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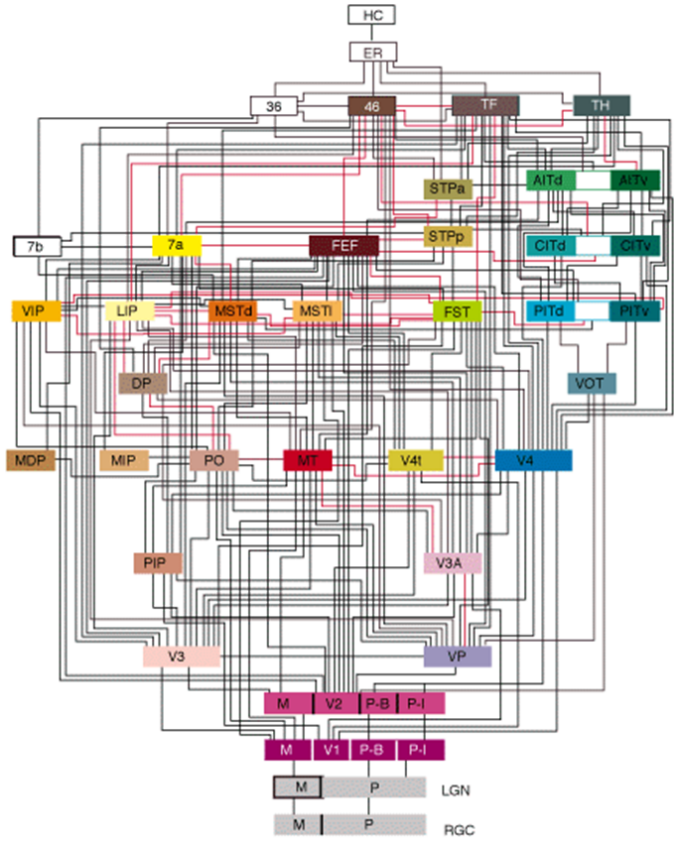
Episodic Memory and Beyond: The Hippocampus and Neocortex in Transformation
Moscovitch et al.



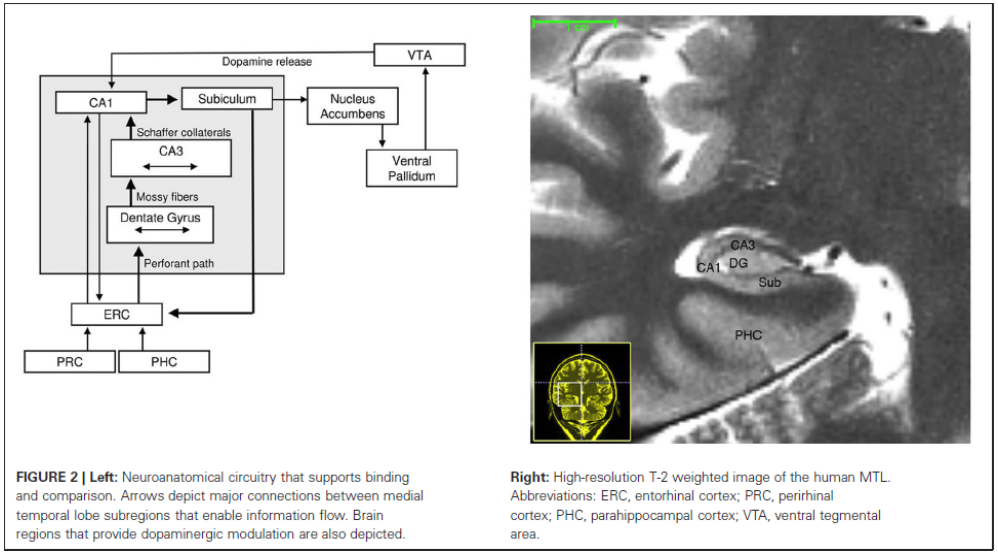
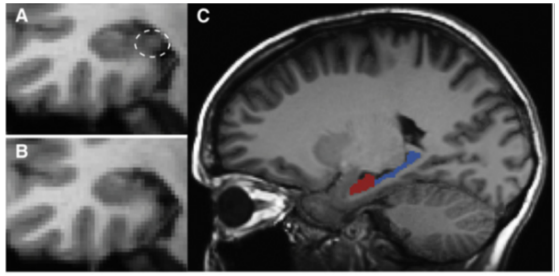


