The model of memory

- Memory as processing of information
- Encoding, storage and retrieval
- The model of memory
  - Sensory memory
  - Short-term memory
  - Long-term memory
  - Duration and capacity of each
- Depth of processing and memory
- Maintenance versus elaborative rehearsal

Forgetting

- Encoding failure
- Decay
- Interference
  - Proactive
  - Retroactive
- Motivated forgetting
  - Supression
  - Repression
- Amnesia
  - Retrograde
  - Anterograde
  - Infantile

Organization of information and Memory

- Serial position effect
  - Primacy effect
  - Recency effect
- Clustering (categories)
- Hierarchies
- Chunking
- Mnemonics

How Reliable is Memory?

- Memory as a constructed process
- Memory distortions and schemas
- Perceptual sets and memory
- Misinformation and leading questions
- Why is learning about the reliability of memory important?

Storage and Retrieval

- Associative networks (semantic networks)
- Types of long term memories
  - Procedural
  - Semantic
  - Episodic
- Methods of retrieving information
  - Recall
  - Recognition
  - Free recall
- Encoding specificity principle
  - Context effects
  - Mood congruence
  - State dependent retrieval

Forgetting

Encoding Failure:
The information never got to long-term memory because it was not properly encoded (penny demo).

Decay:
Forgetting is due to normal metabolic processes that occur in the brain over time.

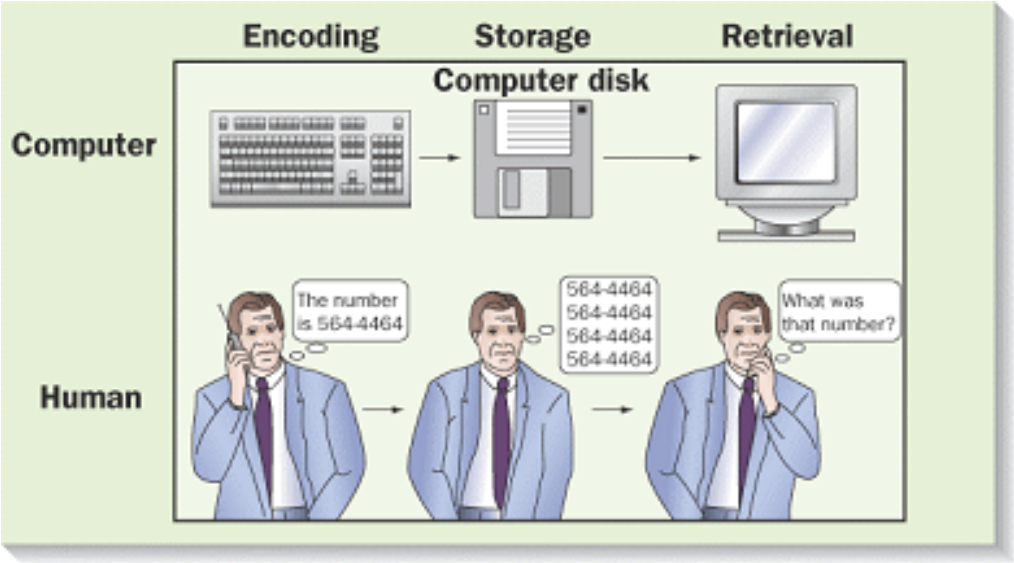
Interference:

- Proactive: Forgetting in which an old memory (the past) interferes with remembering a new memory; forward-acting memory interference. New memories are hard to form.
  - It is like “new procedures are hard to remember due to old ways”).
  - I automatically give people the old phone number for the apartment I lived in last year.
- Retroactive: Forgetting in which a new memory interferes with remembering an old memory; backward-acting memory interference
  - (eg. "going home", false memories). Old memories are being replaced by new memories.

