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Memory Reconsolidation, Emotional Arousal and the Neuroscience of Enduring Change: Implications for Psychoanalysis

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Lecture #3
Memory-Emotion Interactions

- Multiple types of memory interact with emotion: the basic science underpinning differential psychotherapeutics
- Scientific foundation and evolution of CBT
- Evidence for memory reconsolidation in humans
- Interactions between emotion and episodic memory
    - Flashbulb memories and trauma memories
- Interactions between emotion and schematic memory
    - New research during this fellowship
- Psychoanalytic perspectives: MR (“nachträglichkeit”) and corrective emotional experiences

Which Therapy to Choose?

There are at least 500 different forms of psychotherapy.

When is psychoanalysis or psychodynamic therapy indicated?

Psychoanalysis Is Not for Everyone

"Providing psychoanalysis for all mental health problems is like trying to solve the transportation problem by giving everyone a Rolls Royce." (1972)

Is Psychotherapy Like An Automobile?

- There are hundreds of makes and models
- Some are faster and some are slower
- Some people are city drivers; others want “off road”
- Some want electric cars and others are OK with gas
- But don’t all cars basically work the same way –
  and don’t all help you to get where you are going?
- Yes – perhaps they do
- But maybe it matters what your goals are:
  - People are not all starting from the same place
  - People are not all going to the same place
- Perhaps on-line approaches are more like public transport

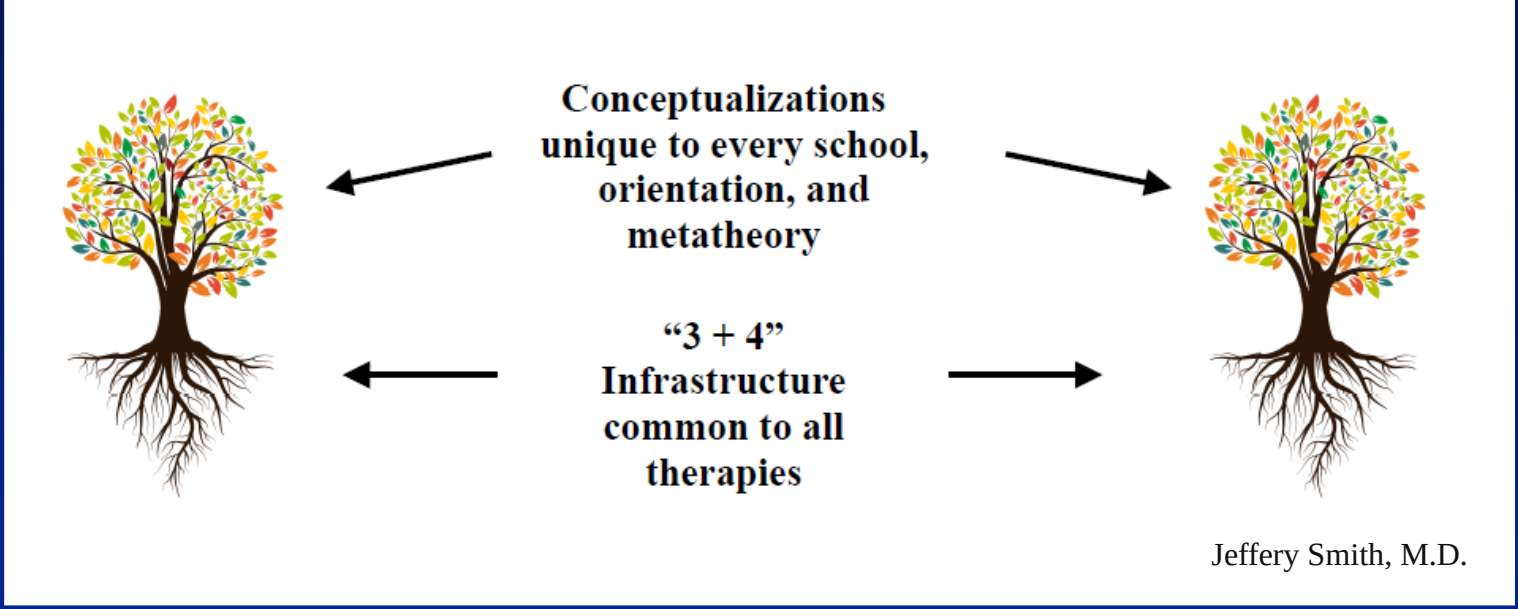
Common Factors vs. Specific Mechanisms in Psychotherapy (and Pharmacology)

- A strong therapeutic alliance, higher ratings of therapist empathy, positive regard, genuineness, and more favorable outcome expectations are related to improved treatment outcomes
- Debate continues regarding whether psychotherapy outcomes are most strongly determined by these common factors or by factors specific to the type of therapy used
- An integration of the two perspectives and a shift toward evaluating mechanisms is a way to move the field forward

Browne J, Cather C, Mueser K. Common Factors in Psychotherapy. *Oxford Research Encyclopedia of Psychology.* 2021.

- Consider meds for asthma, hypertension, pain, bacterial infection
  - common factors: bioavailability, few side effects, half life
  - specificity matters when targeting specific pathophysiology

Common Factors and *Common Mechanisms*



3 Final Pathways	3 Key Steps	4 Facilitating Factors
New Learning (outcompetes)	Reactivate	Arousal regulation
Extinction (suppresses)	Revise	Motivation
Memory Reconsolidation (updates)	Reinforce	Safety
		Relationship

Elsey, van Ast and Kindt Critique

- It is premature to invoke MR as an explanation for change in Tx until it has been demonstrated
- It has not yet been possible to demonstrate change (eliminating symptoms as an outcome) in anxiety disorders based on a classical conditioning model, which is the closest human analogue to animal research where MR has been demonstrated
- Explaining what is already being done in therapy based on MR is a major error

Elsey, J. W., Van Ast, V. A., & Kindt, M. (2018). Human memory reconsolidation: A guiding framework and critical review of the evidence. *Psychological Bulletin*, *144*(8), 797.

Requirements for Demonstrating Memory Reconsolidation (Elsey, Van Ast and Kindt, 2018)

- Reactivation x Manipulation interaction
- Time dependency
  - intervene within time window of 4-6 hours
- Memory specificity
- Dissociation of immediate and delayed effects
  - sleep is necessary for reconsolidation
  - demonstrate altered memory the next day and in long-term follow-up (e.g. 1 year)

Different Types of Memories with Emotional Content

1) Classical conditioning
   associative learning that involves pairing a CS and US
2) Associative learning
   emotionally neutral content + unrelated emotional arousal
3) Reinforcement learning
   affective consequences of an action change its value
4) Procedural memory (as a way of regulating emotion; BCPSG)
5) Episodic memories with strong emotional content vs. those without
   e.g. trauma memories
6) Semantic memories (e.g. schemas) with inherent emotional content
   such as implicit affective learning, e.g. see Ecker
7) A combination of schemata
   internal working model of the social world

