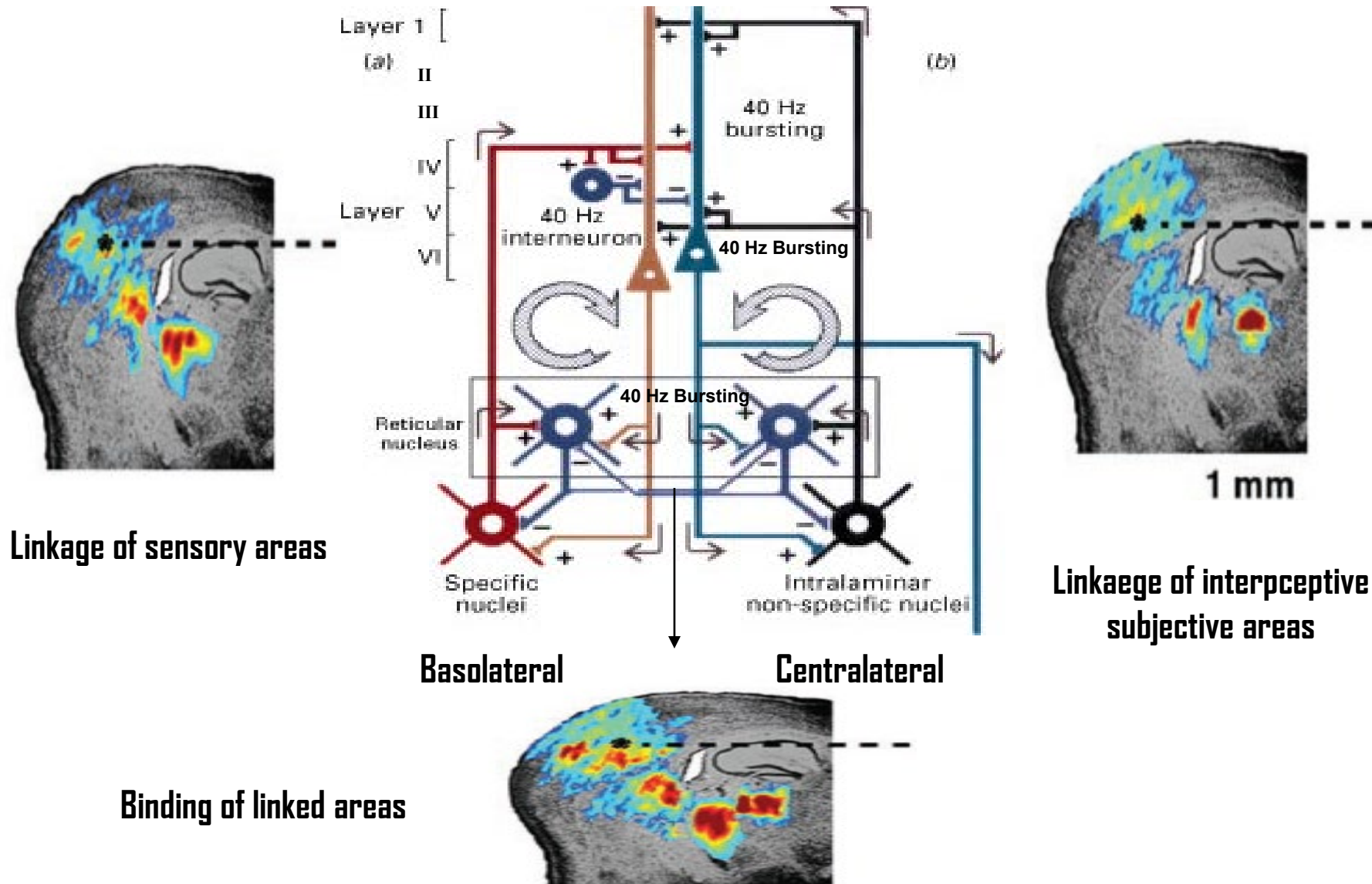




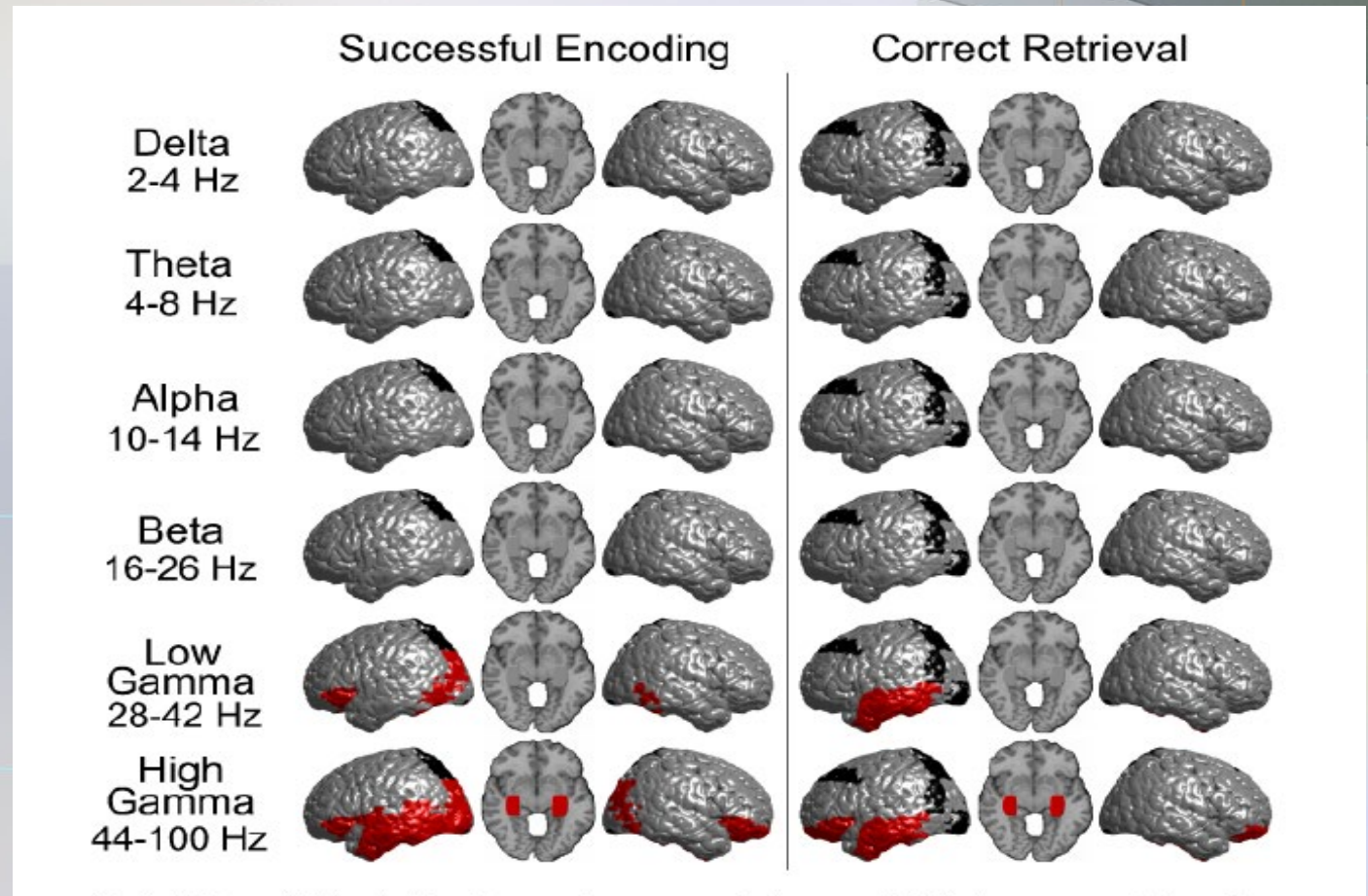
Thalamo-Cortical-Temporal Binding/Mapping