Motivated Forgetting

- Suppression: Conscious forgetting
- Repression: Unconscious forgetting

Forgetting



Reasons why we forget:

- Encoding failure: sometimes it doesn't get in
  - invited inferences
  - schemas, and
  - _____
- Decay
- Interference
  - Proactive
  - Retroactive
- Motivated forgetting
  - Suppression
  - Repression
- Amnesia
  - Retrograde
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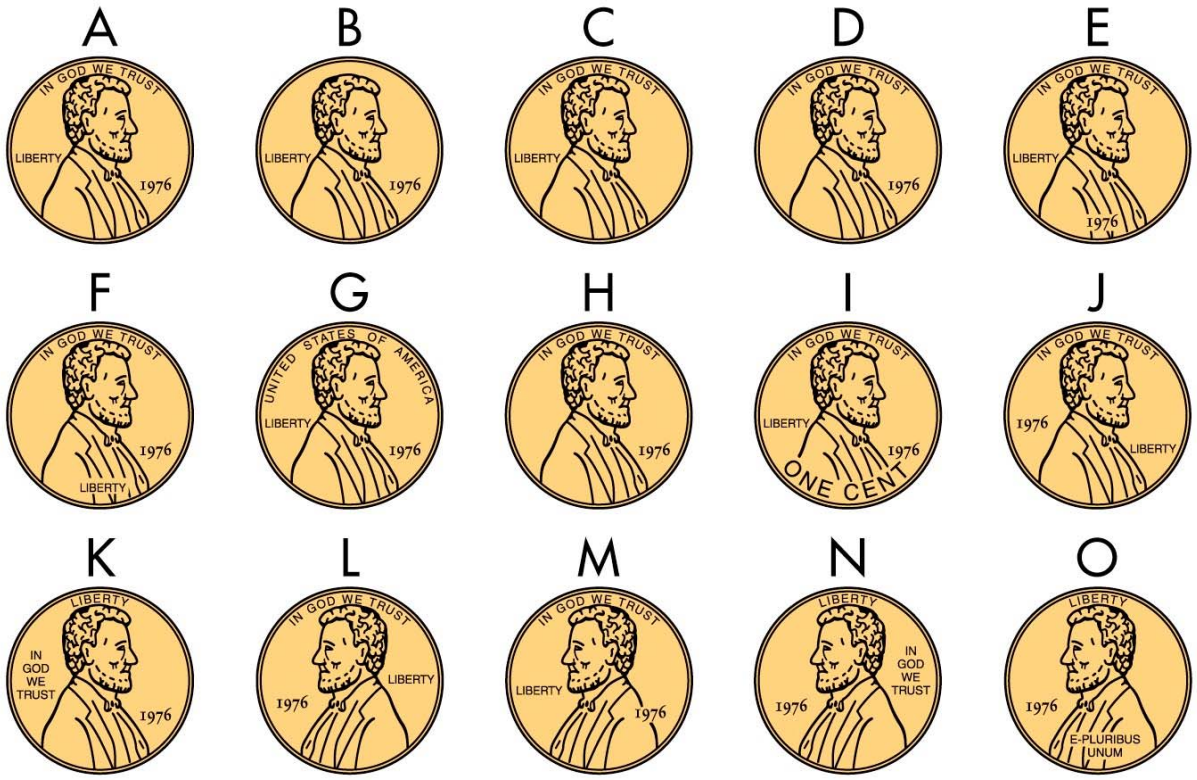
Forgetting: Encoding Failure