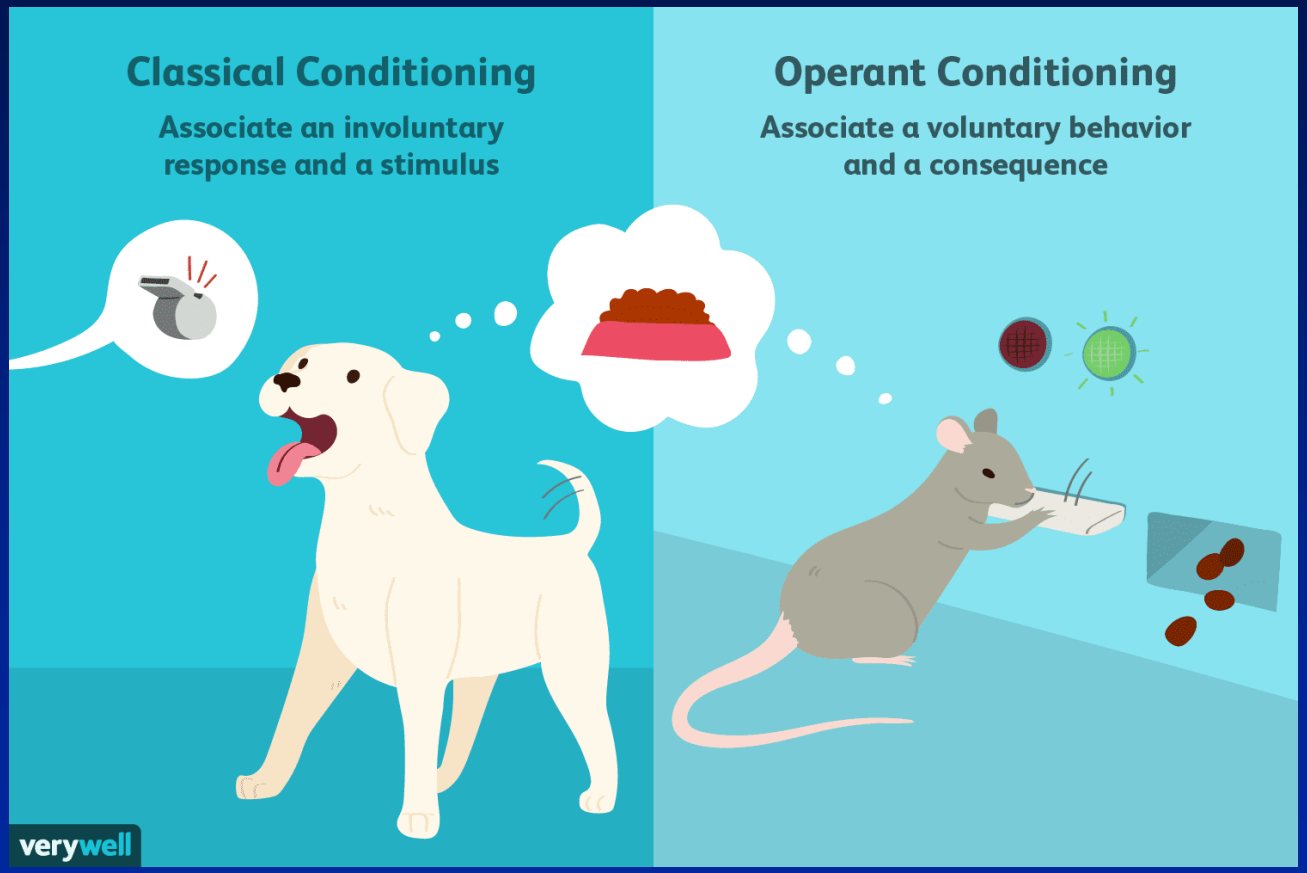
Is Animal Research Relevant to Psychoanalysis?

- Are we rats pressing levers for rewards?
- No
- Don't we have free will? Aren't we self-aware, able to reflect upon our experiences, and interested in the meaning of our experiences, unlike other creatures?
- Yes
- However, a fundamental starting point for Freud is that humans are animals with basic drives; how can these be reconciled with the demands of civilization?
- Learning mechanisms that we've retained through our evolutionary history are relevant and important

Important Milestones in the History of CBT (Mark Starr PhD & James Simms PhD 11/3/21)

Classical Conditioning (stimulus) vs. Operant Conditioning (response)

CS-US Pairing



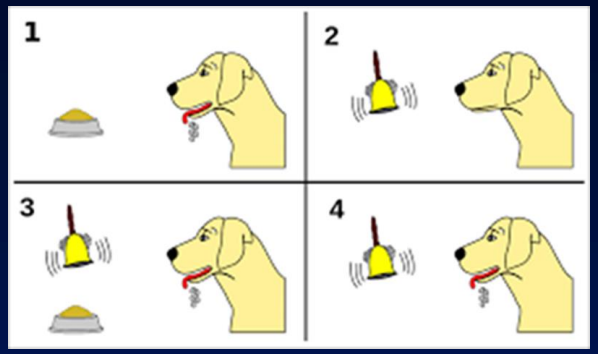
Reward value of actions

Pavlov, 1897

Skinner, 1937

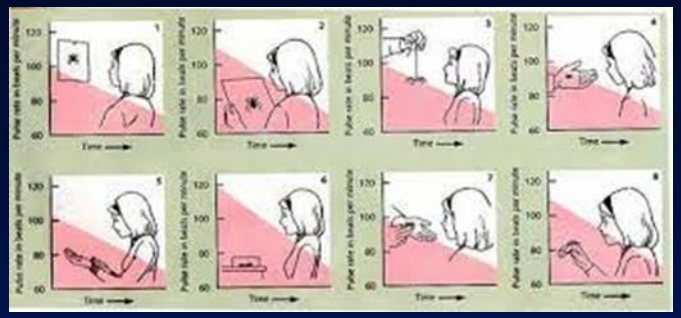
Mowrer's 2-Factor Model of Avoidance Learning (1947)

- Sought to integrate monistic theories of learning
- Given that classical conditioning leads to extinction unless pairing repeated, how can CC explain clinical anxiety?
- Operant conditioning includes positive reinforcement and negative reinforcement
- Negative reinforcement: avoiding something negative is reinforcing (turned out better than expected)
- e.g. Avoidance of parking lot where assaulted reinforces the CS (parking lot) – US (assault) association
- The combination of the two can explain clinical anxiety



Current Examples of How Extinction Can Be Enhanced

- Increase the number of extinction trials
- Switching contexts to avoid context specificity
- Presenting aversive outcome or non-extinguished cue together with an extinguished cue
- Replacing aversive outcome with a novel non-aversive outcome
- These adjustments can enhance the strength and generalizability of extinction
- This illustrates the benefits of a validated model for improving and refining clinical interventions

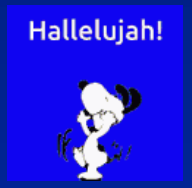


Systematic Desensitization (Wolpe 1958)

- Attempts to pair conditioned fear with relaxation failed
- Wolpe posited reciprocal inhibition: an individual cannot be relaxed and anxious simultaneously
- A hierarchy of the patient's fears is developed
- Patients are systematically exposed to increasingly threatening stimuli
- Through counter-conditioning, a relaxation response to a phobic stimulus is achieved
- Patients improve distress tolerance: learn to tolerate and improve functioning in anxiety-provoking contexts

Cognitive Revolution and the Advent of CBT (1950s - 1960s)

- Psychoanalysis focused on unconscious determinants of behavior (difficult to observe and measure)
- Learning theory focused on environmental determinants of behavior (much easier to observe and measure)
- New observation: the way we interpret stimuli influences emotion and behavior
- The mind matters (again)!!



- Albert Ellis (1950s): rational emotive therapy
- Aaron Beck (1960s): cognitive behavior therapy
- Pts identify irrational beliefs and negative thought patterns and change them to improve mood and behavior

Bioinformational Theory of Emotional Imagery (Lang, 1977)

- Imagery, not just thoughts, can evoke an emotional response
- The image in the brain is indicative of a conceptual network, controlling specific somatovisceral patterns constituting a prototype for overt behavioral expression
- Emotional imagery may elicit similar physiological responses in both peripheral and central nervous systems as would be evoked during actual experience
- This advance permitted the advent of behavioral fear extinction through imaginal exposure therapy
- More recently, subliminal exposure to images of feared stimuli can induce extinction to conditioned fear

Emotion Processing Theory
Rachman (1980); Foa & Kozak (1986)

- Rachman (1980) described "emotion processing" -- the processes by which emotional disturbances are absorbed and dissipate including experiencing and expressing the distress
- Foa and Kozak (1986): exposure therapy doesn't work simply by inhibiting CS-US associations; an essential ingredient is the experience of safety
- Introduction of *corrective information* during the exposure and additional cognitive processing is imperative for success
- The concept of corrective experience is now widely seen as useful across a variety of psychotherapy modalities (Costanguay & Hill, 2012)
- However, there is no consensus about how they work, e.g. is emotional experience necessary, or just prediction error updating priors?