Thalamo-Cortical-Temporal Binding/Mapping

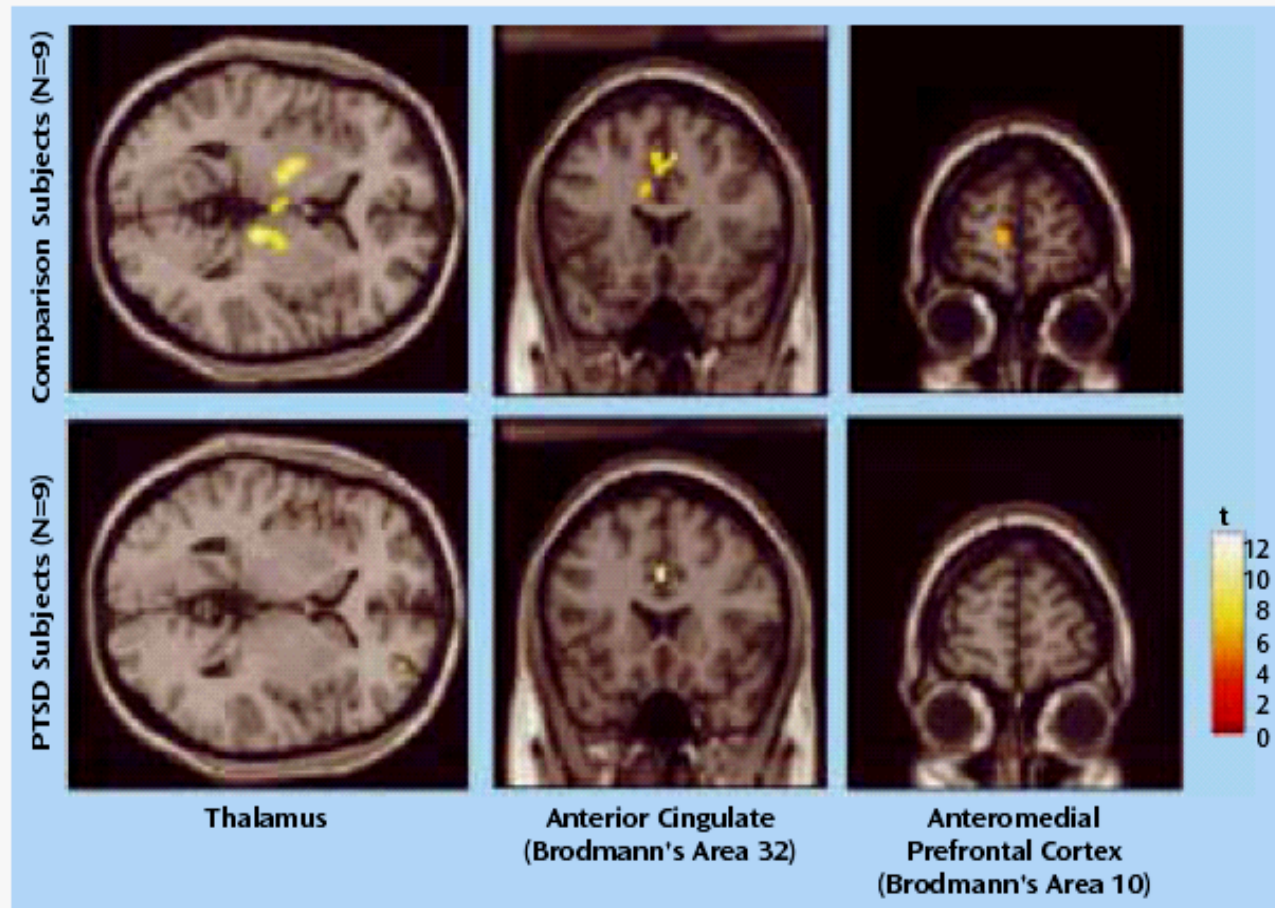


Gamma Oscillation, Encoding & Retrieval



Osipova, D., et al. (2006). Theta and Gamma Oscillations Predict Encoding and Retrieval of Declarative Memory. *The Journal of Neuroscience*, 26(28), 7523-7531

FIGURE 1. Brain Activation Sites^a in Traumatized Subjects With and Without PTSD



^a Areas of significantly ($p < 0.001$) increased activation during the final 30 seconds of a 60-second period of recalling a traumatic event, relative to average baseline activation 60 seconds before each recollection of the traumatic event, superimposed on T₁-weighted magnetic resonance imaging templates.