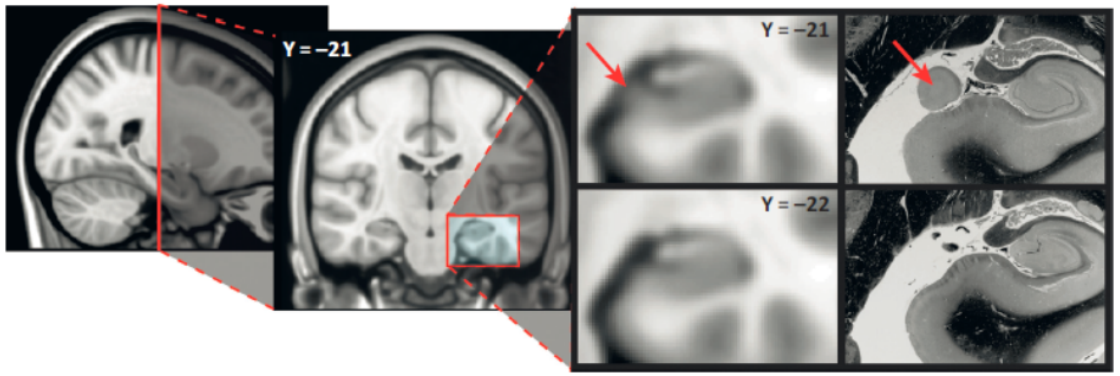
FIGURE 2 | Left: Neuroanatomical circuitry that supports binding and comparison. Arrows depict major connections between medial temporal lobe subregions that enable information flow. Brain regions that provide dopaminergic modulation are also depicted.

Right: High-resolution T-2 weighted image of the human MTL. Abbreviations: ERC, entorhinal cortex; PRC, perirhinal cortex; PHC, parahippocampal cortex; VTA, ventral tegmental area.

1*a* **1*b***

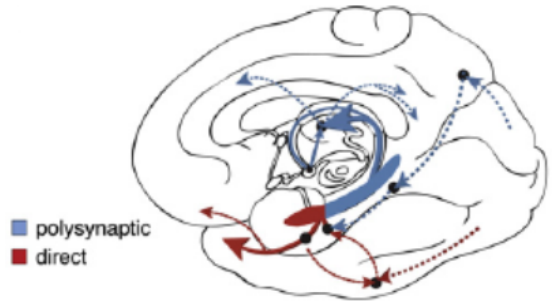
Supplemental Figure 1. (*a*) The hippocampus sits at the top of a hierarchy of cortical systems largely in the ventral and dorsal visual streams. Panel *a* used with permission from Nadel & Peterson (2013). (*b*) Medial temporal input to the hippocampus, its subfields (DG, CA3, CA1, subiculum), and its output. Panel *b* used with permission from Olsen et al. (2012). Abbreviations: DG, dentate gyrus; ERC, entorhinal cortex; PHC, parahippocampal cortex; PRC, perirhinal cortex; Sub, subiculum; VTA, ventral tegmental area.