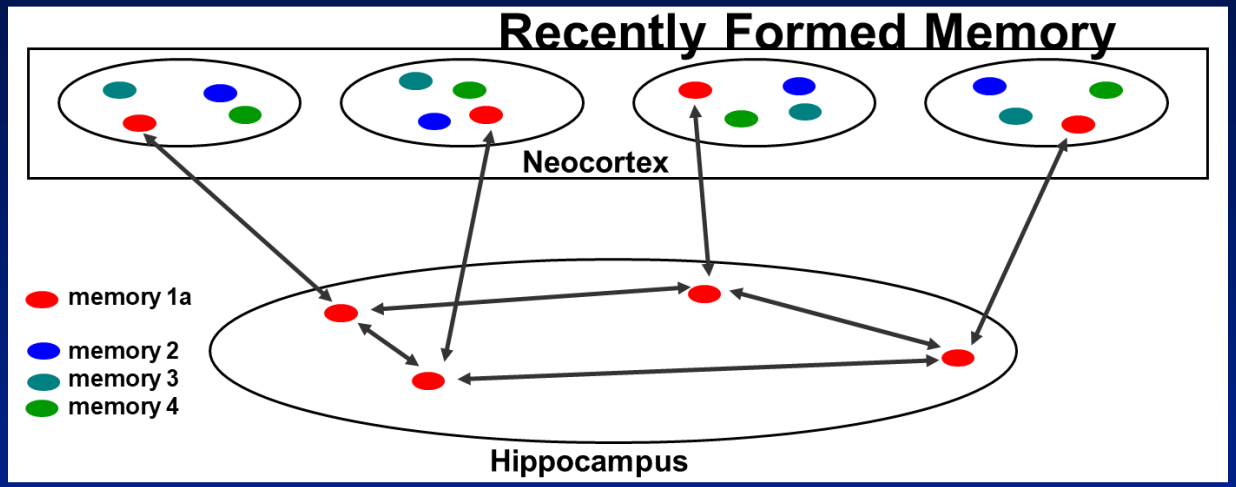
Three Essential Ingredients for Enduring Change in Psychotherapy

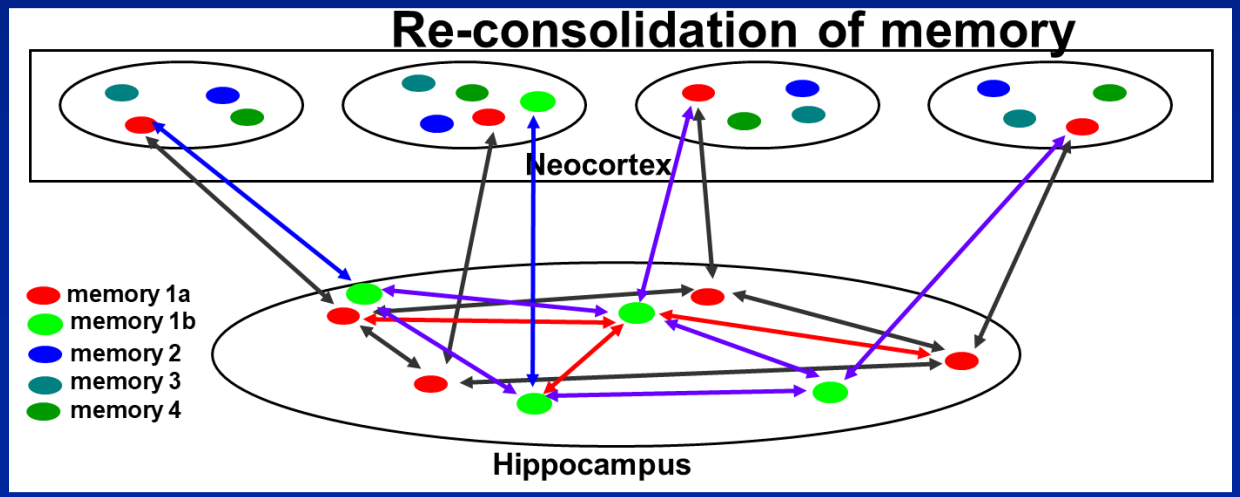
- Activate old memories and old feelings (with or without awareness of their connection to the past)
- Concurrently engage new emotional experiences that change old memories through reconsolidation
- Reinforce the strength of new memories and their semantic structures by practicing new ways of behaving and experiencing the world in a variety of contexts

Multiple Trace Theory (Nadel & Moscovitch, 1997)

- Previously the hippocampus was only thought to participate in the creation of new memories; role ends with consolidation
- Amnesia typically characterized by an inability to make new memories (anterograde memories)
- However, patients with amnesia showed unexpected deficits in details of remote memories (retrograde memories)
- This suggested that remote memory was changing over time
- Perhaps the role of the hippocampus was not time-limited
- MTT, a forerunner of MR, redefined memory as undergoing constant revision
- Retrieval itself puts the memory in a labile, transformable state

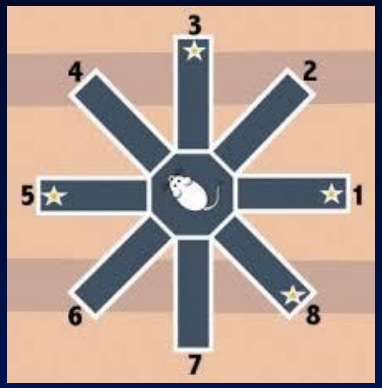
Multiple Trace Theory (Nadel & Moscovitch, 1997)





- H-traces are distributed ensembles
- H-traces act as an index to the distributed cortical regions that represent various aspects of the episode

- The H-C complex is the episode memory trace; the H trace not only binds elements in C, but is the repository of critical episodic components (eg., contextual detail)
- Reactivation/retrieval occurs in a different context and results in a new sparsely distributed ensemble H-trace



First Proof of Memory Reconsolidation: Pryzbyslawski & Sara, 1997

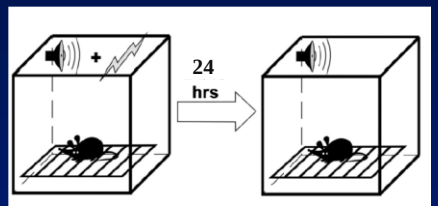
Behavioural Brain Research, *84*(1-2), 241-246

- NMDA receptors play an important role in experience-dependent neuroplasticity
- Blocking NMDA receptors interferes with synaptic changes associated with learning
- This study examined timing of i.p. injection of an NMDA antagonist in rats after various stages of learning a maze task to assess when these receptors play a role
- They observed that for a task that was already well-learned, injection up to 3 hours after a new trial disrupted performance 24 hours later, suggesting that the memory was made labile by reactivating it

Fear memories require protein synthesis in the amygdala for reconsolidation after retrieval

Karim Nader, Glenn E. Schafe & Joseph E. Le Doux

Replication and Extension
Different kind of learning
Different drug
More anatomical specificity
More controls



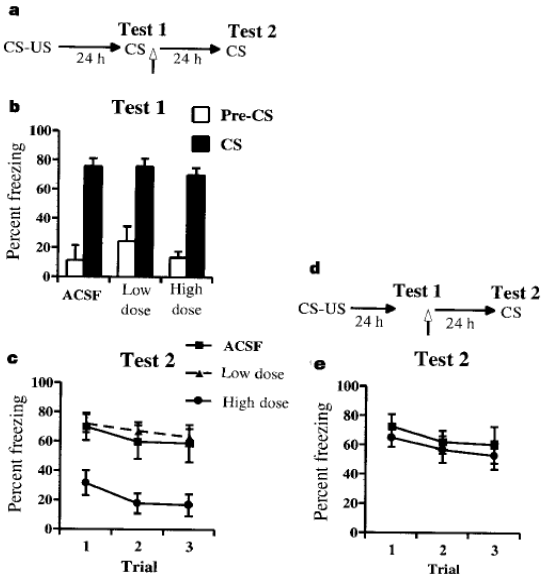


Figure 2 A test of whether consolidated fear memories can become labile when reactivated. **a**, The behavioural procedure used for experiment 1A. **b**, Freezing to the CS on test 1 was comparable across groups and was specific to the CS. **c**, Intra-LBA anisomycin infusions after reactivation of a consolidated fear memory produce amnesia for the original learning, as measured on test 2. **d**, **e**, Rats demonstrated normal memory if the CS was omitted before anisomycin. **d**, The behavioural procedure used for experiment 1B. Rats were placed in the test chamber and received infusions of anisomycin. **e**, Percent freezing on test 2. Figure legend is applicable to both **c** and **e**. Vertical open-headed arrows represent infusions. All data points represent group means ± s.e.m.