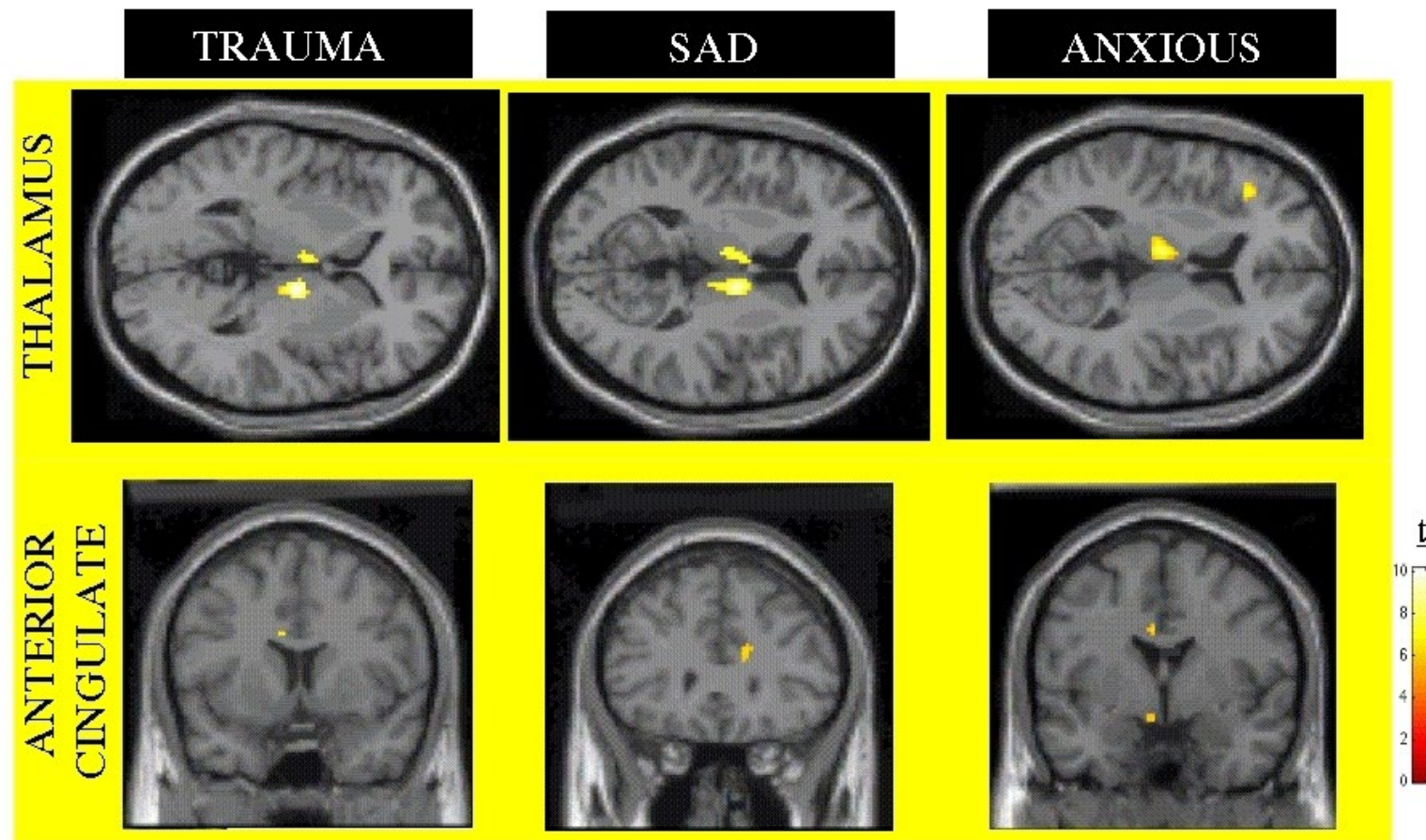
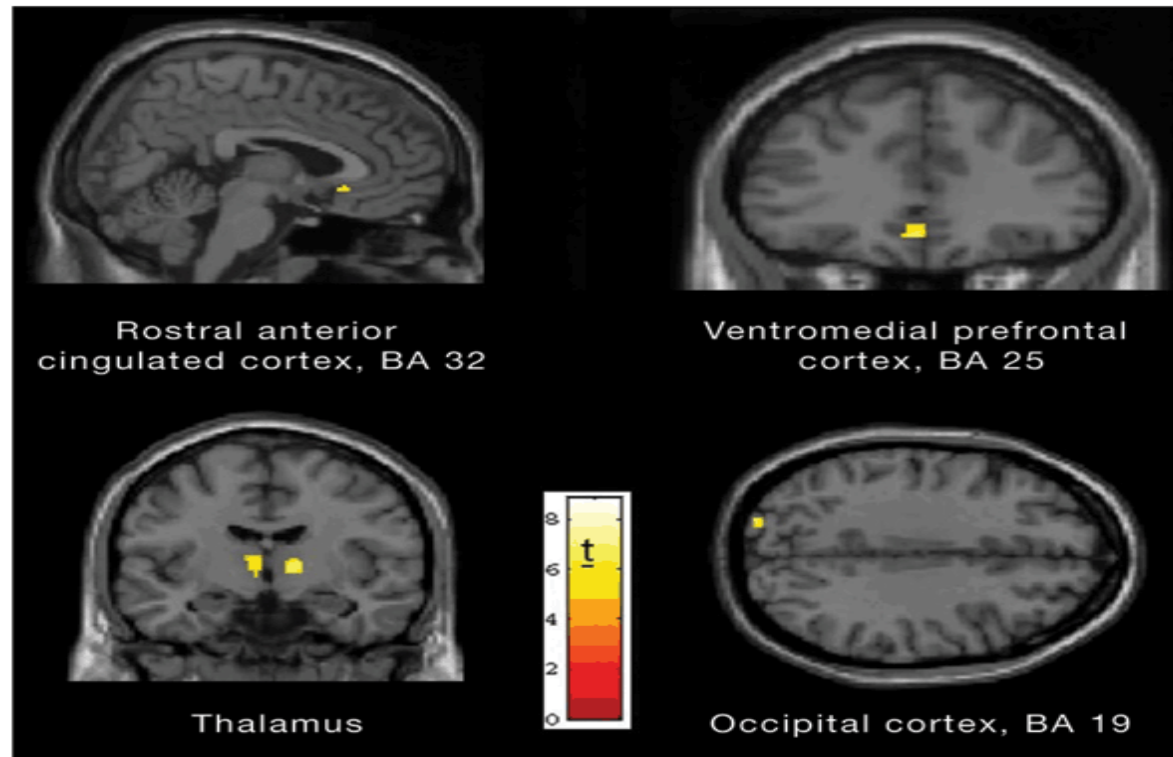


Figure 1: Regions of activation during memory recall versus implicit baseline where the comparison group (n=10) shows greater activation than the PTSD group (n=10), $k > 10$.

PTSD

Figure
1

Regions where patients with PTSD (without major dissociation) exhibited less activation during traumatic memory recall than trauma-exposed controls without PTSD¹¹



PTSD, posttraumatic stress disorder.

