“Core” Features of Amnesia

- **Anterograde amnesia**: defect in new learning
- **Retrograde amnesia/remote memory disturbance**: defect in retrieving old memories
- **Spared memory abilities**: attention span, psychometric intelligence, and ‘nondeclarative’ forms of memory are generally spared

The Human Amnesic Syndrome

- Impaired new learning (anterograde amnesia), exacerbated by increasing retention delay
- Impaired recollection of events learned prior to onset of amnesia (retrograde amnesia), often in temporally graded fashion
- Not limited to one sensory modality or type of material
- Normal IQ, attention span, “nondeclarative” forms of memory

Clinically Relevant Dimensions of Human Memory Performance

- Immediate-recent-remote
- Encoding-storage-retrieval
- Material, modality specificity
- Tests vs. processes

Encoding

- **Definition**: process of transforming to-be-remembered in formation into memorable and retrievable form
  - Encoding I: bringing information-processing capacity to bear on stimuli
  - Encoding II: ability to use the results of E-1 mnemonically
- **Relevance**: levels-of-processing accounts of memory (memory as by-product of information processing)
- **Clinical manifestation**: poor immediate (superspan) recall

Consolidation/Storage

- **Definition**: process of making new memories permanent
- **Basis**: anatomic and physiological changes at cellular level; hippocampal system important
- **When?**: during study-test interval
- **Duration**: hours? days? years?
- **Clinical symptom**: delayed memory << immediate memory (forgetting)

Retrieval

- **Definition**: process of locating, selecting, and activating a memory representation
- **Basis**: re-enactment of pattern of excitation occurring at encoding
- **When?**: at point of test
- **Clinical symptom**: recall << recognition (also true of shallow encoding), inconsistent errors

Medial Temporal Syndromes

- Anoxic-hypoxic syndromes
  - Cardiac arrest
  - CO poisoning
- Amnesia associated with ECT
• CNS Infections (Herpes)
• MTS and complex-partial epilepsy (material-specific)
• Early AD

32 Diencephalic Syndromes
  • Korsakoff Syndrome associated with ETOH abuse or malabsorption
    – prominent encoding deficits
    – role of frontal pathology
  • Vascular disease
  • Thalamic trauma
Basal Forebrain Syndromes

- Anterior Communicating Artery (ACoA) infarctions
  - prominent anterograde, variable retrograde amnesia
  - prominent confabulation
  - frontal extension of lesions
- Basal forebrain and cholinergic projections to hippocampus

Key Points

- Extended memory system including hippocampus, amygdala, and basal forebrain
- We (basically) understand anatomy, now we need to understand computation
- Notion of distinct subtypes of amnesia generally less favorable now than 10 years ago
- Certain structures are ‘wired’ for associational processing; these structures are reciprocally connected to cortical processors