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Feature	Photographic Memory	Human Memory
Unit	Pixel (tiny spec)	Chunk (a collection of elementary units that together form a meaningful unit)
Size	~2,000,000 units (iPhone camera)	~7 units in working memory ~2,000,000,000,000,000 units in episodic memory
Form	Literal and exact. Photographs remember the things themselves.	Conceptual and semantic. We remember the <b>meaning</b> of things, not the things themselves.
Stability	Stable & unchanging	Revisable
Gaps	Left blank	Filled in (and filled in memories feel as real as authentic ones)
Context	Independent	Dependent (people recall better in the same environment in which they learned)
Longevity	Last "forever"	Fade over time
Exceptions	None	None (Flashbulb memories are just like other memories)

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**Simon Reinhard**  
SpeedCards  
World Record

**21.90s**

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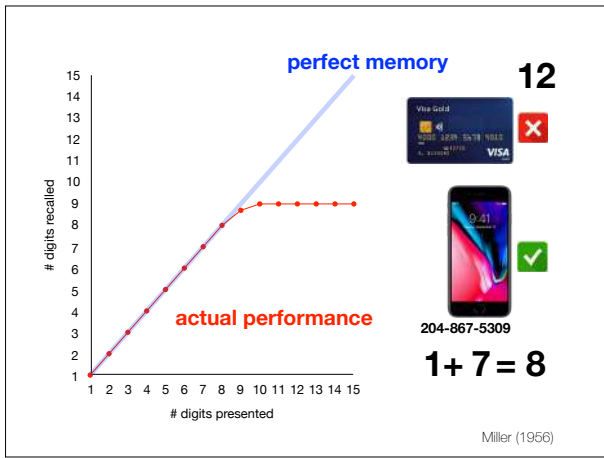
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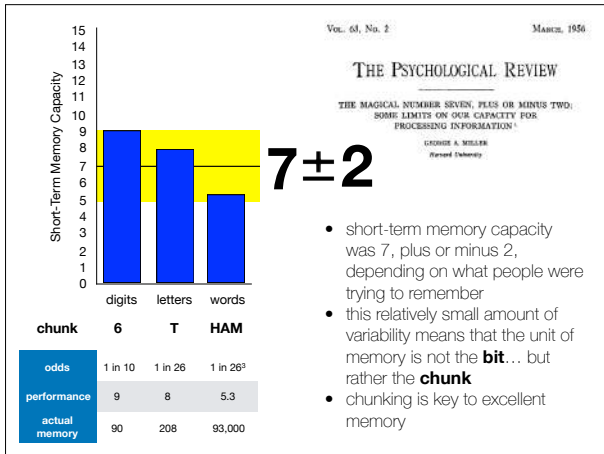
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## Four Types of Memory

- **Short-Term or Working Memory**
  - the ability to hold information in our minds for a brief time and work with it (e.g., multiple 12 x 5). Small capacity.
- **Episodic Memory**
  - Memories of events in a particular time and place (e.g., your entire life story). Large capacity
- **Semantic Memory**
  - The more or less permanent store of knowledge that people have (e.g., what the word "dog" means). Large capacity.
- **"Collective Memory"**
  - Memories that people in a group share (e.g., customs, historical events)

how to get these into

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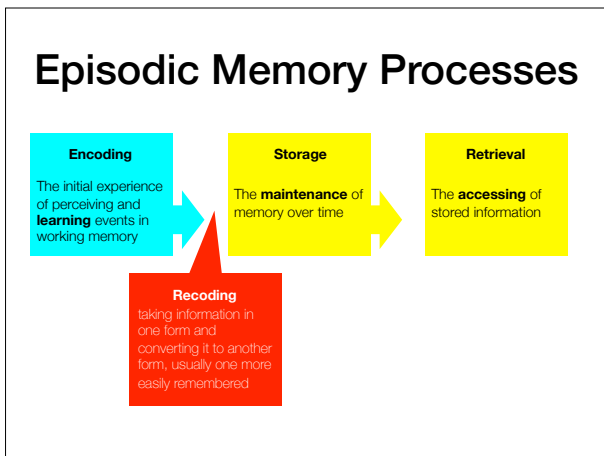
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# Major System of recoding

