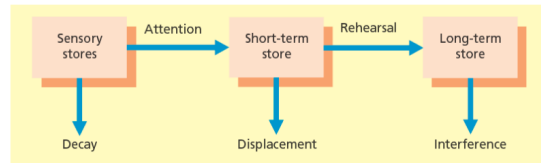


## WEEK 2; WORKING MEMORY

### Original multi-store model

- Architecture = structure
- Processes = activities/processes
- Original multistore model of memory: 3 stores
  - Sensory store (holds info in original sensory modality: colour, visual, etc.)
  - STM store (limited capacity, fragile, holds info as long as one pays attention to content + rehearses it)
  - LTM store (unlimited capacity, holds info over long periods of time, permanent)
- Criticisms:
  1. Sensory store, STM + LTM are not unitary:
    - Each store is not independent, work in single/uniform fashion
  2. Over-emphasized structural (architectural) aspects of memory (at expense of processing aspect)
  3. STM is not a gateway to LTM
    - Memory systems are interconnected (STM tasks make us of LTM: e.g., chunking – C I A T V H S C becomes CIA TV HSC)
    - Rehearsal may not be crucial to learning (e.g., maintenance/rope learning ≠ durable memory)
    - Impairment of STM doesn't lead to impairment of LTM (e.g., Patient KF)
      - Patient KF:
        - ◇ ↓verbal IQ, ↑ performance IQ
        - ◇ Inability to repeat verbal material
        - ◇ Extremely limited memory (/digit) span – approx. 1
        - ◇ Paired-associated learning (e.g., baby-cry) after 24hr normal
        - ◇ ∴ impaired STM but intact LTM (and ability to recall)
- ∴ STM replaced by working memory
- ∴ LTM replaced by episodic/semantic memory
- DIFFERENCE IN TASKS:
  - STM = domains specific (e.g., digit span)
  - WM = involve trying to maintain info in active memory while simultaneously performing distracting activities (e.g., Operation span task)



## Working memory

- Central executive → Phonological loop, episodic buffer & visuo-spatial sketchpad
- Temporary storage (limited capacity)
- Relatively independent:
  - If 2 tasks use same components: can't be performed simultaneously (interference)
  - If 2 tasks use different components: can be performed simultaneously
- **Central executive:** controls system, coordinating peripheral storage systems (PL, EB, VSS)
  - Baddeley based it on Norman & Shallice's (1986) model of attention – linked central executive with their SAS (supervisory attentional system)
  - Norman & Shallice's view:
    - Conflict resolution (e.g., Stroop Task)
    - Role of schemas:
      - Habits
      - Triggered by cues in environment (colour, word)
    - 2 forms of attentional control:
      - Conventional scheduling:
        - ◇ Prioritized action based on strength of schema
        - ◇ Practice strengthens schema
        - ◇ Routine habits prevail
      - Supervisory attentional system:
        - ◇ Conscious control → flexible selection according to goal of task
        - ◇ Involved in situations where routine control is insufficient (e.g., name of colour, not word colour)
    - Schemas are coordinated using 'CS' & 'SAS'
  - Impairment of SAS:
    - Located in prefrontal cortex
    - Damage results in:
      - Utilization behaviour (captured by stimulus that triggers action: e.g., scissors)
      - Dysexecutive syndrome
      - Difficulty with novel situations (overriding habit)
  - Executive functions:
    - Inhibition function:
      - Stop habitual responses
      - E.g., Stroop task, anti-saccade task
    - Shifting function:
      - Task switching (b/w multiplication + division, colour + shape)
      - E.g., colour-shape task
    - Updating function:
      - Updating/monitoring WM representation
      - E.g., Letter-Memory task