Lanius & Hopper (2008). *Psychiatric Times*, 25(13)

Implicit Nondeclarative Memory

- ¥ The idea that memory is not a single faculty has a long history
- ¥ Bergson (1910) distinguished between a kind of memory that represents our past, and memory that is not representational but nevertheless allows the effects of the past to persist into the present
- ¥ In non-declarative memory, arise our habits, and preferences that are inaccessible to conscious recollection
- ¥ Shaped by past events, they influence our current behavior and mental life, and are a fundamental part of who we are

Implicit Nondeclarative Memory

- ¥ Unconscious, expressed as automatized somatosensory images, core beliefs, and reflexive, repetitive behavior
- ¥ Memory is reflected in various motor and perceptual skills, habits, and emotional learning which is reflexive.
- ¥ As opposed to declarative memory, which is conscious and reflective.

Schacter, D.L. (1987). Implicit memory: history and current status. *Journal of experimental psychology*, 13, 501 – 518.

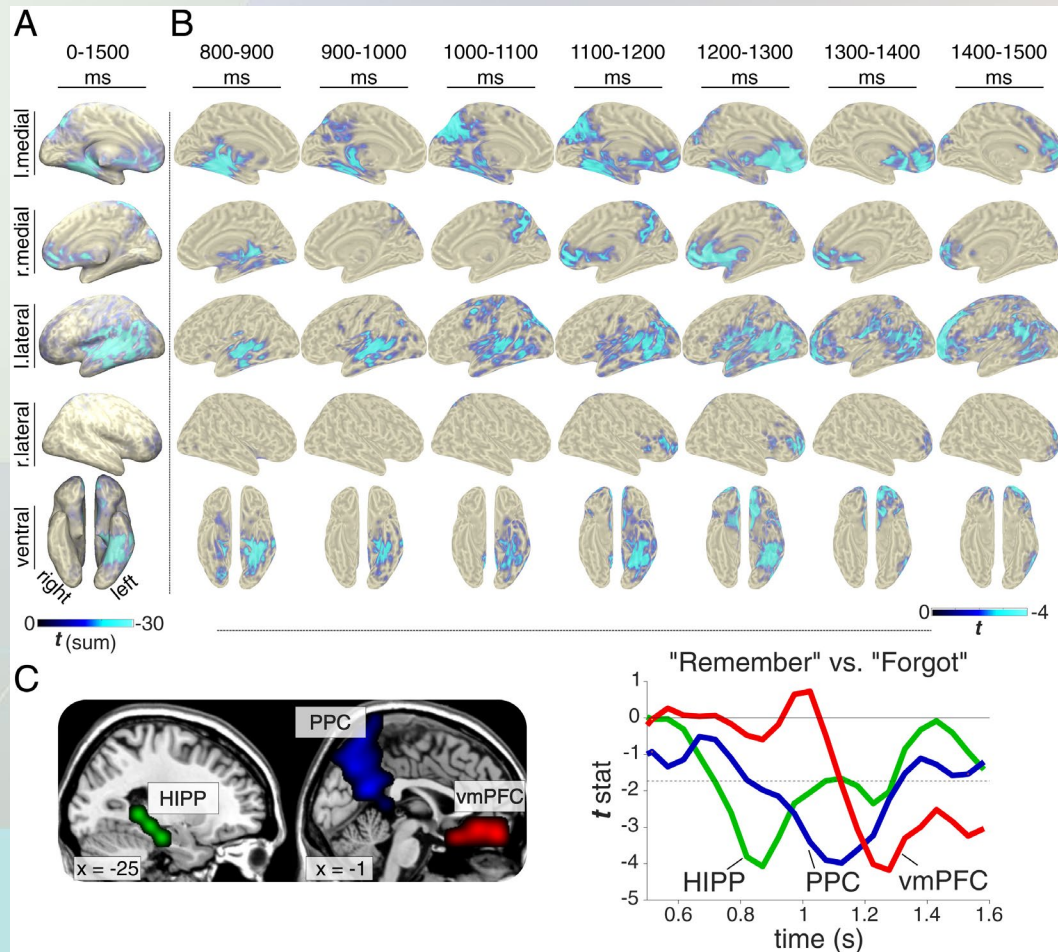
Implicit Nondeclarative Memory

- ¥ Unlike episodic memory, which is mediated by a localized system
 - ¥ The Medial Temporal Lobe
- ¥ Implicit learning/memory does not depend on a single circumscribed neural system
- ¥ But instead, occurs in changes within processing systems across the brain
 - ¥ Somatosensory
 - ¥ Subcortical

Schacter, D.L. (1987). Implicit memory: history and current status. *Journal of experimental psychology*, 113, 501 – 518.

LeDoux, Joseph (2002). *Synaptic Self*. New York: Penguin Books

Implicit vs. Explicit Memory



Regions Predicting Explicit Memory

- Hippocampus
- Para Hippocampus
- Medial Temporal Lobe (MTL)

Regions Predicting Implicit Memory

- Fusiform Gyrus
- Cerebellum
- Right Ventromedial Pref. Cortex
- The Default Mode Network (DMN)

Treder, M. S., et al. (2021). The hippocampus as the switchboard between perception and memory."
Proceedings of the National Academy of Sciences of the United States of America (PNAS), 118(50), e2114171118.

Implicit Nondeclarative Memory

¥ A growing body of empirical literature suggests that implicit memory is operative in utero.

Gustafsson, H. et al. (2022). Third trimester fetuses demonstrate priming, a form of implicit memory, in utero. *Children*, 9 (11).

DMN and Memory systems

- ¥ **DMN activity is sustained during implicit memory function**
- ¥ **DMN activity is Strongly suppressed during explicit memory functioning**
- ¥ **Therefore, activation of the DMN is associated with ongoing unconscious processing.**
- ¥ **The automatic, reflexive, influences of our past experience**
 - ¥ **Somatosensory**
 - ¥ **Subcortical**
 - ¥ **Not reflectively conscious**

DMN and Memory systems

- ¥ Years of data support the idea
- ¥ The DMN participates more in internally/implicitly oriented integrative memory processes
- ¥ Is markedly suppressed during the targeting of explicit memory processes

Characterological, Attachment, and Complex PTSD Disorders

- ¥ **Developmental**
- ¥ **Reflexively procedural**
- ¥ **Nonconscious**
- ¥ **Nonreflective**

Characterological, Attachment, and Complex PTSD Disorders

- ¥ These traits are encoded mainly in
 - ¥ Implicit memory systems
- ¥ Subserved mainly in circuitry
 - ¥ Right amygdala
 - ¥ Striatum
 - ¥ Cerebellum
 - ¥ Brainstem

Schacter, D.L. (2007)). The cognitive neuroscience of memory and consciousness.