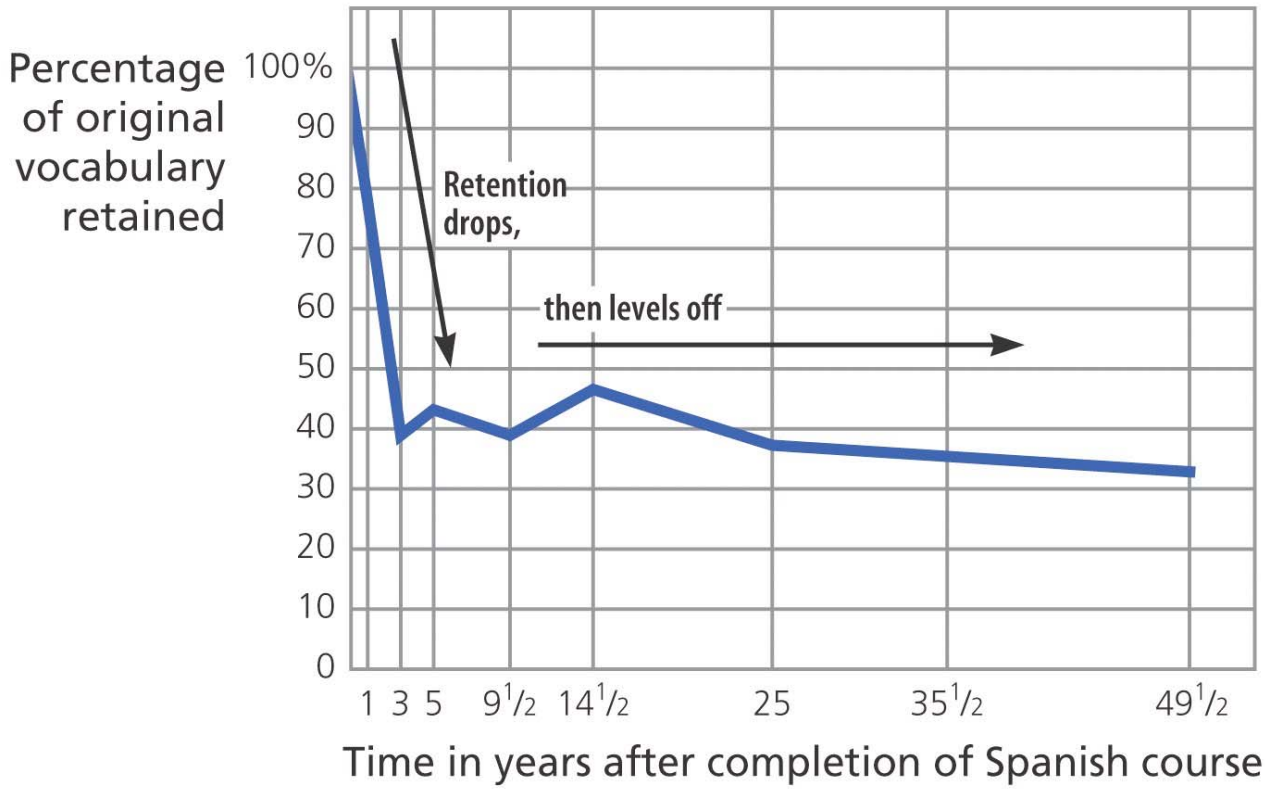
Which coin portrays a real penny?



The reason why most people can't pick out the correct penny is due to encoding failure—the tendency to not encode ALL the features of the penny.

Forgetting: Decay

Forgetting is due to normal metabolic processes that occur in the brain over time.

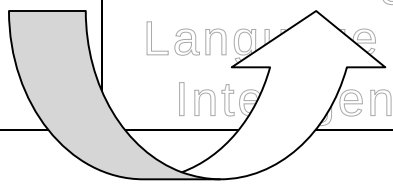


Forgetting: Interference

Interference:

- Proactive: Forgetting in which an old memory (the past) interferes with remembering a new memory; forward-acting memory interference. New memories are hard to form.