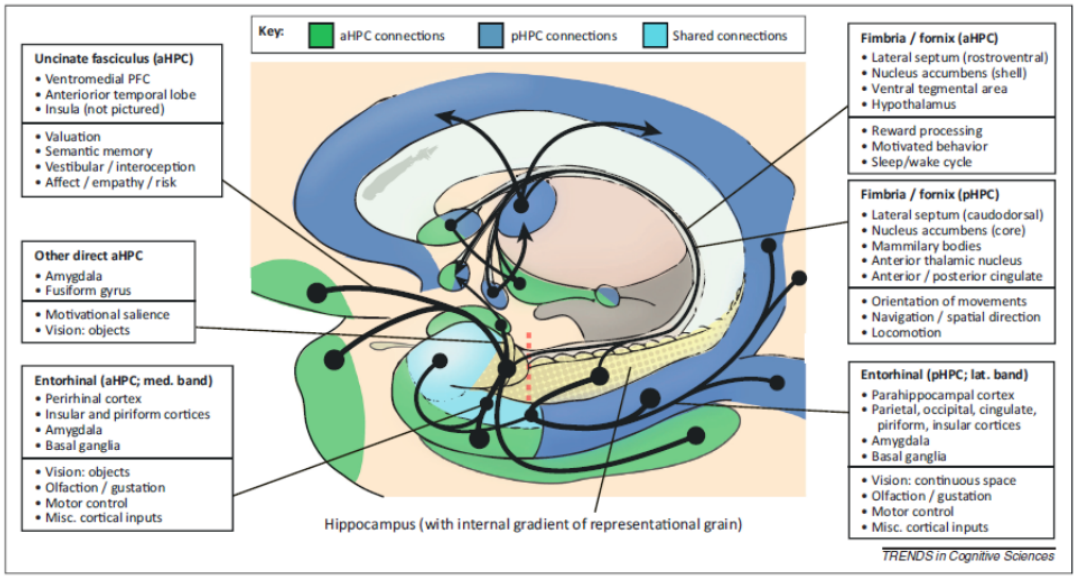




2*a*

2*b*

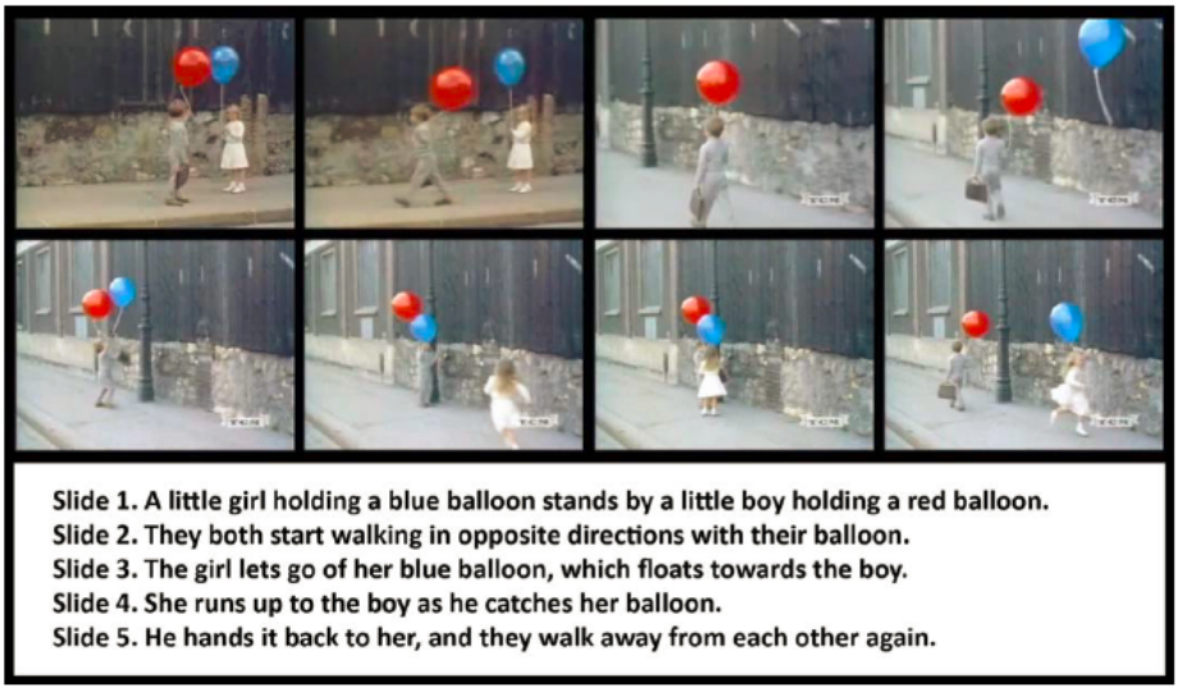




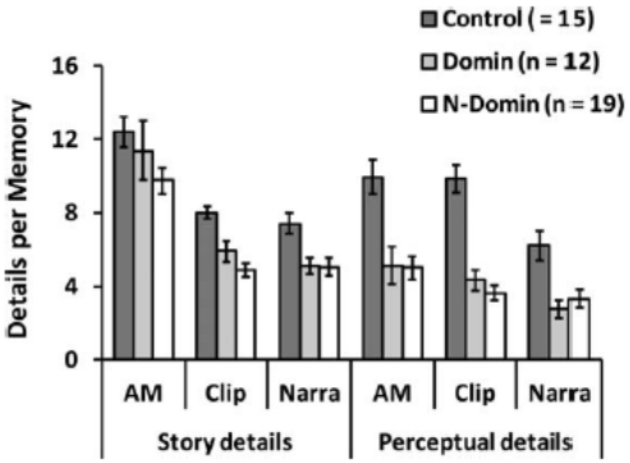
2*c*

2*d*

Supplemental Figure 2. (*a,b*) Demarcation of anterior (*blue*) and posterior (*red*) hippocampus. Panels *a* and *b* used with permission from Poppenk & Moscovitch (2011). (*c,d*) Projections of anterior hippocampus (aHPC) and posterior hippocampus (pHPC) to anterior and posterior neocortical structures. Panels *c* and *d* used with permission from Poppenk et al. (2013).