Emotional and Relational Fields

¥ Our biologically organized emotional core is biased (or conditioned) toward certain emotional responses, which are mediated by the neural templates (emotions, cognitions/beliefs/implicit memories) of our early attachment experiences.

Emotional and Relational Fields

- ¥ These implicit memories can be targeted by a focus
On our “somatic markers.”
- ¥ Emotional somatic signals
- ¥ That target our unconscious beliefs/predictions, reflexively

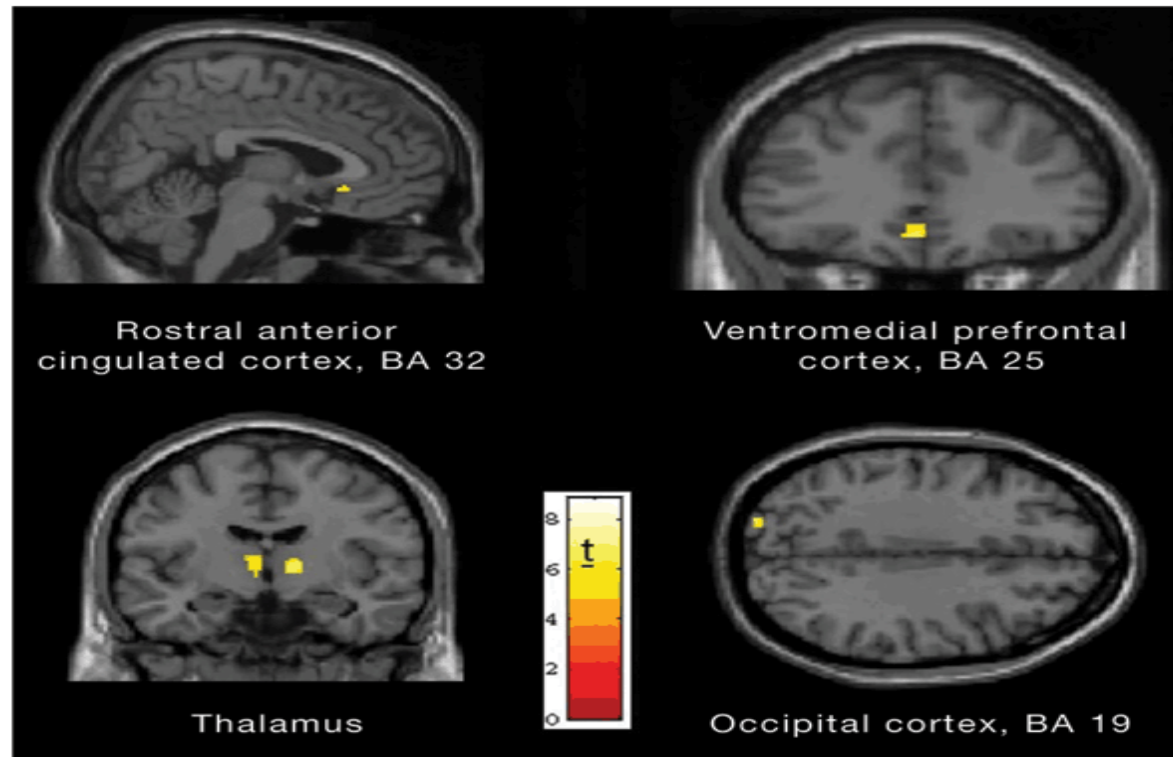
Emotional and Relational Fields

- ¥ Present life interpersonal experiences reactivate the neural maps of earlier childhood.
- ¥ This occurs unconsciously and, often, regardless of what is actually occurring,
- ¥ Thus biasing or distorting our emotional perception of personal interactions.

PTSD

Figure
1

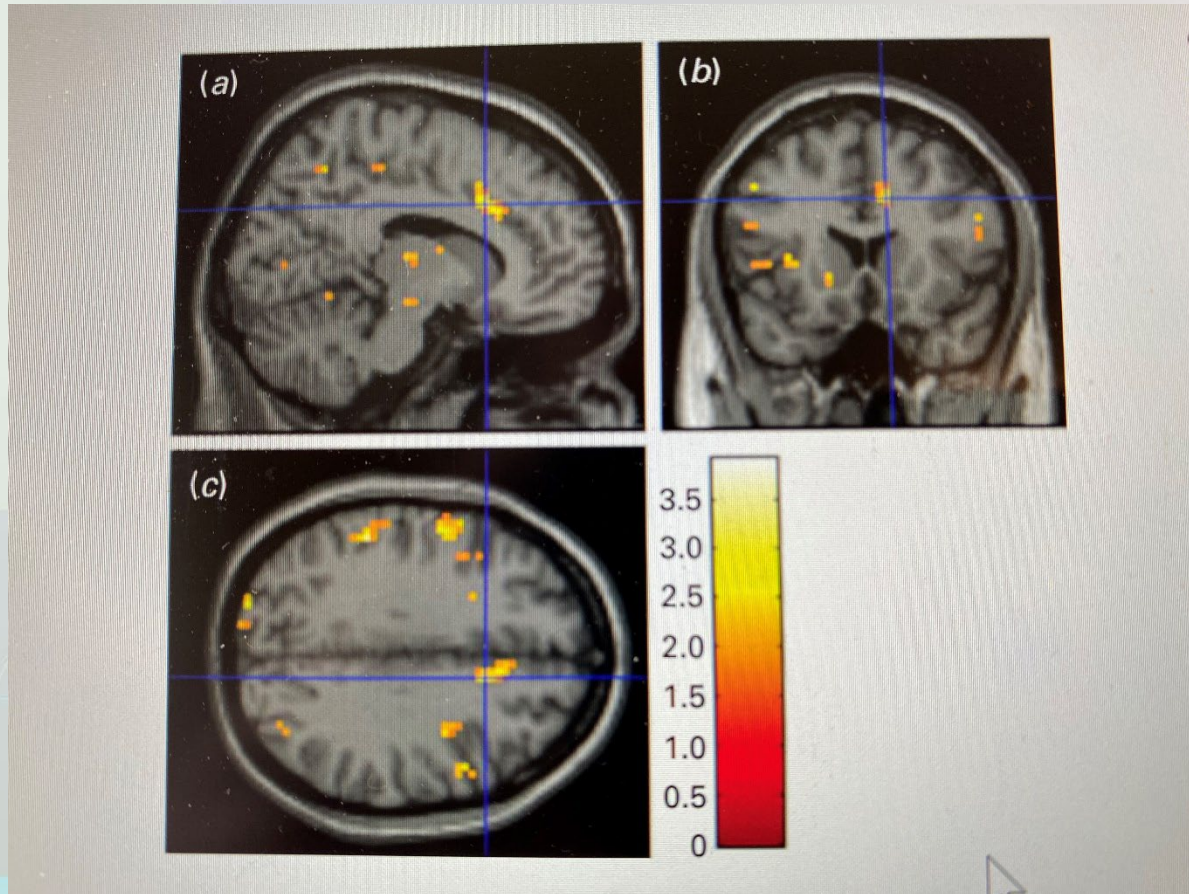
Regions where patients with PTSD (without major dissociation) exhibited less activation during traumatic memory recall than trauma-exposed controls without PTSD¹¹