Information yesterday	Information today	Information tomorrow
Psychology of Learning	Psychology of Memory	Thinking, Language and Intelligence



- Retroactive: Forgetting in which a new memory interferes with remembering an old memory; backward-acting memory interference

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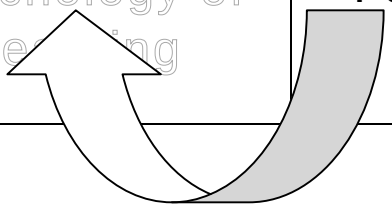
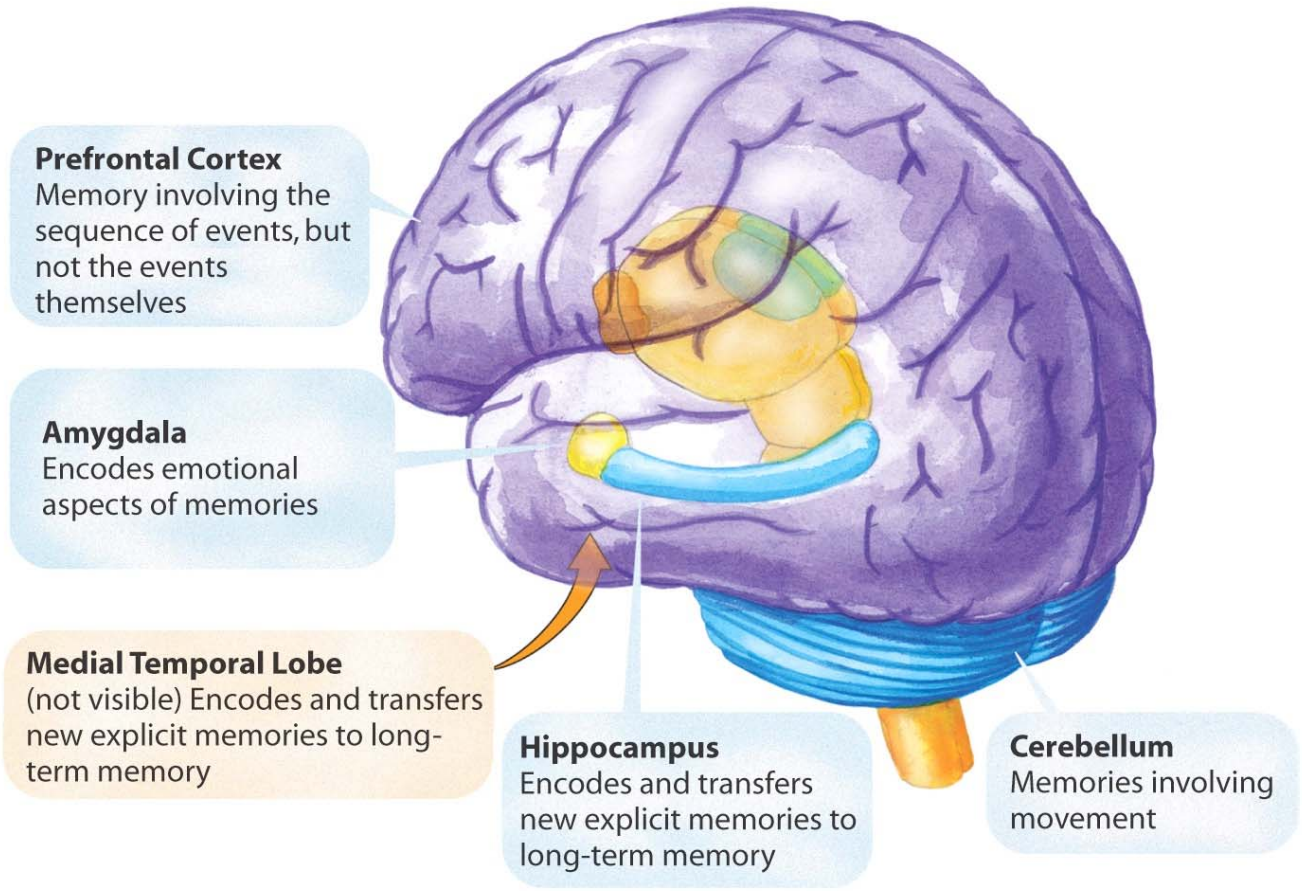


