

# Cognition

## Information-Processing Theory

### Sensory Memory

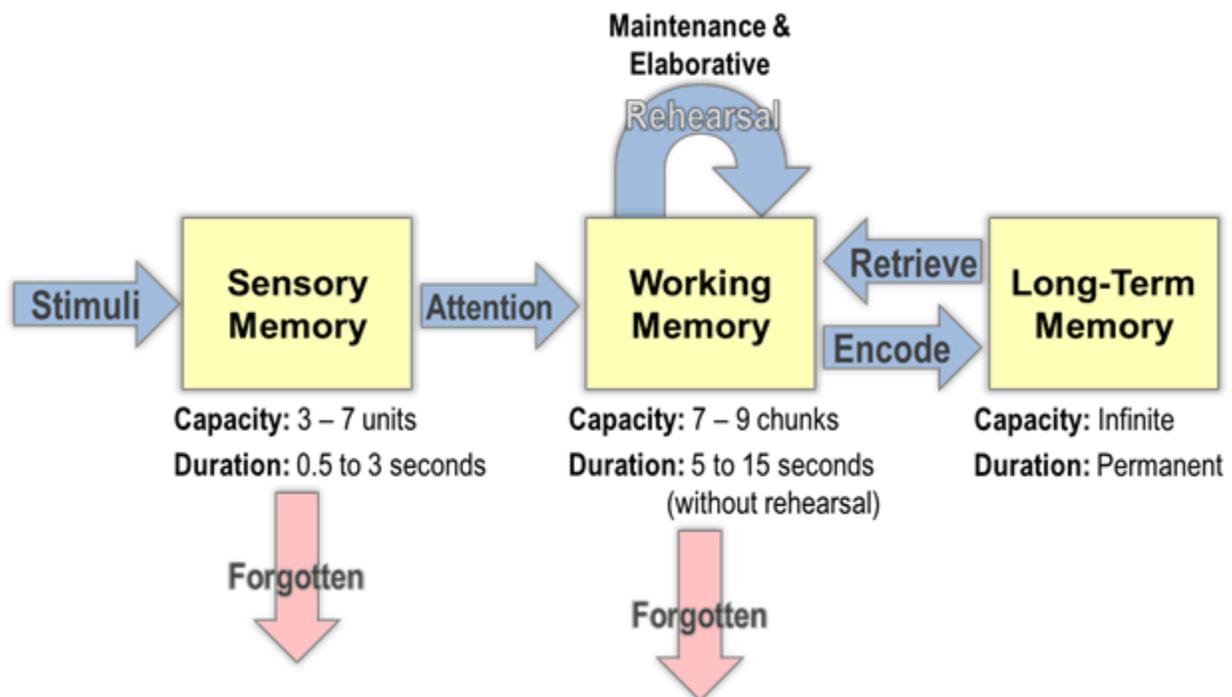
- Split-second holding tank for incoming sensory information
- Lasts mere seconds
  - Iconic Memory* = visual sensory memory, high capacity, very brief (<1000 ms)
  - Echoic Memory* = auditory sensory memory, stored longer (3-4 seconds)

### Working/Short-Term Memory

- Fade in 10-30 seconds, on average of 7 items
  - Selective Attention* = temporarily encodes sensory memory
  - Chunking* = memorizing in groups
  - Rehearse* = repeating information to increase chances of retention

### Long-Term Memory

- Unlimited capacity for the rest of our lives
  - Episodic Memory* = memories of specific events, stored in sequential series of events
  - Semantic Memory* = general knowledge, stored as facts, meanings, or categories
  - Procedural Memory* = memories of skills and how to perform them
  - Explicit Memory* = recalled with conscious thought and intent
  - Implicit Memory* = recalled unintentionally or without knowledge of memories' existence
  - Eidetic Memory* = ability recall precise information after few instances of exposure



## Levels of Processing Model

- Information are either deeply or shallowly processed
- We remember things we spend more cognitive time and energy processing