Nature 2000; 406: 722-726

Known: protein synthesis is necessary for memory consolidation
Rats were conditioned by pairing a tone (CS) with a foot-shock (US)
Wait 24 hours (sleep; protein synthesis)
Exposure to the CS → freezing
Untrained tone → no freezing
Anisomysin only → freezing
CS + anisomysin → no freezing
Reactivation of the memory (CS only) puts the memory in a labile state
Injection of a protein synthesis inhibitor into the amygdala erased the memory
We now think that whenever memories are retrieved they are available for updating and then *re*consolidated with new information presented in the labile state.

Memory Reconsolidation in Healthy Volunteers

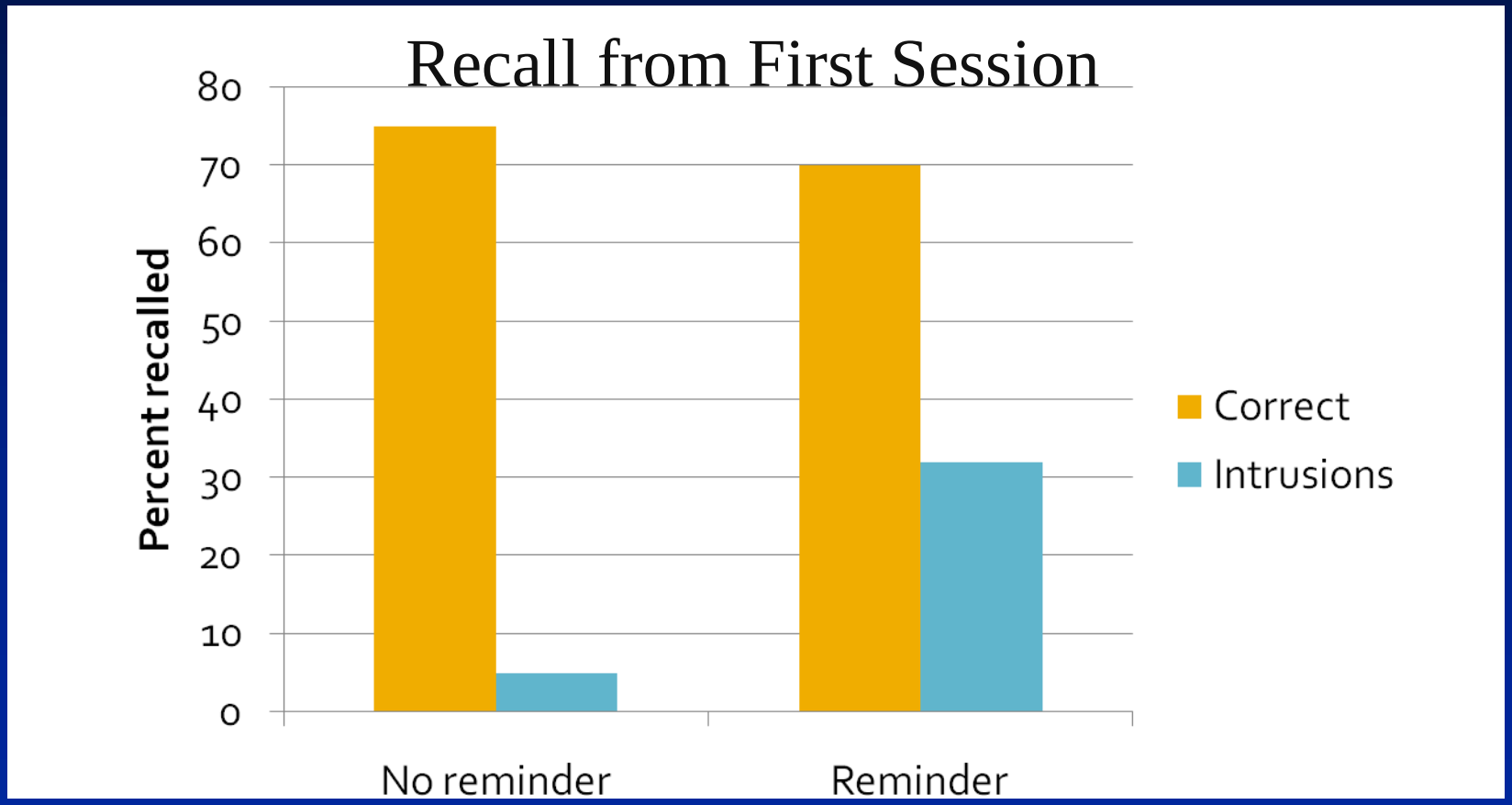
Hupbach et al. (2008)

- First session, learn new information (lists, stories)
- Second session, half of subjects given a reminder of the first session (same room, experimenter, question about the event)
- Then learn new set of information (lists, stories)
- Two days later, tested for their memory for the information in the *first* session

Hupbach, A., Gomez, R., Hardt, O. & Nadel, L. (2007) Reconsolidation of episodic memories: A subtle reminder triggers integration of new information. Learning and Memory 14(1–2):47–53.

Hupbach, A., Hardt, O., Gomez, R. & Nadel, L. (2008) The dynamics of memory: Context-dependent updating. Learning and Memory 15(8):574–79.

Memory Reconsolidation in Healthy Volunteers



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Meta-Analysis: Episodic Memory Change Due to Memory Reactivation and the Addition of New Information

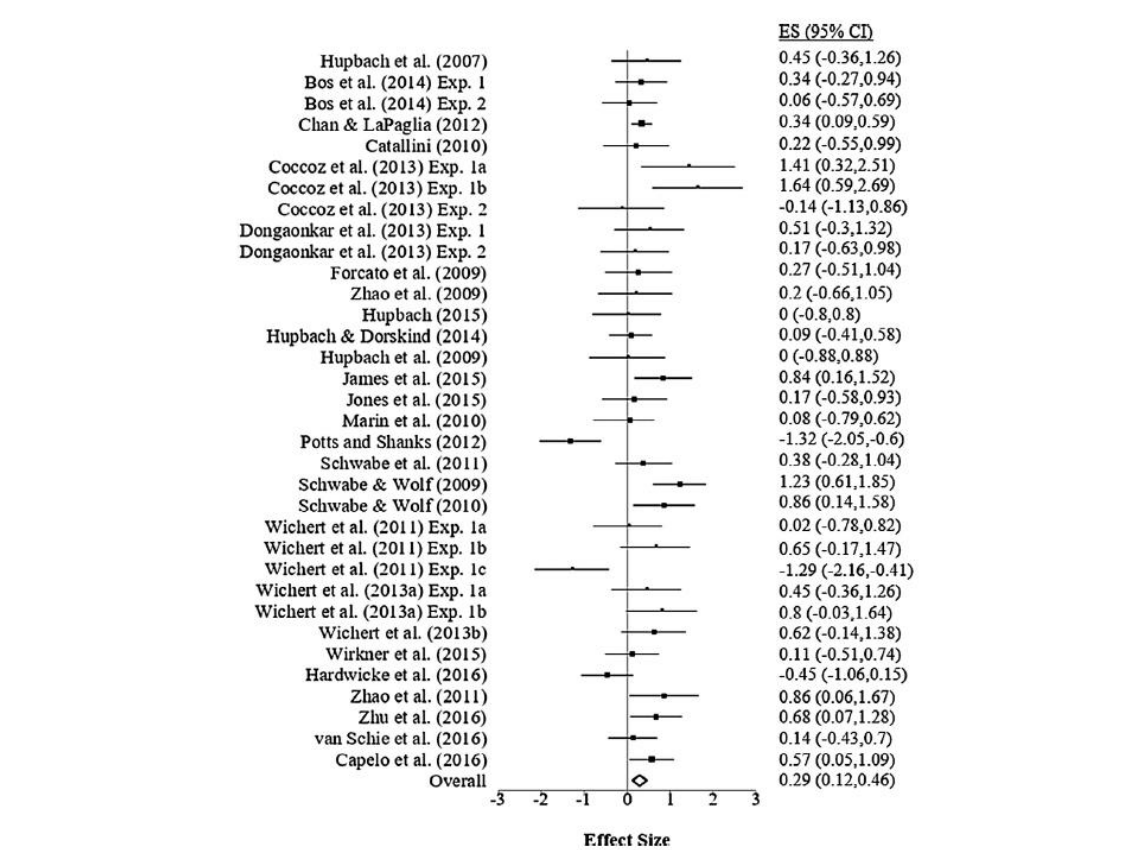

Fig. 1. Forest plot of effect sizes and 95% confidence intervals for the retrieval meta-analysis. A positive effect size indicates that the reactivation group had greater change in memory than the control group.