PTSD, posttraumatic stress disorder.

Lanius & Hopper (2008). *Psychiatric Times*, 25(13)

C-PTSD



- ¥ Medial Temporal Lobe
- ¥ Medial Prefrontal Cortex
- ¥ Posterior Cingulate Cortex
- ¥ Hippocampal areas
- ¥ Medial, Lateral & Inferior Parietal Cortices

Thomas et al. (2012). Treatment effects on insular and anterior cingulate cortex activation during classic and emotional Stroop interference in child abuse related complex PTSD. *Psychological Medicine*, 42, 2337-2349

Characterological Presentations

- ¥ Attachment templates
- ¥ Implicit interpersonal predictions/expectations
 - ¥ Right hemispheric
 - ¥ Core belief domains
 - ¥ Self representations
 - ¥ Object representations
 - ¥ Schemas
 - ¥ Negative cognitions

Schacter, D. L., & Addis, D. R. (2007). The cognitive neuroscience of constructive memory: Remembering the past and imagining the future. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 362(1481), 773-786.

Neural Prediction

¥ Rodolfo Llinas (2001)

- ¥ A majority of consciousness/information processing
 - ¥ Is nonconscious prediction
 - ¥ Many brain processes are implicit
- ¥ The right brain continuously simulates predictive outcomes

Neural Prediction

¥ Rodolfo Llinas (2001)

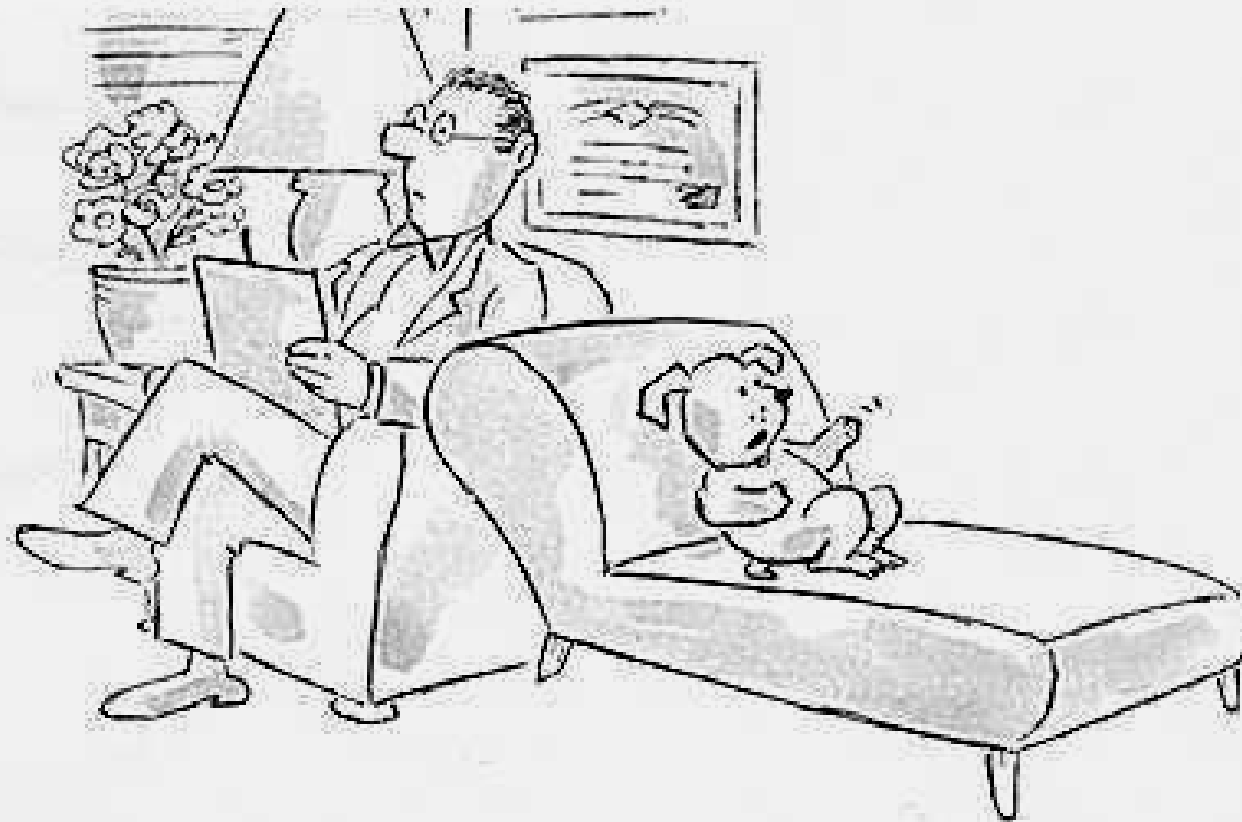
- ¥ This generates
- ¥ Procedural learning
- ¥ Implicit memory
- ¥ Automatic emotional responses

Neural Prediction

¥ Rodolfo Llinas (2001)