Severe Memory Loss and the Biological Basis of Memory

Type of amnesia	Definition
Retrograde	Backward-acting memory loss; especially for episodic memory. It is believed that the process of memory consolidation is impaired with severe blows to the head. • Trevor Reese Jones (Princess Diana's bodyguard) has retrograde amnesia.
Anterograde	Loss of memory caused by the inability to store new memories; forward acting memory loss. • H.M. could not form new explicit memories (episodic and semantic), but could learn and form new procedural memories.
Infantile	The inability to remember experiences during childhood. This is generally attributed to the lack of organization about the world and information is quickly lost as well as an immature hippocampus that prevents us from encoding explicit memories.

Brain Structures and Memory



Memory and the Brain--What Do We Know?

- Anterograde Amnesia
- Retrograde Amnesia
- Infantile Amnesia
- Sleep and Memory

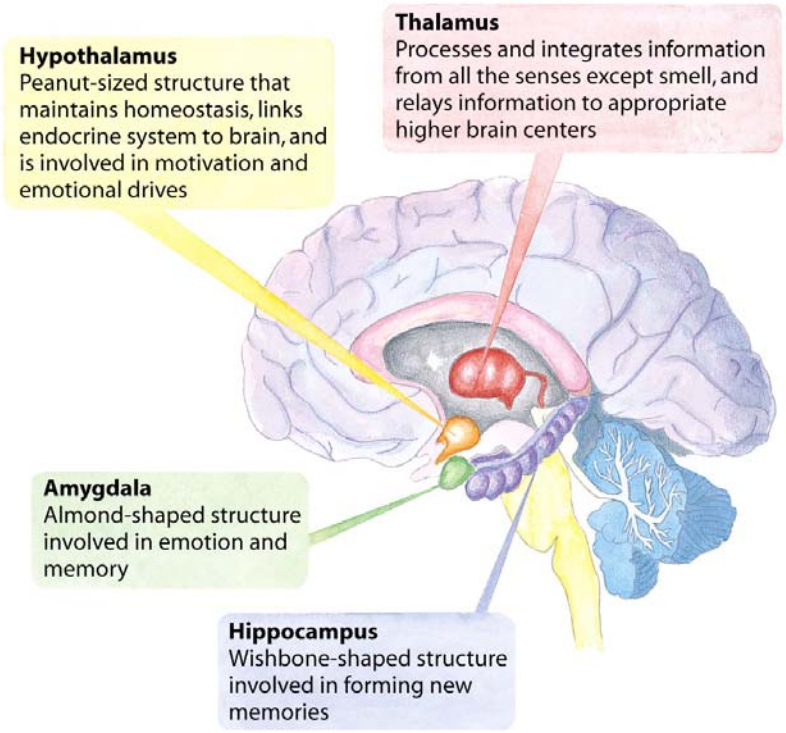
Anterograde Amnesia

Anterograde Amnesia: Memory loss for events that occur after the initial onset of amnesia

Past	**Onset of amnesia**	Present	Future

Has long term memories

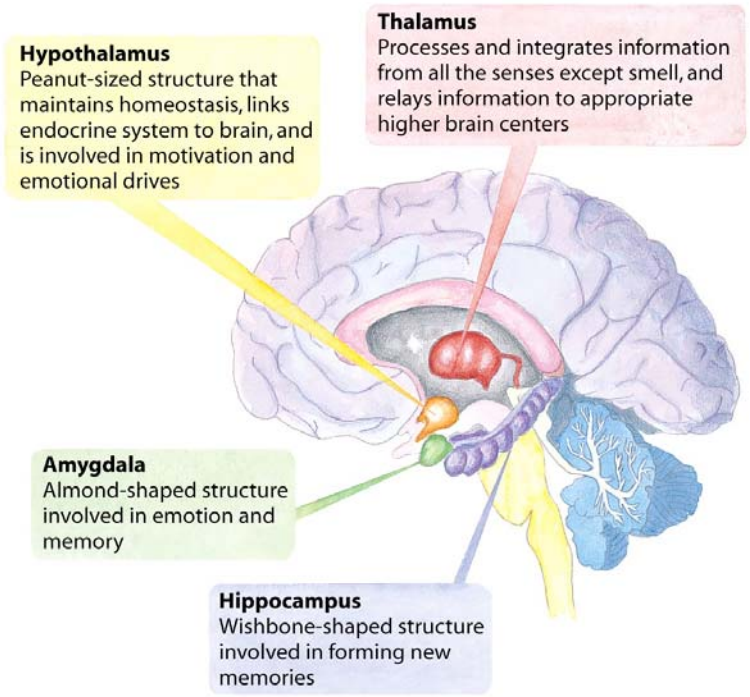
Can't form new long-term declarative (explicit) memories, but can form new procedural memories