Scully, I. D., Napper, L. E. & Hupbach, A. Does reactivation trigger episodic memory change? A meta-analysis. Neurobiol. Learn. Mem. 142, 99–107 (2017).

Overall effect is small but significant (d=.29, p<.001)

Larger effect for:

Older memories (d=.53, p<.001)

Narrative memories (d=.65, p<.001)

Large effect for Number of intrusions (d=1.03, p<.001)

CITATION
Elsey, J. W. B., Van Ast, V. A., & Kindt, M. (2018, May 24). Human Memory Reconsolidation: A Guiding Framework and Critical Review of the Evidence. *Psychological Bulletin*. Advance online publication. http://dx.doi.org/10.1037/bul0000152

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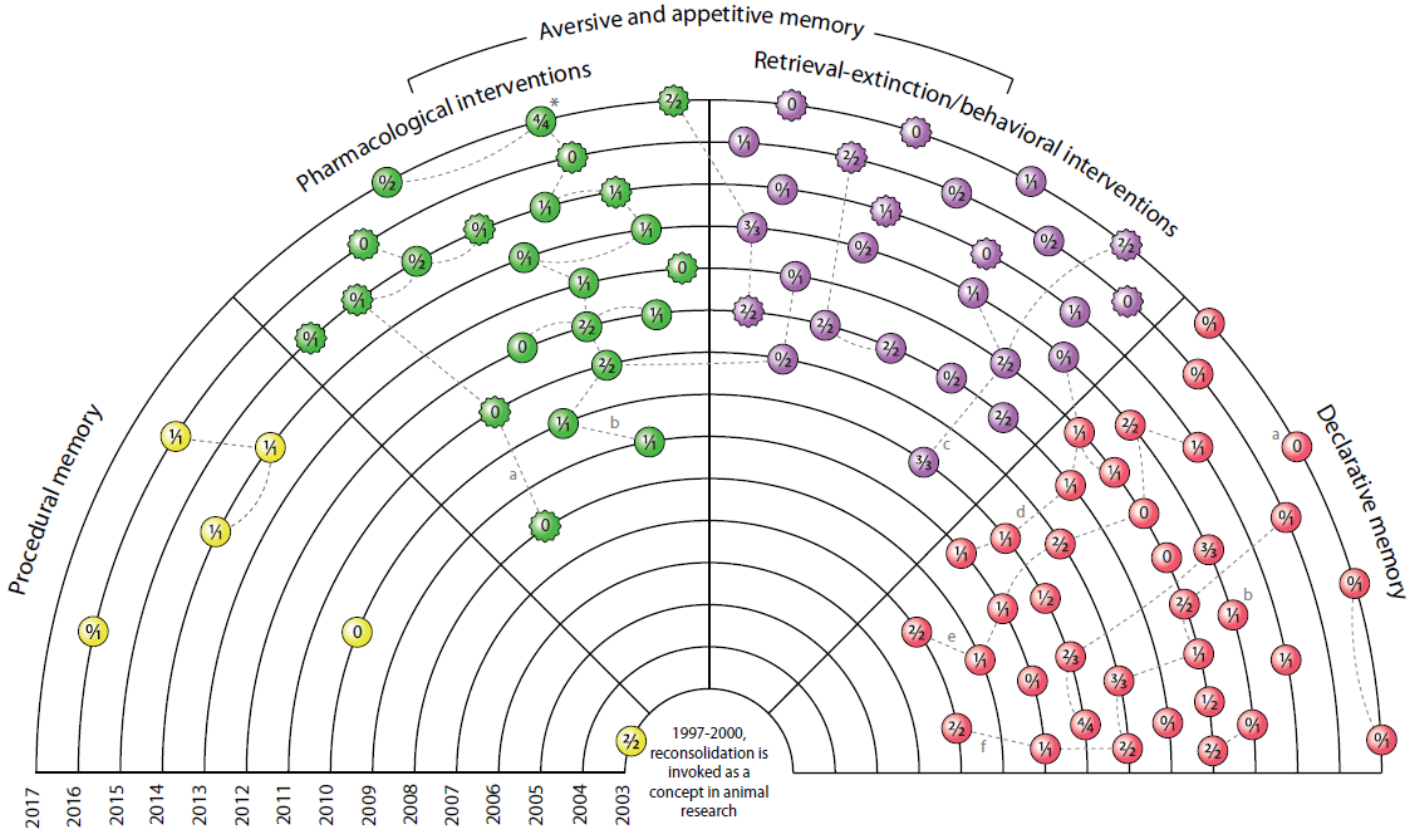
Psychological Bulletin

0033-2909/18/$12.00

http://dx.doi.org/10.1037/bul0000152

Human Memory Reconsolidation: A Guiding Framework and Critical Review of the Evidence

James W. B. Elsey, Vanessa A. Van Ast, and Merel Kindt
University of Amsterdam



Alternatives to and Variations of Memory Reconsolidation

Alternatives

- Extinction: creating a new memory that suppresses the old
- Enhanced retrieval competition
    1) new learning out-competes the old
    2) retrieval of pre-existing memory is enhanced
- Impaired retrieval of problematic memory

Variations on MR (altering the memory itself)

- Updating (adding new content/revising old content)
- Erasure
- Weakening
- Strengthening

Updating Memories: Time Course of Change

- Episodic -- easiest to update
- Semantic – harder to update
- Procedural / Habit – hardest to update

Emotional Arousal Enhances Memory Encoding

Synaptic plasticity, which is the molecular basis for encoding memories, is enhanced by the neurotransmitters and hormones (e.g. norepinephrine, cortisol) that are activated by emotional arousal.

Schwabe L, Joëls M, Roozendaal B, Wolf OT, & Oitzl MS. Stress effects on memory: An update and integration. *Neuroscience & Biobehavioral Reviews*. 2012; 36:1740-1749.

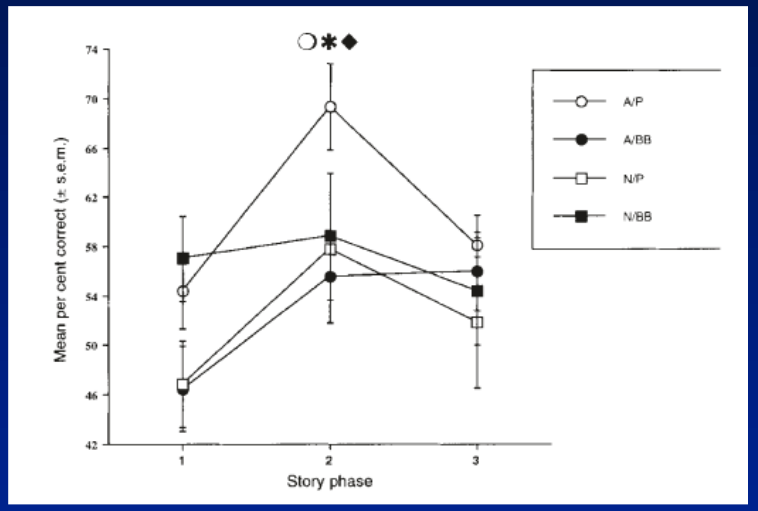
Propranolol Blocks Encoding of the Emotional Content of Episodic Memory (Cahill, 1994)

- Participants took propranolol (PPL) or placebo prior to hearing a story that had neutral details or both emotional and neutral details
- 2 days later they returned for a surprise memory test
- The placebo group had more accurate memory for the emotional details
- The PPL group's recall of emotional details was blunted and accuracy for emotional details was comparable to recall for the neutral details