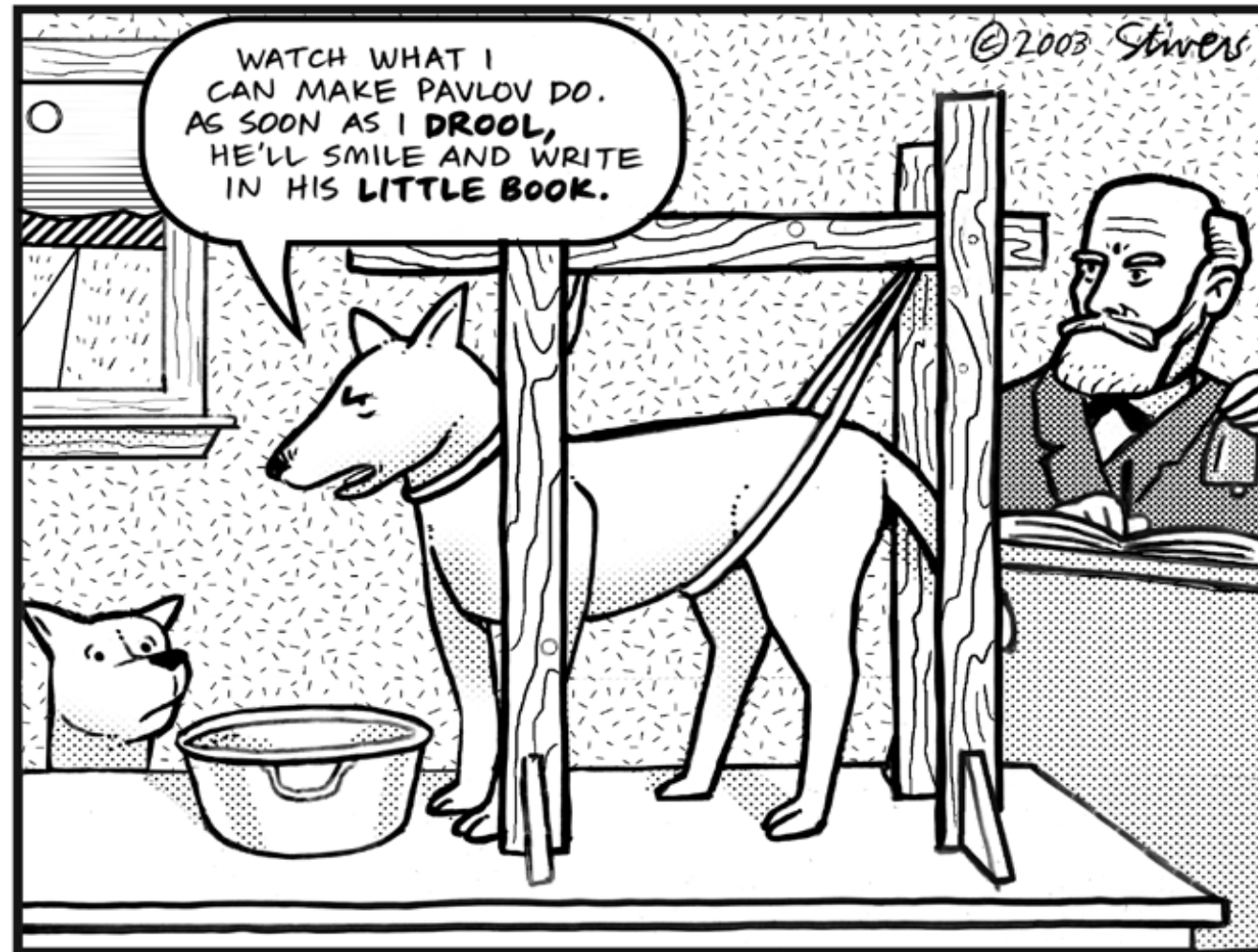
- ¥ **Consciousness/IP "...evolved as the goal-oriented device that implements predicted/intentional interactions between a living organism and its environment. Such transactions, to be successful, require an inherited pre-wired instrument that generates an internal subjective image of the external world that can, then, be compared with sensory transduced objective information from the external environment."**

Pavlov's Dog – Before EMDR



"AND THEN INSTEAD OF FEEDING ME
HE WOULD RING A LITTLE BELL."