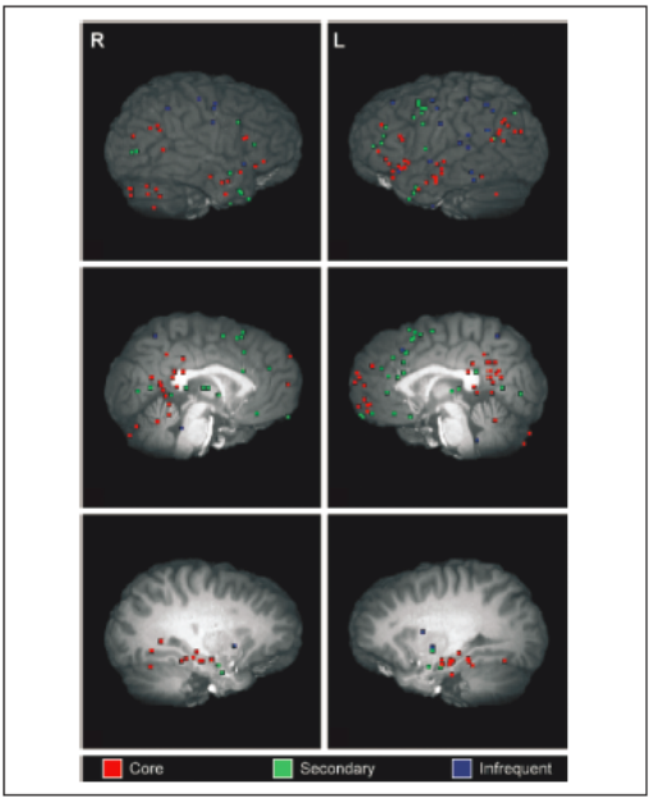


3a

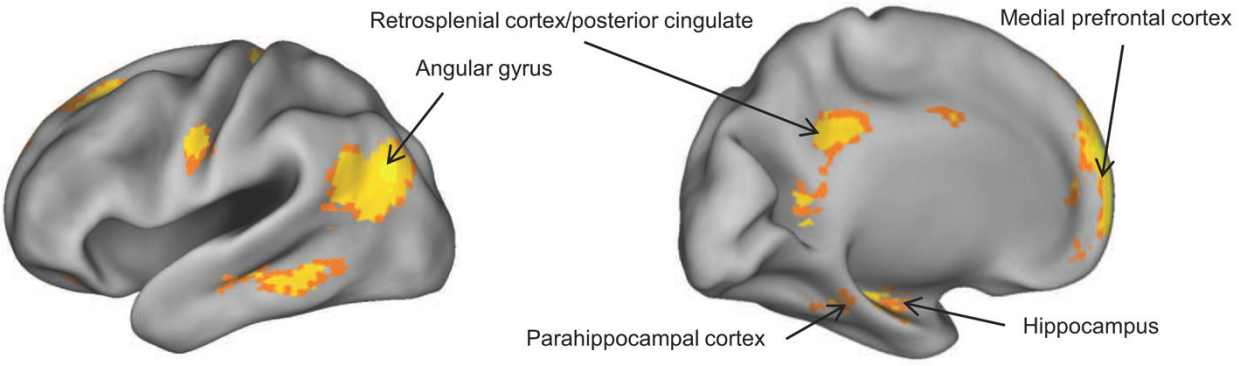


3b

Supplemental Figure 3. (*a*) Example of a movie clip ("The Red Balloon") and the accompanying narrative (story elements). (*b*) Number of details recalled in autobiographical memory, clip, and narrative conditions by healthy controls and patients with dominant and nondominant temporal lobe epilepsy. Figure used with permission from St-Laurent et al. (2014). Abbreviation: AM, autobiographical memory.