Retrograde Amnesia

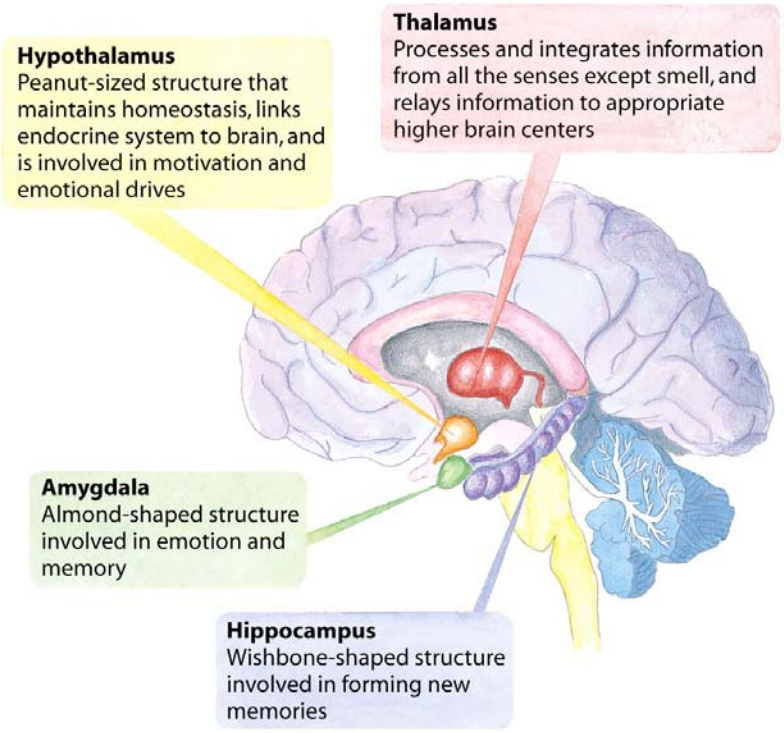
Retrograde amnesia: Memory loss for events that took place sometime in life before the onset of amnesia

Past	**Onset of amnesia**	Present	Future
	e.g. an accident		
What occurred a few moments before the accident	The accident	Later memories are intact	



Infantile Amnesia

Memory loss for early childhood (typically, memories before 3 to 4 years old) experiences



It is unknown why we can't remember early childhood memories. It is hypothesized that

- The brain regions involved in encoding episodic memories are still immature, or
- We don't encode our earliest experiences deeply and fail to form good retrieval cues

Forgetting

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Motivated Forgetting

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Amnesia:

- Retrograde: Backward-acting memory loss; especially for episodic memory.
- Anterograde: Loss of memory caused by the inability to store new memories; forward acting memory loss.
- Infantile: The inability to remember experiences during childhood.

Sleep and Memory

REM sleep (short periods in which we dream) is thought to restore mental and brain functions.

- Both animal and human studies have shown that REM sleep increases after learning a novel task and
- deprivation of REM sleep following training disrupts learning when compared to those who are not deprived of REM sleep.

Being deprived of sleep can impair your ability to form new long-term memories

Why is it important to know about the relation between sleep and memory?