Pavlov's Dog – After EMDR



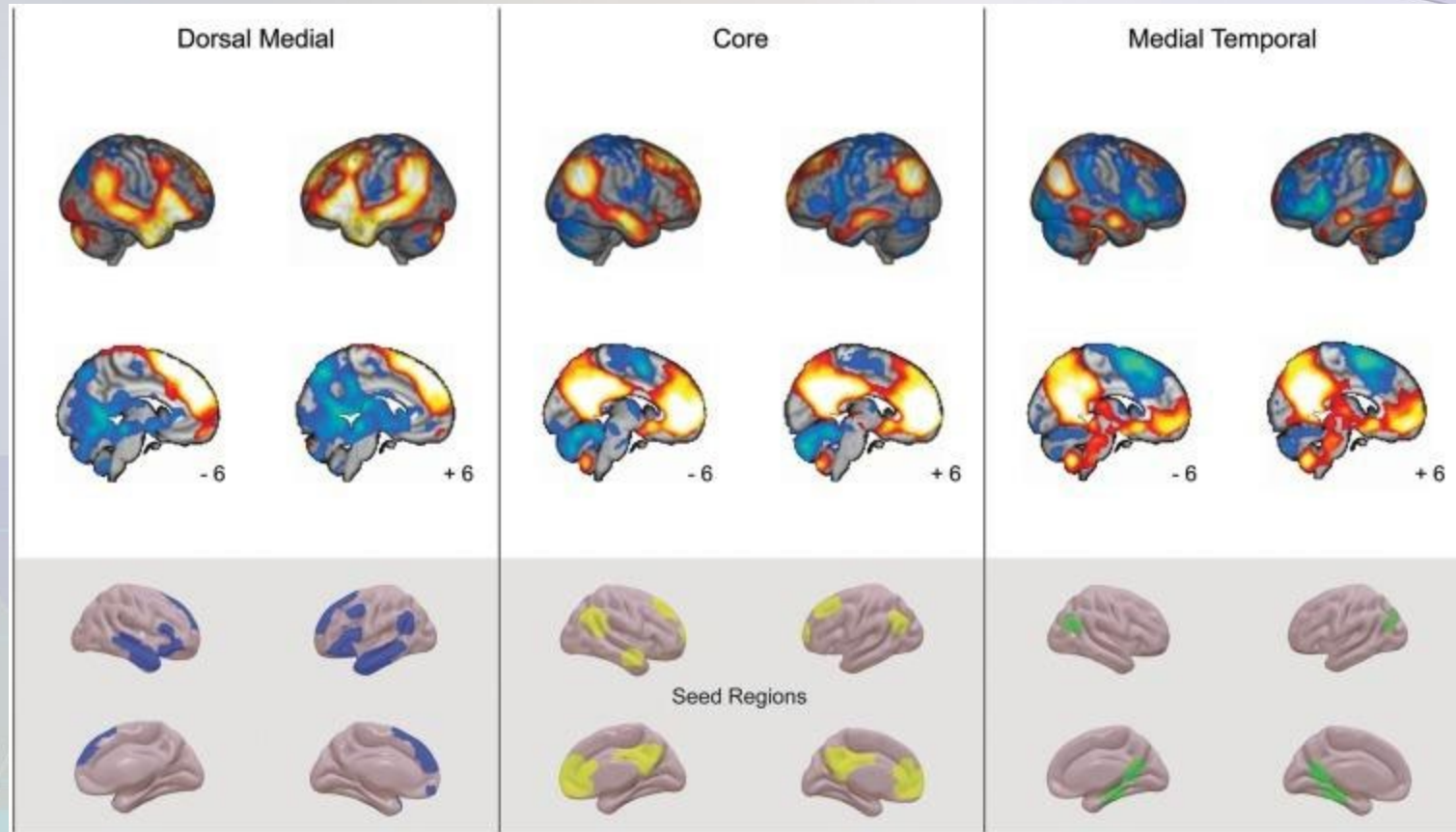
DEFAULT MODE NETWORK'S ROLE

- ¥ Integrates self-model, affect, and implicit memory
- ¥ Is active during internally generated states
- ¥ Remains highly engaged during implicit processing
- ¥ Is suppressed during effortful explicit tasks
 - ¥ Mediates implicit self
 - ¥ Schemas
 - ¥ Self representations
 - ¥ Object representations
 - ¥ Negative cognitions

Yang et al (2009). Sustained activity within the default mode network during an implicit memory task. *Cortex*, 46(3), 354-366.

Damis, L.F. (2022). The role of implicit memory in the development and recovery from trauma- related disorders. *NeuroScience*, 3, 63-88

DEFAULT MODE NETWORK'S ROLE



Poerio, G.L. (2017). The role of the default mode network and component processes underlying the wandering mind. *Social Cognitive and Affective Neuroscience*, 12(7), 1047 – 1062.

Louis Damis - 2022

- ¥ **“Adequate recovery from extensive trauma experiences requires more than conscious elaboration of traumatic autobiographical memories...**
- ¥ **The application of implicit and nonconscious memory modification strategies are required to facilitate a more optimal recovery.”**

Moment-By-Moment-Attunement

- ¥ Attunement
- ¥ Co-regulation
- ¥ Nonverbal communication
- ¥ Synchrony

Moment-By-Moment-Attunement

- ¥ Many core change processes
 - ¥ Affect Regulation
 - ¥ Attachment
- ¥ Implicit relational knowing
 - ¥ Depend heavily on
 - ¥ Right lateralized
 - ¥ Nonverbal
- ¥ Embodied processing

Moment-By-Moment-Attunement

- ¥ Because right lateralized emotional processing is tightly linked to embodied and affective signaling
 - ¥ the therapist often tracks sensation, imagery and action tendency
- ¥ It's a way of staying at the level at which the experience is actually organized,
 - ¥ And expressed at its deepest level

Moment-By-Moment-Attunement

- ¥ Tightness in the chest
- ¥ Sinking stomach sensations
 - ¥ Throat constriction
 - ¥ Numbness
 - ¥ Agitation
- ¥ Collapsing postures
 - ¥ Urges the hide
 - ¥ Urges to cling
 - ¥ Urges to attack...

Moment-By-Moment-Attunement & Interoception

- ¥ **The sensing and interpretation of internal bodily signals**
 - ¥ **Conscious**
 - ¥ **Gateway into implicit memory**
- ¥ **Therefore, mediates emotional regulation**

CASE PRESENTATION

¥ Lyndi

¥ Smoking crack for over a year

¥ Raped four times

¥ Multiple rehab hospitalizations

¥ NA meetings

¥ Unable to maintain any employment

¥ Nothing worked

CASE PRESENTATION

¥ **Sara**

¥ **60 years old**

¥ **In high school**

¥ **Unbeknownst to her**

¥ **Given cookies heavily laced with THC**

¥ **Since that time**

¥ **Suffering from severe panic attacks**

Bottom Line

- ¥ Targeting implicit memory is superior, because
- ¥ Characterological dysfunction is implicit by nature
- ¥ Explicit insight does not rewrite procedural predictions
- ¥ Lasting change requires implicit memory reconsolidation
 - ¥ Not reinterpretation
 - ¥ Decartes' error
- ¥ The self is felt before it is thought

Resistance To Daniel Schacter's Neural Research

- **The Field Privileged Conscious Narrative Because Narrative Is Teachable**
- **Psychotherapy training programs heavily emphasize:**
 - **Left Brain Case formulation**
 - **Verbal process**
 - **Meaning-making**
 - **Insight-oriented supervision**

Resistance To Daniel Schacter's Neural Research

- **Why?**
- **Narrative is observable and discussable**
- **It fits manuals, protocol transcripts, and exams**
- **It aligns with how therapists are evaluated**

Resistance To Daniel Schacter's Neural Research

- **Evidence-Based Practice Narrowed What "Counts" as Evidence**
- **As psychotherapy aligned with randomized controlled trials, several distortions occurred:**
- **RCTs favor manualizable, language-based interventions**
- **Outcome measures emphasize symptom reports (explicit cognition)**
- **Implicit change is nonlinear, and context-dependent**
- **Difficult to research formally**

Resistance To Daniel Schacter's Neural Research

- **Schacter's work thrived in:**
- **Neuropsychology**
- **Experimental cognitive neuroscience**
- **But psychotherapy research increasingly rewarded:**
- **Short-term symptom reduction**
- **Cognitive reframing**
- **Explicit skill acquisition**

Resistance To Daniel Schacter's Neural Research

- **Implicit Memory Threatens Therapist Identity**
- **This part is rarely acknowledged openly.**
- **If Schacter is right, then:**
- **Insight is not the primary mechanism of change**
- **The therapist's interpretive brilliance is secondary**
- **Change depends more on how the patient learns than what the therapist explains**
- **That's destabilizing to the psychotherapy community**
- **It shifts the therapist's role from:**
- ***Interpreter of meaning***
to
Architect of learning conditions
- **Many therapeutic identities—and entire schools—were not ready to make that shift.**