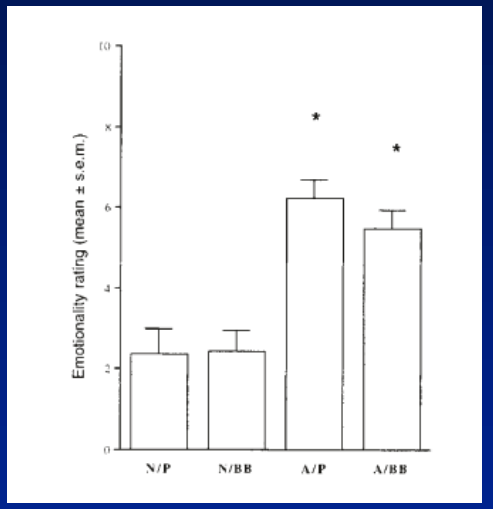
Details of 1994 Emotional Memory Study by Cahill and Colleagues

BOX 1 Narratives accompanying slide presentation

Slide	Neutral version	Arousal version
1.	A mother and her son are leaving home in the morning.	A mother and her son are leaving home in the morning.
2.	She is taking him to visit his father's workplace.	She is taking him to visit his father's workplace.
3.	The father is a laboratory technician at Victory Memorial Hospital.	The father is a laboratory technician at Victory Memorial Hospital.
4.	They check before crossing a busy road.	They check before crossing a busy road.
5.	While walking along, the boy sees some wrecked cars in a junk yard, which he finds interesting.	While crossing the road, the boy is caught in a terrible accident, which critically injures him.
6.	At the hospital, the staff are preparing for a practice disaster drill, which the boy will watch.	At the hospital, the staff prepare the emergency room, to which the boy is rushed.
7.	An image from a brain scan machine used in the drill attracts the boy's interest.	An image from a brain scan machine used in a trauma situation shows severe bleeding in the boy's brain.
8.	All morning long, a surgical team practised the disaster drill procedures.	All morning long, a surgical team struggled to save the boy's life.
9.	Make-up artists were able to create realistic-looking injuries on actors for the drill.	Specialized surgeons were able to re-attach the boy's severed feet.
10.	After the drill, while the father watched the boy, the mother left to phone her other child's pre-school.	After the surgery, while the father stayed with the boy, the mother left to phone her other child's pre-school.
11.	Running a little late, she phones the pre-school to tell them she will soon pick up her child.	Feeling distraught, she phones the pre-school to tell them she will soon pick up her child.
12.	Heading to pick up her child, she hails a taxi at the number nine bus stop.	Heading to pick up her child, she hails a taxi at the number nine bus stop.



Recall Accuracy



Arousal Rating of Story

Cahill, L., Prins, B., Weber, M., & McGaugh, J. L. (1994). β-Adrenergic activation and memory for emotional events. *Nature*, *371*, 702-704.

Emotion Enhances Encoding and Retrieval of Episodic Memories

- Mood-congruent memory (more easily recalling memories when in a similar mood) is well established
- Emotional details of an episodic memory are selectively retrieved relative to peripheral details
- Emotion enhances memory for simultaneously presented neutral stimuli
- Emotion enhances memory for subsequent neutral stimuli
- Emotion even enhances memory for previous neutral stimuli
- Conclusion: emotion strongly influences both encoding and retrieval of episodic memories

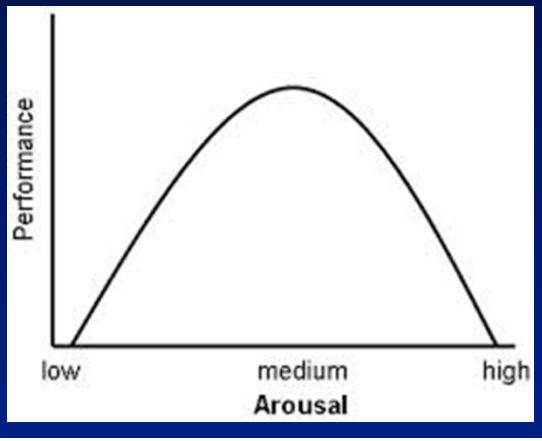
Behavioral Tagging
Dunsmoor et al. Nature 2015

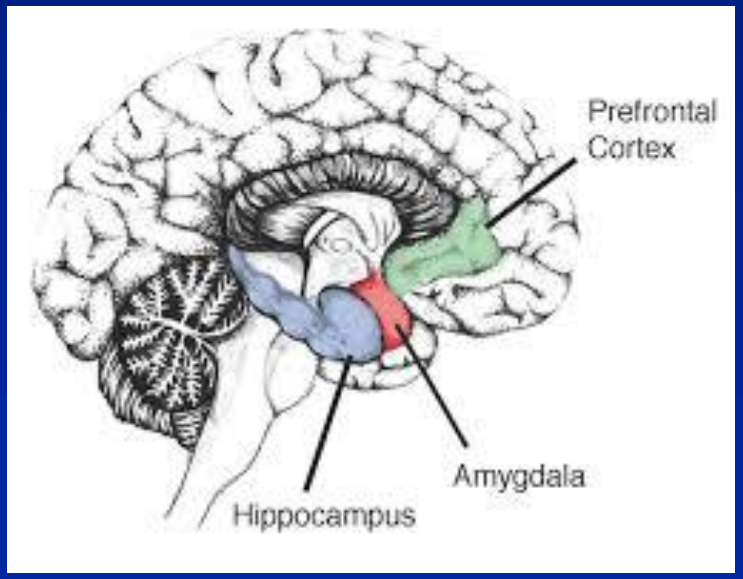
- Subjects viewed pictures of tools and animals
- A short time later a shock was delivered while viewing a tool or animal not previously seen
- This resulted in improved recall only for the items in the same category as the shock in a surprise memory test 6 h or 24 h later, but not immediately, suggesting that consolidation was necessary
- Strong encoding enhances learning of related items that were previously only weakly encoded
- Dopamine released by the shocks may be a mediator

Flashbulb Memories

- A flashbulb memory is a vivid, long-lasting memory about a shocking event that happened in the past
- Subjects interviewed a few days, 11 months, 3 yrs and 10 yrs after 9/11
- There was a surprising decrement in personal detail recall at 11 months
- But confidence in the memory was high!
- Memory stabilized and was then consistent at 11 mos, 3 and 10 years
- Even strong memories are malleable!

Emotional and Contextual Encoding During Trauma May Be Impaired



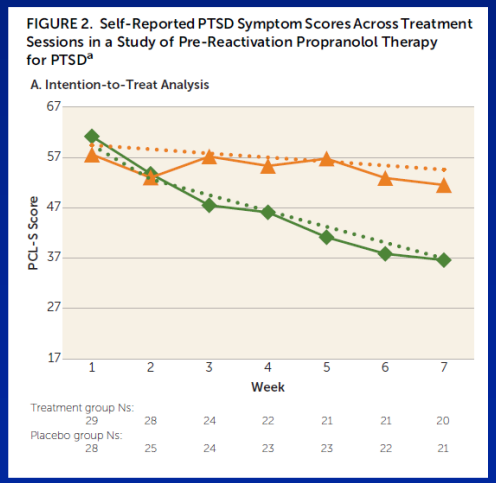


- If arousal level is too high, the hippocampus cannot adequately encode context
  - This can lead to over-generalized sensitivity to threat cues
- Hyperarousal impairs MPFC-amygdala encoding of specific emotions
- Improvement of PTSD symptoms with CBT involves top-down modulation by the PFC (extinction)

Use of Propranolol to Promote Reconsolidation of Traumatic Memories

Reduction of PTSD Symptoms With Pre-Reactivation Propranolol Therapy: A Randomized Controlled Trial

Alain Brunet, Ph.D., Daniel Saumier, Ph.D., Aihua Liu, Ph.D., David L. Streiner, Ph.D., Jacques Tremblay, M.D., Roger K. Pitman, M.D.