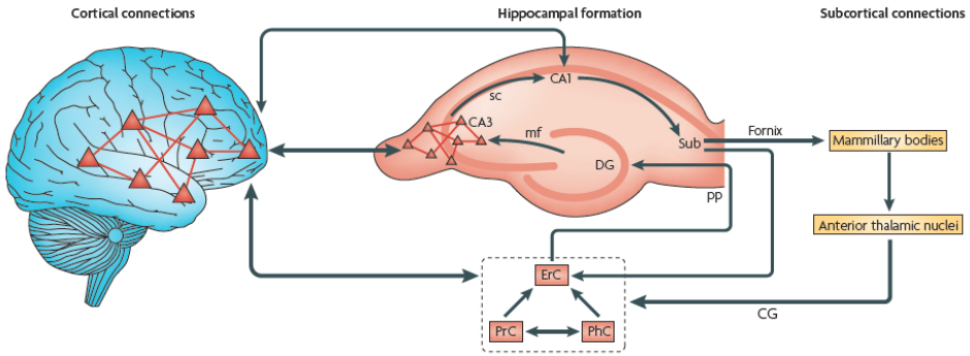


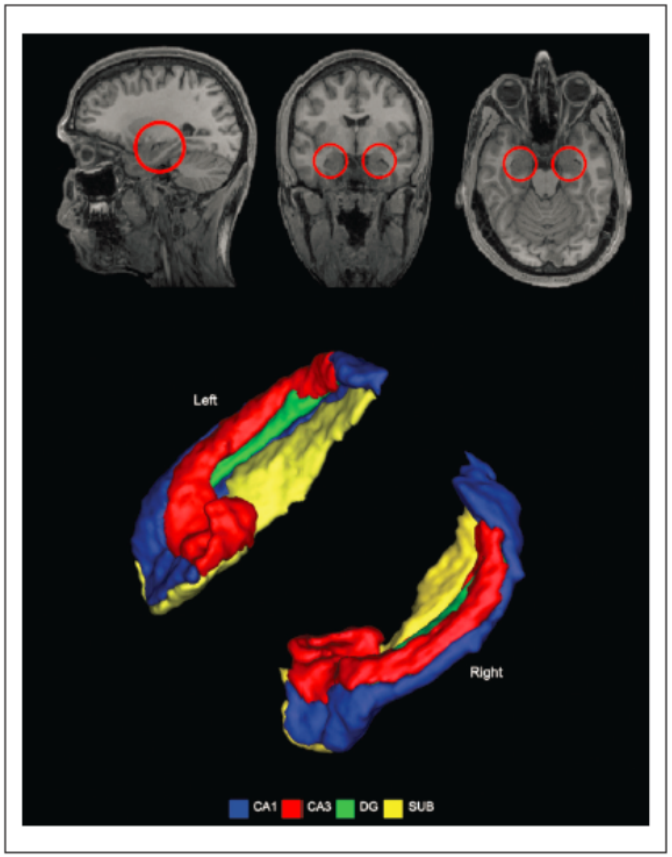
4*a*



4*b*

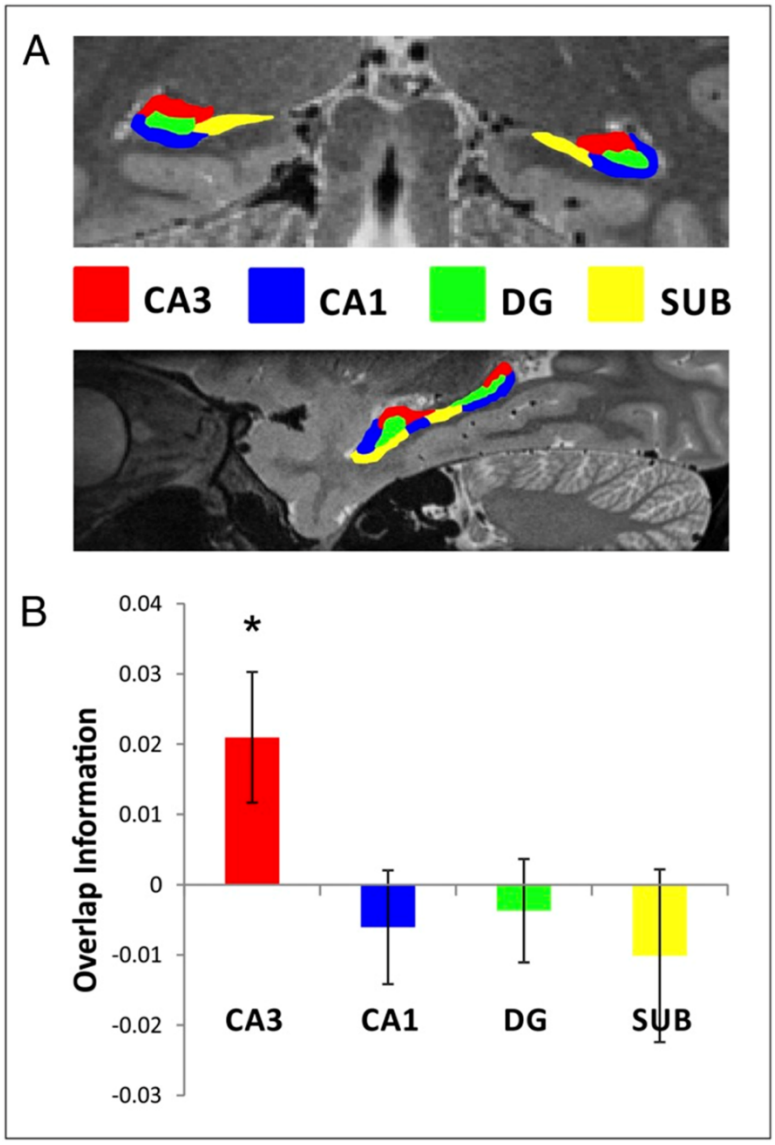
Supplemental Figure 4. (*a*) Regions of activation in autobiographical memory studies according to frequency of activation. Panel *a* used with permission from Svoboda et al. (2006). (*b*) Regions of activation in episodic memory (recollection) studies in the laboratory. Panel *b* used with permission from Rugg & Villberg (2013).



