# Memory and Cognition

## February 25, 2013

Duration of STM w/o rehearsal 15 sec

Duration of STM w/ rehearsal – indefinite

Information can be stored in short term memory – acoustically, semantically, and visually.

* Components of working memory
  + Central Executive
    - Performs all higher level tasks – controlling, decision-making, planning future actions, language comprehension, reasoning, retrieval, and information from LTM
    - Central Executive Controls…
  + Phonological Loop
    - Phonological store
    - Articulatory loop
  + Visuo-spatial sketch pad
  + Capacity is determined by how fast you rehearse.
* Basic Findings
  + World-length effects
    - Shorter words are easier to remember than longer words. Shorter words have less characters to rehearse so it can be done faster. Even if doing it in your head, longer words take longer to do in your head so faster decay.
    - Chinese speakers have larger digit span than English speakers do.
* Application of Working Memory
  + Individual Differences
  + Working memory is tested by how many words can you remember as long as you are correct.
* Long Term Memory
  + Once something has entered your LTM, it’s there forever.
  + Momentary forgetting is possible but it never leaves.
  + Types of LTM
    - Declarative
      * Episodic – Memory for personal experiences. Specific experiences in your life. Ie what you had for dinner, your 18th birthday, etc. All experiments done in class are episodic. What the maiden name is.
      * Semantic – Language, facts, etc. Concept of what a maiden name is.
    - Nondeclarative – Exhibit the information in other ways.
      * Procedural – Skill memory. How to ride a bike, throw a ball, etc.
      * Priming –
    - Golf Example – You need semantic memory to know the rules, what a birdie is, and episodic to where you hit the ball, strokes taken, or keep score. Procedural memory to actually hit the ball.
      * Semantic memory was fine, episodic was not.
* Techniques for studying LTM
  + Recall
    - Free recall – essays, fill in the blank, short answer, etc
    - Serial Recall – The items must be recalled in the correct order or presentation.
    - Cued Recall –
  + Recognition – Given a series of options / choices and you have to chose which one is correct. Multiple choice, etc. Typically recognition is easier than recall. Generate possible answer, then decide whether it’s correct.
  + Paired Associate Learning – Pairing pin w/ debit card
  + Incidental vs. Intentional Learning
    - Incidental Learning -
    - Intentional Learning – You learn schoolwork since you know you’re going to be tested.
* **Encoding in LTM**
  + Levels of Processing
    - If you see “CAT” you can process it auditory (C-A-T) or semantically (Fat Cat) or Visually (seeing a fat cat in your head)
  + Orienting Task – Function of orienting task is to control cognitive processes at encoding.
    - Shallow vs. Deep Processing
      * Shallow –
      * Deep – Deeper the processing is, the better your memory will be.
  + Two types of rehearsal
    - Maintenance rehearsal – Simple role memorization. Just rehearses it in the STM.
    - Elaborative Rehearsal – Additional new analyses of a stimulus is required. Relating it to yourself, much more likely to understand and move into LTM.
* Evidence for Levels of Processing
  + Craik and Watkins (1973) – Remember the G words.
    - Garden, half, book, cat, gift, table, and girl.
    - You can rehearse garden for 3x as long (since 3 words are in between garden and gift) than gift.
    - If all you’re doing is reading through your notes, without actively thinking about it, it will not help you.
  + Hyde and Jenkins (1973) – Incidental vs. Intentional
    - Study
      * Shallow Processing – Does the word contain e or g?
      * Deep Processing – Pleasantless rating
      * Half of the subjects were given intentional learning instructions – They were told you’d have to remember these words. The other half were not. You can make a conscious effort to study for an exam, intention to learn does not help if you’re not encoding the meaning.
  + Organization
    - Material-induced organization
      * Clustering during input
        + A – Cat, dog, lion, elephant, chair, table, desk, lamp, skirt, pants, coats, socks
        + B – Cat, socks, chair, skirt, dog, pants, table, coat, lion, desk, elephant, lamp
      * Clustering in recall
        + Study -> Black, table, stop, white, chair, go.
        + Free recall -> black, white, stop, go, table, chair. As long as it’s free recall you’re more likely to remember.
    - Subjective Organization