- Preponderance of the evidence supports PPL relative to placebo
- Still need to rule out other factors
  - extinction
  - PPL impairs retrieval of CC learning
- Note: Cahill gave PPL *before* encoding

American Journal of Psychiatry 2018: 175(5), 427-433

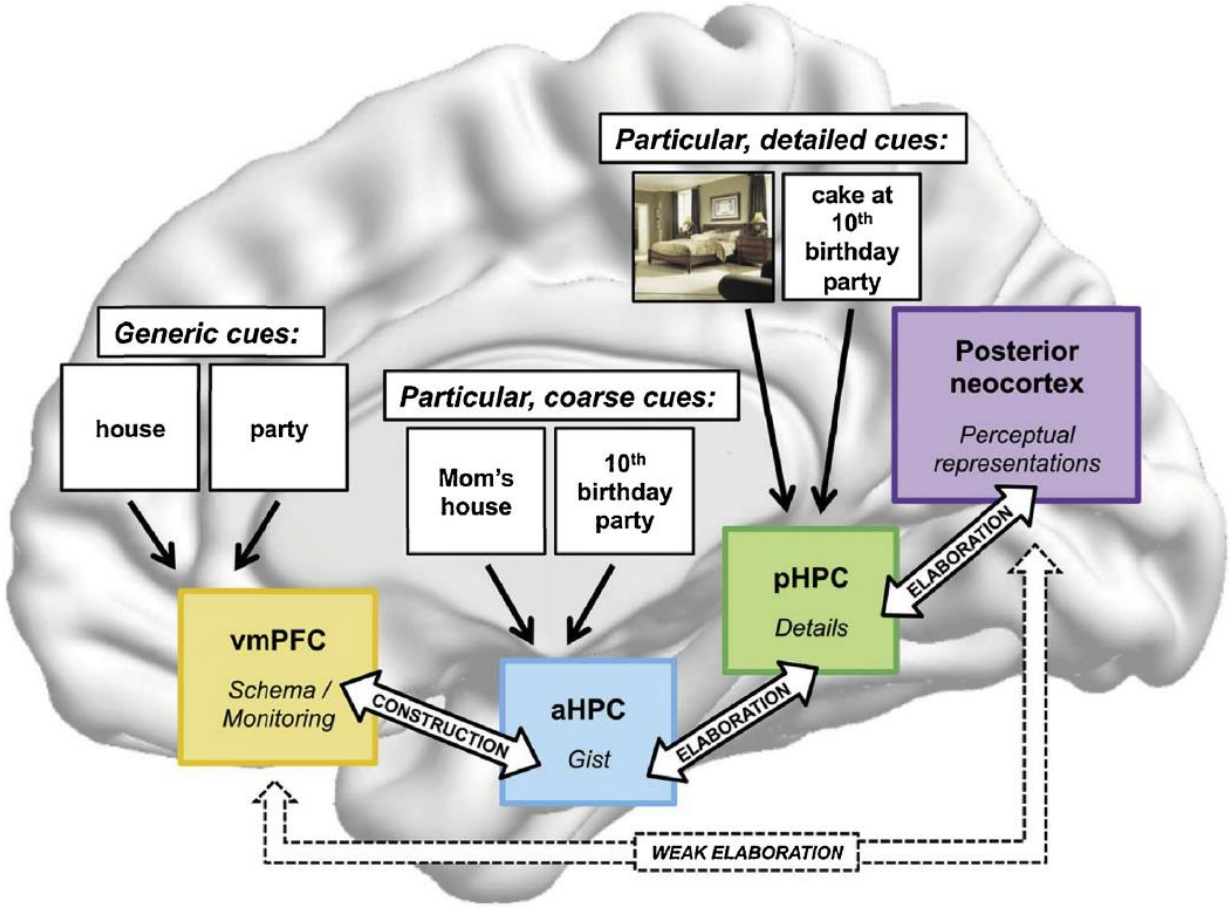


Fig. 1. Schematic of the representations mediated by hippocampus and medial prefrontal cortex and their interactions (from [26]).
Activations of the medial prefrontal cortex (mPFC), anterior hippocampus (aHPC), posterior hippocampus (pHPC), and the interactions among them, are influenced by the nature of the information the structures help represent, the type of cues used to elicit memories, and the goals of the memory task. Thus, generic cues will preferentially engage the ventral (v)mPFC and the schemas it represents; particular cues at a coarse level of detail will engage the aHPC and gist representation; and particular cues at a fine level of detail will engage pHPC and representation of details. This organization applies equally to memory for events and locations. In response to generic or particular cues, the initial phases of memory retrieval involve memory construction, which implicates interactions between vmPFC and aHPC, likely via entorhinal cortex [118]. Later phases in which the memory is fleshed out with details, involve a process of elaboration that recruits pHPC and interactions with posterior neocortex, including parietal and occipital regions involved in perceptual representations. If the cue is highly detailed, the pHPC may be engaged directly via a process of pattern completion. If the hippocampus is damaged, or memory is highly schematic, the vmPFC and posterior neocortical regions may interact directly to generate a less detailed representation [23].

Sekeres, M. J., Winocur, G., & Moscovitch, M. (2018). The hippocampus and related neocortical structures in memory transformation. *Neuroscience letters* 680; 39-53.

New Pre-Clinical Research on Schematic Memory Updating

Article

Neuron

A Map for Social Navigation in the Human Brain

Highlights

- Power and affiliation guide social interactions in many species
- Participants interacted with characters in a role-playing game during fMRI
- Hippocampal activity located each character in a 2D power-affiliation "map"
- Participants' social skills correlated with more distinct hippocampal paths

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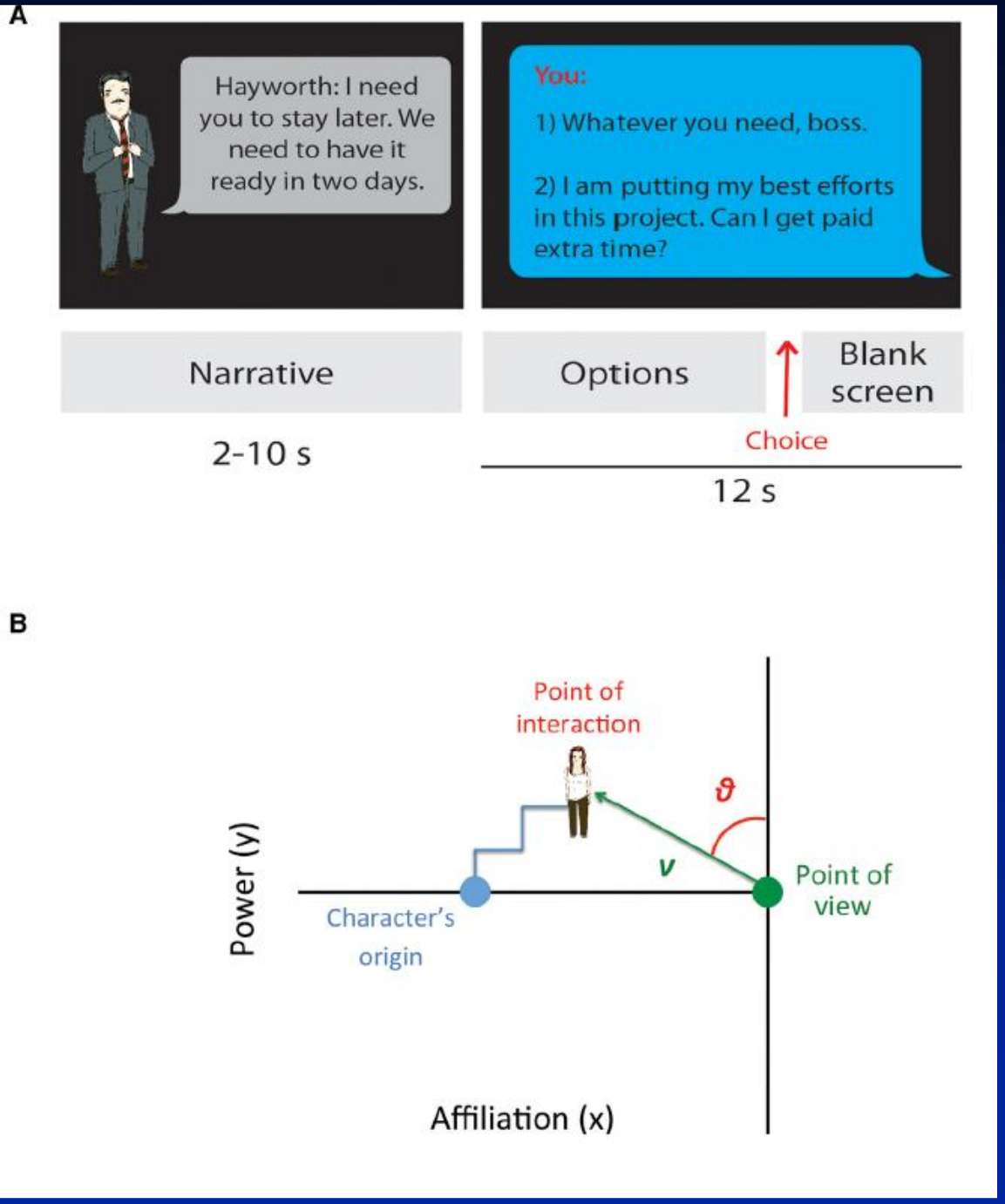
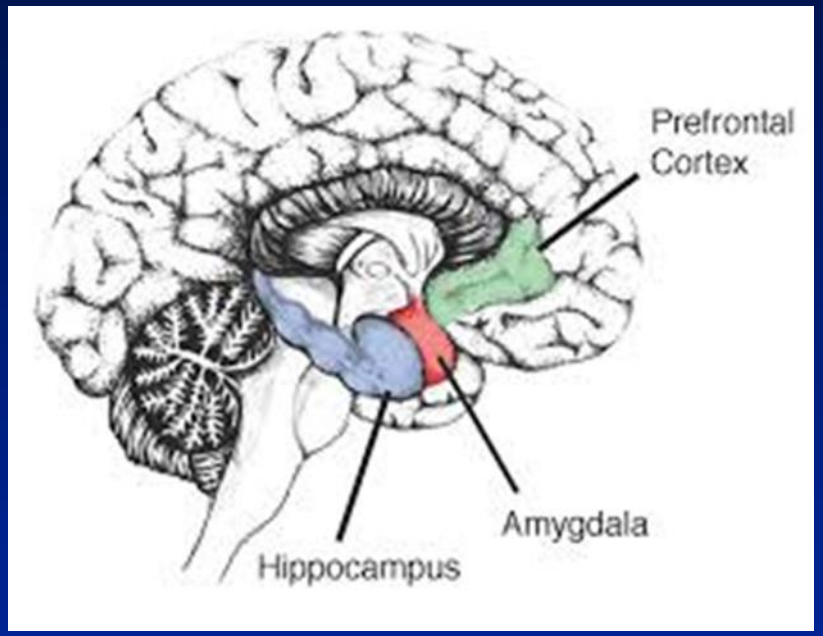
In Brief