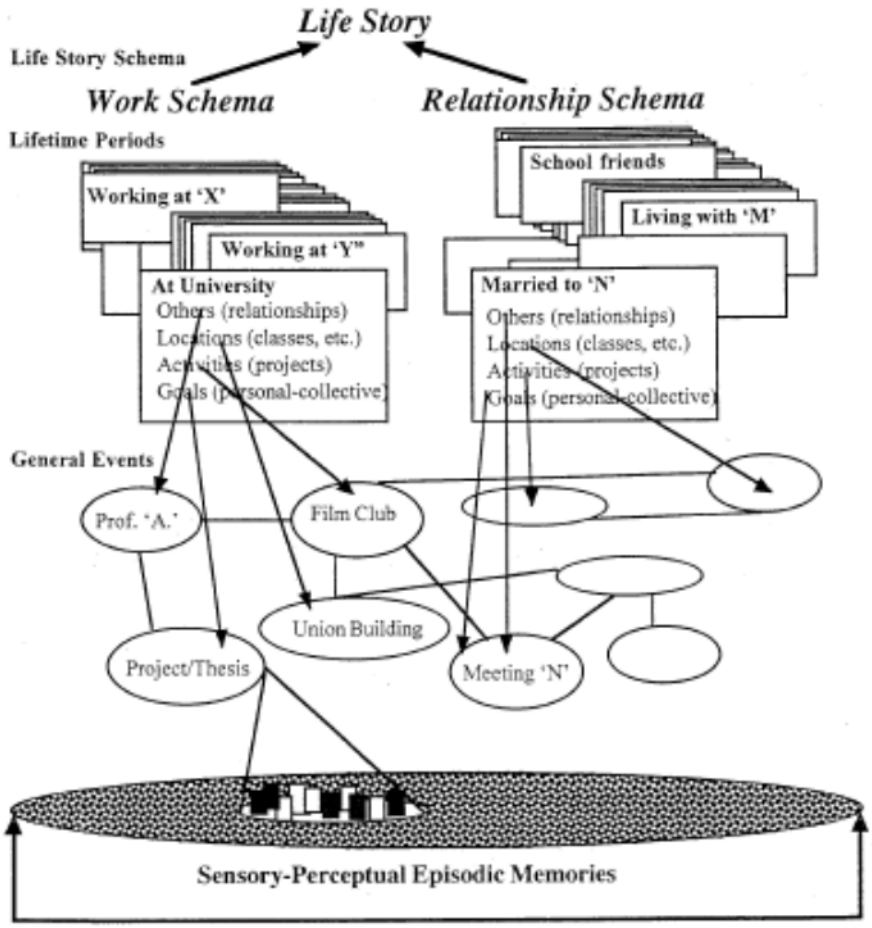


5a ***5b***

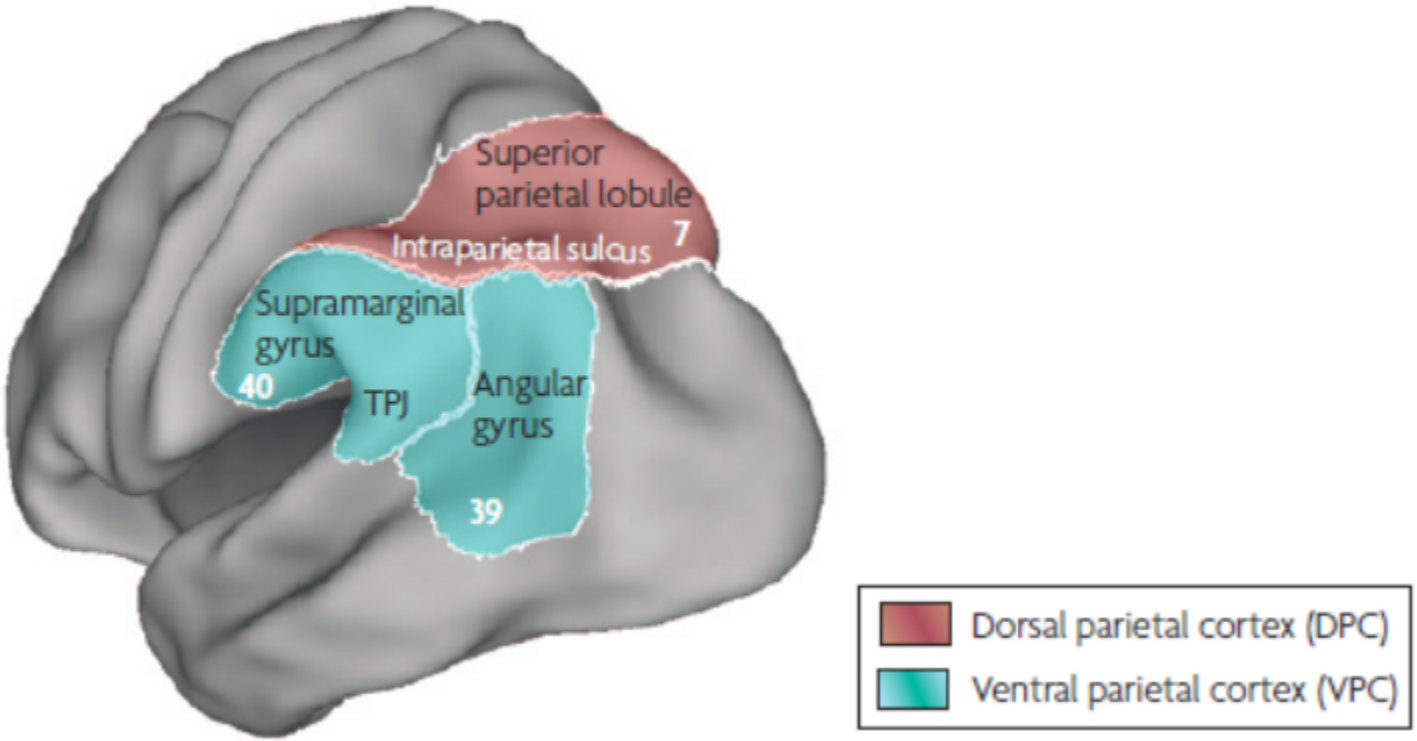
Supplemental Figure 5. (*a*) The hippocampal subfields and their inputs and outputs. Panel *a* used with permission from Henke (2010). (*b*) Delineation of hippocampal subfields in high-resolution neuroimaging in humans. Panel *b* used with permission from Bonnici et al. (2014). Abbreviations: CG, cingulate gyrus; DG, dentate gyrus; ERC, entorhinal cortex; MF, mossy fiber; PHC, parahippocampal cortex; PRC, perirhinal cortex; PP, performant path, SC, Schaffer collaterals.



