

**2016-08-25**

## **Memory and Encoding**

### **Automatic processing:**

- details encoded on:
  - space
  - time
  - frequency
- practice can reinforce pattern searching abilities (ie reading backward is unconscious processing but needs practice)
  - brain makes effort to regulate abnormalities

### **Effortful processing**

- requires selective attention

### **Ebbinghaus**

- researcher that studied memory
- Discovered the Spacing Effect
  - depreciate practice over many sessions results in better encoding of memories
  - a, ab, abc, abcd – new sessions cover previous sessions material
  - also called “chaining”

### **Serial Position Effect**

- tendency to remember first and last members in a list easier

### **Semantic encoding**

- association between words and meaning
- crucial to language learning

### **Acoustic encoding**

- attachment of sound data to a memory
- Especially pronounced in words and pronunciation

### **Visual encoding**

- association of visual imagery with a memory
- Combined with semantic processing, very useful
- Used commonly with effortful processing

### **Mnemonics**

- Shrink down long sequences into distinguishing characters and string them together into short words or sentences
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### **Automatic Processing**

**Viral behavior** = behavior that spreads quickly because others mimic behavior they see around them

### **Method of Loci**

- associate motion through familiar scenes with pieces of information
- Used in ancient Greece to remember lengthy speeches

### **Peg Word System**

- Associate a melody with a piece of information
- Very pertinent in advertising

### **Chunking**

- Grouping bits of information into more manageable units that can be memorized as one
- Used for numbers often

### **Iconic Memory**

- Sensory memory associated with visual imagery
- Used when you suddenly open your eyes and close them and see an afterimage

### **Echoic Memory**

- Sensory memory associated with sounds
- lasts ~2sec

### **Long Term Memory:**

- **Karl Lashley**
  - Worked on rats and long-term memory in 1950
  - Lesion cortex
  - Developed idea of memory trace or *engram*
- Synaptic Changes
  - Makes neurons more easily activated after brief rapid stimulation
- Emotional content helps long-term memories form

### **Explicit Memory/Declarative Memory:**

- Memory of information one can consciously retrieve
- Stored in hippocampus(in limbic system)

### **Implicit Memory/Procedural Memory:**

- Memory of information that happens spontaneously
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### **Amnesia**

- Retrograde amnesia = loss of past memories
  - Associated with head injury
- Anterograde amnesia = loss of ability to form new memories
  - Associated with damage to the hippocampus

### **Priming**

- Associated with William James
- Activation of a memory or association due to sense experience

### *Deja Vu*

- French word for “already seen”
- Priming may subconsciously activate memories of a similar experience

### **Mood-Congruent Memory**

- A tendency for memory recall of memories with a similar emotional mood to be easier or more frequent
- Caused by priming caused by emotional cues

### **State-dependent Memory**

- Similar phenomenon to Mood-Congruent memory

### **Forgetting**

#### **The Forgetting Curve**

- Hermann Ebbinghaus
  - Guy with the nonsense syllables
- 20 minutes after test, 40% gone
- After that, slow degradation

### *Presque Vu*

- “Tip of the Tongue”
- Sensation of knowing the information is in the long-term memory, but cannot recall

### **Interference with Retrieval**

- Proactive Interference
  - Old information supercedes new information
- Retroactive Interference
  - New information supercedes new information

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## **Memory construction**

### **Misinformation Effect:**

- filling in gaps with wrong information
  - Information often biased
- Intentional?

### **Source Amnesia**

- Also called “misattribution”
- Mistaking the source of a piece of information—you imagine it came from another person

### **Loftus Experiment**

- Wording Effect: wording a piece of information in a certain way can change the perception of the information
- Experiment
  - Two groups: control and experimental
  - Experimental asked how fast two cars were going when they smashed/flew into each other
    - \* Negative words
  - Control group asked same question with neutral words

### **Memories of Abuse**

- Can be repressed or even constructed
- Some genuinely forget

### **False Memory Syndrome**

- A false memory forms the central part of someone’s identity
- Can happen by therapist’s trusting their clients who tell of trauma

### **Theories of how Forgetting Happens:**

- Failure to encode information
- Interference by other memories
- Conscious forgetting
- Decay of connections

### **Improving Memory**

- Retrieval cue frequency
  - Consciously rehearse memories shortly after they occur, so misinformation doesn't tamper with your retrieval
  - Minimize interference
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