How do we navigate social relationships? Tavares et al. found that when people interacted with others in a virtual neighborhood, hippocampal activity correlated with movement through an abstract, two-dimensional social space framed by power and affiliation: a social cognitive map.

Tavares et al. Neuron 2015; 87: 231-243


A
Hayworth: I need you to stay later. We need to have it ready in two days.
You:
1) Whatever you need, boss.
2) I am putting my best efforts in this project. Can I get paid extra time?
Narrative
Options
Blank screen
Choice
2-10 s
12 s
B
Point of interaction
ϑ
v
Power (y)
Character's origin
Point of view
Affiliation (x)

Pilot fMRI Study of Emotional Updating of Social Schematic Memory in Lausanne



- Can schematic memory be updated by new emotional information?
- Does this updating increase trust in the other person?
- Does such updating involve interactions between the amygdala, hippocampus and prefrontal cortex?

Freud's Concept of Nachträglichkeit

- In 1895 and 1896, when psychoanalysis began, Freud described memory retranscription and "deferred action:" "the pathogenic effect of a traumatic event occurring in childhood...[manifesting] retrospectively when the child reaches a subsequent phase of sexual development."
- Freud's theory of deferred action can be simply stated: memory is reprinted, so to speak, in accordance with later experience
- Freud used the concept again in the Wolf Man case (1918)
- Although he never offered a definition, much less a general theory, of deferred action, it is generally accepted that Freud viewed it as part of his conceptual repertoire

Nachträglichkeit After Freud

- Lacan (1953): "the real implication of the *nachträglich*, for example, has been ignored, though it was there all the time and had only to be picked up…"
- Laplanche (1992): “Freud's concept of deferred action contains both great richness and great ambiguity between retrogressive and progressive directions.”
- Psychoanalysts have used the concept to understand the transformative effect of interpretation on previous understandings and personal narratives
- It has not yet been used to describe a general model of enduring change within psychoanalysis

The Corrective Emotional Experience (F. Alexander and T. French, 1946)

The “corrective emotional experience” was the fundamental therapeutic principle of all “etiological psychotherapy.” In their definition it meant "to reexpose the patient, under more favorable circumstances, to emotional situations which he could not handle in the past. The patient, in order to be helped, must undergo a corrective emotional experience suitable to repair the traumatic influence of previous experiences… Intellectual insight alone is not sufficient."

Psychoanalytic Therapy: Principles and Application, 1946.

Historical Objections to the Concept of Corrective Emotional Experiences By Psychoanalysts

- Contrived -- not part of the natural process
- Artificial – creates manufactured, unrealistic experiences
- De-emphasis on interpretation and insight
- Unneeded emphasis on emotional experiences
- Does not adequately take into account the transference relationship with the therapist

Corrective Emotional Experiences

or

Corrective Emotional Relationship ?

Corrective Emotional Relationship

- Retains primary focus on the transference as the focal point of therapeutic interaction in psychoanalysis
- Bypasses conceptual baggage of CEEs
- Captures and highlights abundant, relevant implicit as well as explicit emotional processes in the therapeutic interaction
- Provides repeated emotional responses and experiences inconsistent with expectation while old memories and old feelings (transference) are activated, entirely consistent with how MR works
- Provides a plausible explanation for how emotion-laden schematic memories that are older, stronger and more differentiated can be *slowly* updated over time

David Sander's SEPI 2021 Plenary Talk: Influence of "Appraised Concern-Relevance" on Implicit and Explicit Memory

- Amygdala originally thought to evaluate and mediate fear
- Amygdala, in communication with the prefrontal cortex, now thought to evaluate the emotional significance of stimuli more generally
- Emotional significance = what is of concern and relevant to the individual
- Experimental evidence: appraised concern-relevance strongly influences emotional attention and strongly affects the influence of emotion on explicit (e.g. episodic) and implicit (classical conditioning) memory

The Appraisal Component of Emotion Determines *the Content* of Updating

- The arousal component of emotion facilitates encoding
- The appraisal component determines *what* is encoded and determines future predictions, critical to social perception
- A corrective emotional experience (CEE) in therapy has both components
- This means that CEEs directly change future construals without the need for explicit interpretation or conscious understanding
- It's an illustration of how "a new way of experiencing self with other" can have transformative effects without interpretation

How to Promote Memory Reconsolidation in Psychoanalysis

- The goal is to change the internal working model of social relationships
- Insight consists of understanding what the internal working model is, but understanding alone doesn't change the working model
- Talking about emotions – without experiencing and expressing them – does not change the emotional elements of the schematic memory
- New emotional experiences *update* the internal working model and thus change how future situations are construed and responded to e.g. instead of anticipated ridicule, shame and rejection the analyst responds with compassion, empathy and acceptance
- The implicit emotional messages inherent in an interpretation may matter more than the words used to promote insight
- Insight likely extends the gains achieved from new experiences

Conclusions

- Psychotherapy across a range of modalities addresses mal-adaptive emotional learning (memory-emotion interactions)
- A variety of types of memory interact with emotion, contributing to a range of disorders and a range of treatments
- CBT and related modalities have a strong tradition of basing interventions on validated scientific principles
- Psa and PDT have fallen into disfavor because of a history of rejecting objective research as useful, and thus lag behind
- Psa and PDT have demonstrated effectiveness but the mechanisms of enduring change remain to be elucidated

Conclusions

- Schematic memories capture more complex patterns of dysfunction comprising RMPs that transcend specific situations and time periods
- Neurobiological understanding of schematic memories and their updating through reconsolidatin of new emotional experiences is in its infancy
- This framework potentially provides an opportunity to validate time-honored aspects of Psa and PDT, improve their effectiveness and efficiency (addressing experiences vs. understanding), and establish a unique niche among the range of psychotherapy modalities available