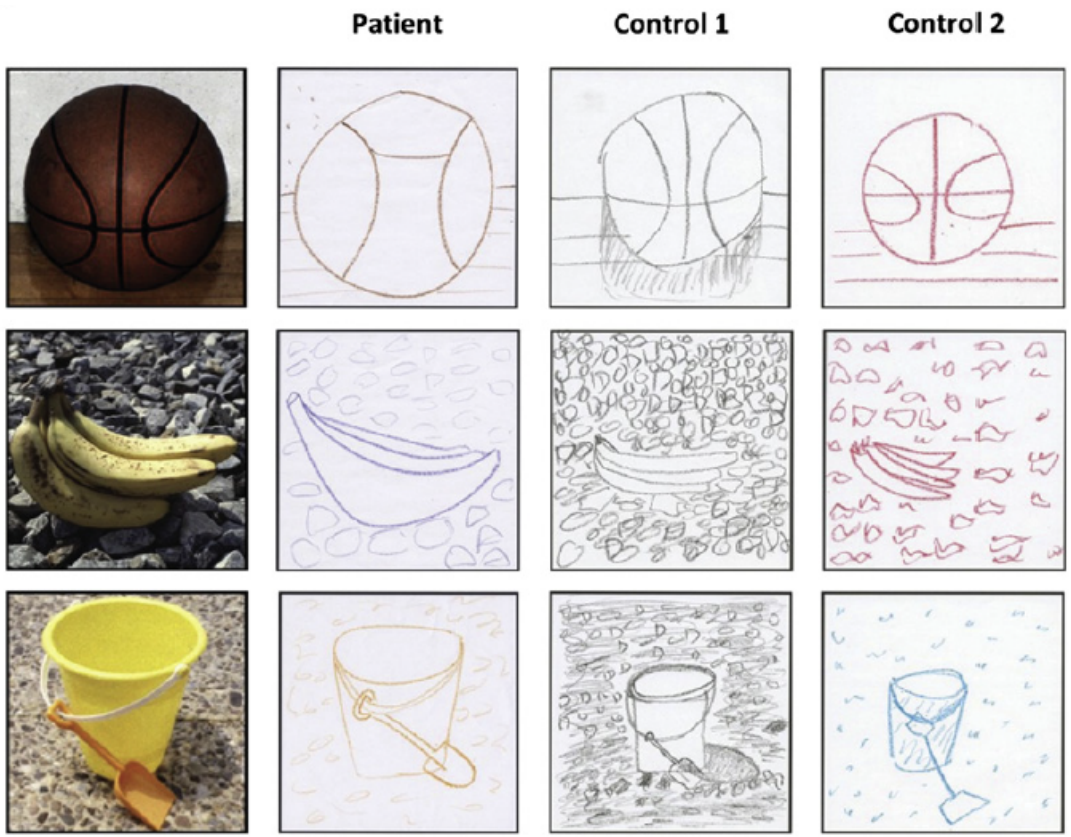
Supplemental Figure 6. (*a*) Coronal (*top*) and sagittal (*bottom*) views of the subfields in the hippocampi of an example participant. (*b*) The amount of overlap memory coactivation within each subfield during episodic retrieval. This is measured as the average correlation between the multivariate Bayes (MVB) voxel patterns for overlapping memories minus the correlation for nonoverlapping memories (baseline). The group mean is shown with standard error bars. Figure used with permission from Chadwick et al. (2014). Abbreviations: DG, dentate gyrus; Sub, subiculum.



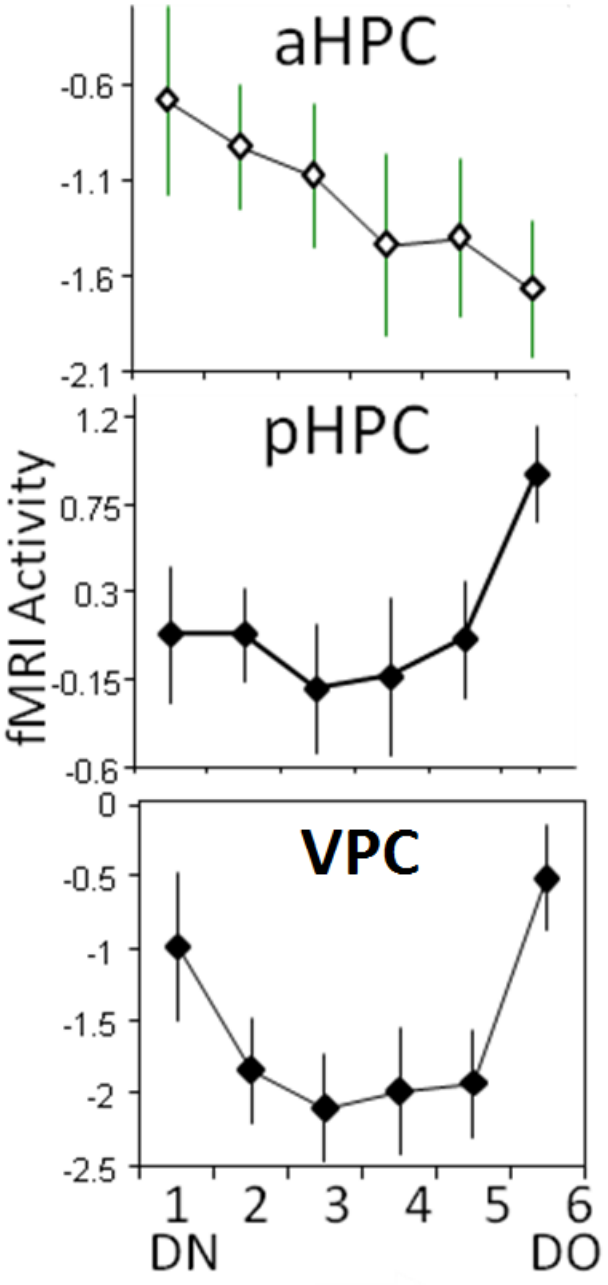
Supplemental Figure 7. Conway's hierarchical model of autobiographical memory. Figure used with permission from Conway (2009).