## Retrieval

*Recognition* = process of matching current fact/event with one in memory

*Recall* = retrieving memory with external cue

*Primacy Effect* = we are more likely to recall items presented at the beginning of a list

*Recency Effect* = we are more likely to recall the items at the end of a list

*Serial Position Effect* = combination of Primacy and Recency Effect

*Semantic Network Memory* = our brain forms new memories by connecting their meaning and context with meanings already in memory

*Tip-of-the-Tongue Phenomenon* = failing to retrieve a word from memory, combined with partial recall and the feeling that retrieval is imminent

*Flashbulb Memories* = highly detailed, exceptionally vivid 'snapshot' of the moment and circumstances in which a piece of surprising and consequential (or emotionally arousing) news was heard.

*Mood-Congruent Memory* = memory retrieval is more efficient when an individual is in the same mood as they were when the memory was formed

*State-Dependent Memory* = memory retrieval is more efficient when an individual is in the same state of consciousness as they were when the memory was formed

## Constructive Memory

*Recovered Memory* = phenomenon where individuals suddenly remember events they have "repressed" for years

*Constructed Memory* = memories with false details

## Forgetting

*Decay* = memory fades due to the mere passage of time

*Relearning Effect* = less time is required a previously learned material

*Interference* = other information in memories competes with the item that is being recalled

- *Retroactive* = learning new information interferes with the recall of older information
- *Proactive* = older information interferes with recall of recently-learned information

## Storage in Brain

- Hippocampus important in encoding new memories (anterograde amnesia)
- Long-term potentiation = neurons strengthen connection and sensitivity through repeated firings

## Language

### Elements of Language

- *Phonemes* = smallest units of sound used in a language (~44 in English)
- *Morphemes* = smallest units of meaning in a language
- *Syntax* = particular order that words are spoken or written in

### Language Acquisition

*Holophrastic Stage* = when babies communicate complex ideas using only single words and simple fixed expressions (~12 months old)

*Telegraphic Speech* = when toddlers combine words with understandable meanings but little syntax (~18 months old)

*Overgeneralization* = misapplication of grammar rules

*Language Acquisition Device* = hypothetical module of the human mind that aids in the ability to learn a language rapidly as children

### Language & Cognition

*Linguistic Relativity Hypothesis* = the structure of a language affects its speakers' world view, thoughts, and cognition

## Thinking

### Describing Thought

*Concepts* = cognitive rules we apply to stimuli from our environment that allow us to categorize and think about objects, people, and ideas

*Prototype* = typical examples of a particular concept

*Images* = mental pictures created in our minds of the outside world

### Problem Solving

*Algorithms* = rule that guarantees right solution by using formulas or other foolproof method

*Heuristics* = rule that is generally, but not always, true that one can use to make a judgement

- *Availability Heuristic* = judging a situation based on examples of similar situations that initially come to mind, and can lead to incorrect conclusions due to invariability in personal experiences (e.g. judging one's own neighborhood to be more violence because they are simply more familiar with violence in his/her own neighborhood)
- *Representativeness Heuristic* = judging a situation based on how similar the aspects are to prototypes a person holds (e.g. one may judge a young person more likely to commit suicide because of a prototype of the depressed adolescent, when in fact, suicide rates are not higher in younger populations)

*Belief Bias* = when we make illogical conclusions in order to confirm our preexisting beliefs

*Belief Perseverance* = tendency to maintain a belief even after the evidence we used to form the belief is contradicted

## Impediments to Problem Solving

*Rigidity* = tendency to fall into established thought patterns

*Functional Fixedness* = inability to see a new use for an object

*Confirmation Bias* = tendency to search for, interpret, favor, and recall information in a way that confirms one's preexisting beliefs

*Framing* = the way a problem is presented

## **Creativity**

Convergent Thinking = thinking pointed toward one solution

Divergent Thinking = thinking that searches for multiple possible answers