

Memory – An active mental system (ability) that allows us to put away info for later

Processes (steps) of Memory:

(receive) (from the senses/world)

Encoding (put in) for short or long term use

Storage (hold)

Retrieval (get out)

Models of Memory

Information-processing model – assumes processing of info for memory  
-Storage similar to a computer.

Levels-of-processing model – assumes info that is more “deeply processed” (processed according to meaning) will be remembered more efficiently & longer  
Explains why multi-tasking isn’t very effective. Doing 2 things at once means you’re not doing either very “deeply” and will hurt you in the long run.

Other models exist too..

Which is right?

- They all have value
- 2 models aren’t even in direct competition with each other

Information Processing Model: (3 stages)

1. Sensory memory -
  - Very first stage
  - Where info enters the nervous system (through the senses)
  - Lasts generally only a second or so...(w/o some sort of processing then it will be lost)
2. Short-term memory (STM) (working memory) –
  - where info is held while it is being used

Selective attention – ability to focus on one stimulus from all sensory input  
-moves info from sensory memory to Short Term Memory (STM)

### How big is STM?

Capacity of STM = ~7 items (+/- 2 items)

Chunking – bits of info combined into meaningful units (chunks) so more info can be held in STM

(phone numbers chunked 3-3-4. Words in sentences are easier to remember than random words)

### How long does it last?

Duration of STM = about 12-30 seconds w/o rehearsal

Maintenance rehearsal – say info over & over in head to keep it in STM (or LTM)

STM's tend to be encoded in auditory form

STM susceptible to interference

Interference? If someone interrupts you while you're repeating in your head then you usually have to start over again

### 3. Long-term memory (LTM) – used to keep info “permanently”

Elaborative rehearsal – get from STM into LTM by making info meaningful

Make connections to other things you know.

### 2 Types of LTM

#### 1. Procedural (non-declarative) memory -

Motor skills, habits, classically conditioned reflexes.

-skills (things people know how to do)

-emotional associations, habits, and simple conditioned reflexes

Aka implicit memory

-not easily brought into awareness

(find it difficult to describe how to ride a bike or tie a shoe but it's easy to do the action)

Interestingly..

Anterograde amnesia

(Inability to form new declarative LTM's) generally does NOT affect procedural LTM (can gain new skills but not new facts)

#### 2. Declarative memory – things people know (facts) aka explicit memory – consciously known.

#### Two types:

Semantic memory – general knowledge

(Knowledge of language & info learned in formal education, etc.)

Episodic memory – Personal info not readily available to others (daily activities and events)

Two types of Remembering – Recall and Recognition:

1. Recall – “pull” info from memory with few external cues.  
With recall memory you have to produce the answer, basically from scratch.  
(short answer, essay, no hints at what the answer should be)

Retrieval failure- recall has failed

Ex. –draw a blank

-tip of the tongue phenomenon (if just relax then you can remember)

Serial position effect – remember beginning and sometimes the end better than middle

Primacy effect – remember info at beginning better

Recency effect – remember info at end better

If delayed for 30 seconds then this effect goes away

Summary: -Ask right away: remember beginning & end better (primacy & recency)

-Ask after 30+ seconds delay: just remember beginning better (primacy)

-Why? Maintenance rehearsal of beginning of list, not as much rehearsal for middle words, recency is in short term memory (only lasts about 30 sec)

2. Recognition – match piece of info to a stored image/fact  
Don't have to produce it, only have to match with info already in memory.

Ex. Multiple choice, fill in with word bank, true/false

Retrieval failure:

-don't recognize something you should

-False positive – “recognize” something you shouldn't

Cues to Help Remember

Retrieval cue – trigger for remembering  
(can be anything, why elaborative rehearsal is recommended when studying)

Encoding specificity – remember info better if info available when memory was formed is also available at retrieval.

State-dependent learning - memories formed during a particular physiological or psychological state will be easier to recall while in a similar state.