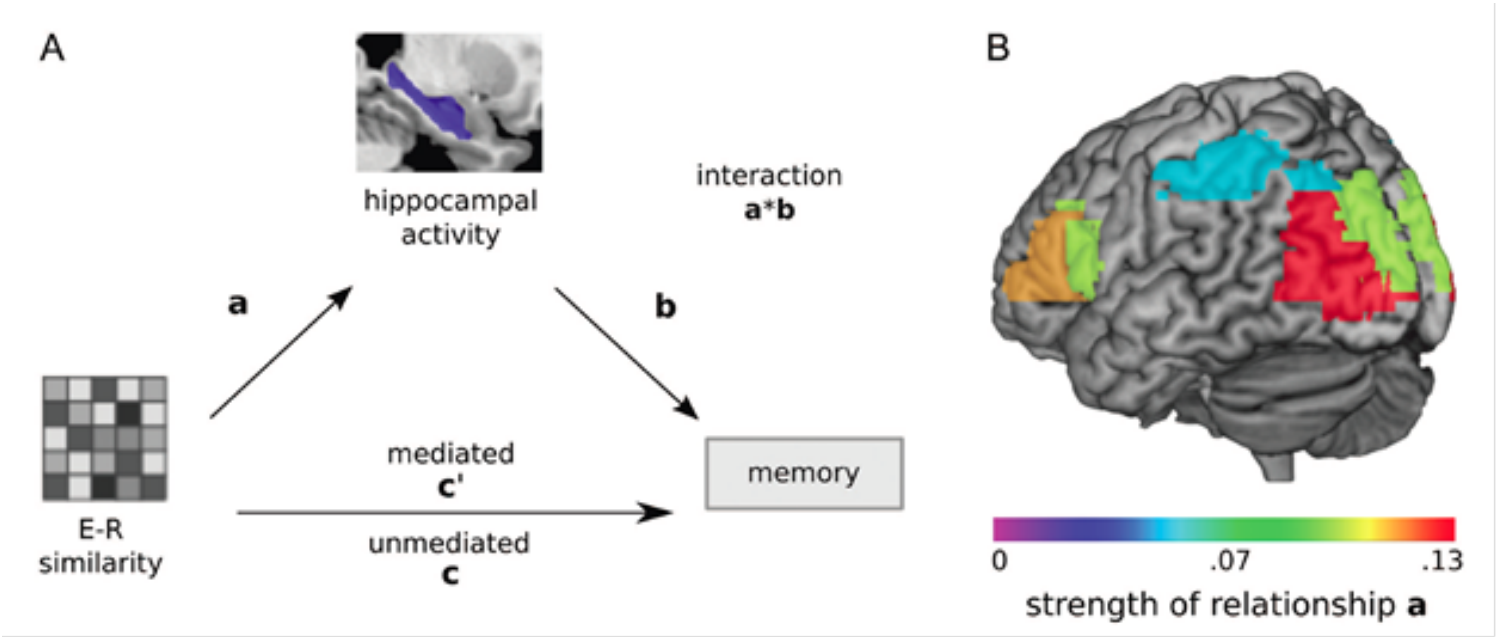
Supplemental Figure 8. The posterior parietal cortex and its division into dorsal (*red*) and ventral (*aqua*) regions. Figure used with permission from Cabeza et al. (2012). Abbreviation: TPJ, temporal parietal junction.



Supplemental Figure 9. An example of border extension in controls' drawings of the target pictures (*far left*) showing that the border expands around the central target. Border extension is minimal in a patient with hippocampal lesions. Figure used with permission from Mullally et al. (2012).



Supplemental Figure 10. Evidence that VPC activity shows a similar response to recollection as pHPC activity. In this word recognition study, when activity was plotted as a function of recognition confidence, both the VPC and pHPC showed a sharp increase for trials with "definitely old" responses, which usually include most recollected trials. In contrast, the aHPC showed a very different novelty-related pattern, consistent with the role of this region in encoding (Kim 2015). Figure used with permission from Daselaar et al. (2006). Abbreviations: aHPC, anterior hippocampus; DN, definitely new; DO, definitely old; pHPC, posterior hippocampus; VPC, ventral parietal cortex.



Supplemental Figure 11. Evidence of the HPC-cortex PSA during encoding and retrieval. A representational similarity analysis showed that successful retrieval of visual scenes increased as a function of the similarity of occipitotemporal activation patterns between encoding and retrieval. Consistent with the assumption that HPC mediates the storage and recovery of cortical memory traces, the impact of cortical encoding-retrieval similarity on memory accuracy was mediated by HPC activity. Figure used with permission from Ritchey et al. (2013). Abbreviations: HPC, hippocampus; PSA, process-specific alliance; vmPFC, ventromedial prefrontal cortex.