1. Split number into 3-digit sets
2. Convert each digit to a letter
3. Form words with the digits
4. Remember the words

### Conversion Table

0 = S or Z  
1 = T or D  
2 = N  
3 = M  
4 = R  
5 = L  
6 = Ch or Sh or J  
7 = K or G  
8 = V or F  
9 = P or B

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## recoding phase

MaJoR      BooST      KaLM  
MJR        BST        KLM  
**364690901995753**  
JBS           PPL  
JoBS        PeoPLe

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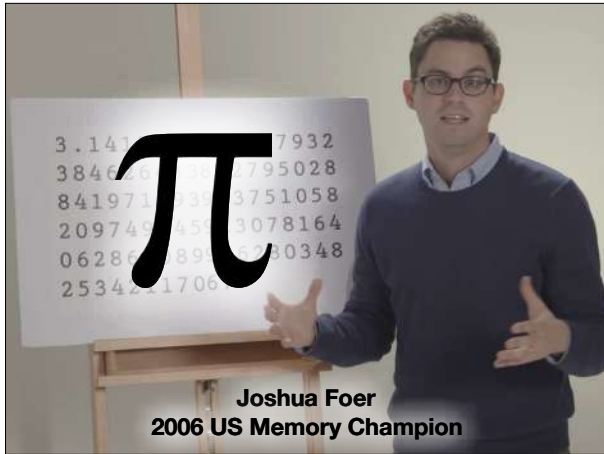
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recoding recruits more of the brain to help memory

# 592

Short-term Memory  
Verbal Memory  
Spatial Memory  
Visual Memory

592  
LByaN

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dog attacking young black man

white police officer with attack dog

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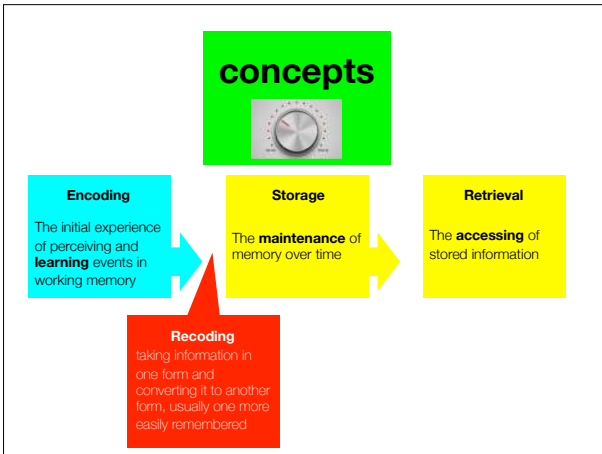
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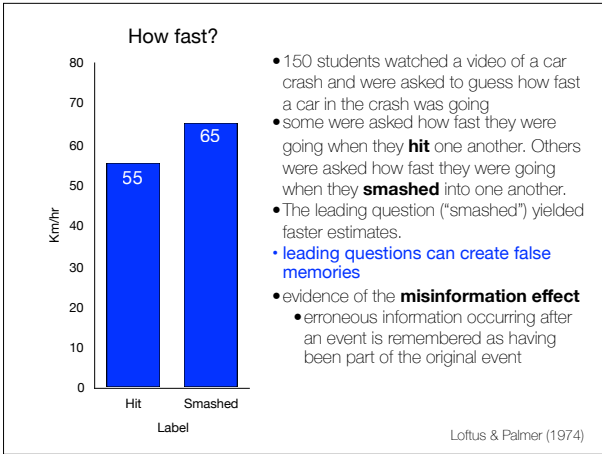
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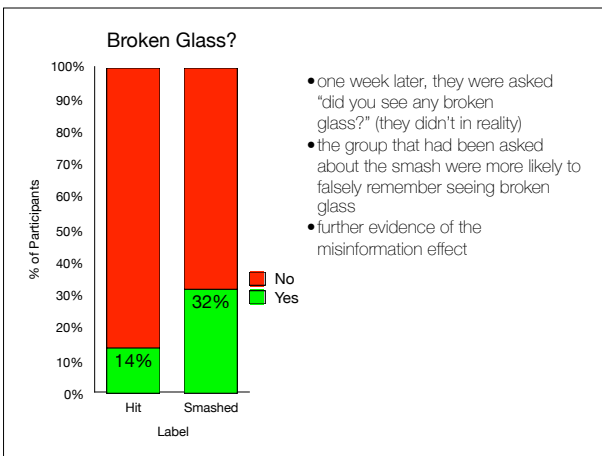
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# INNOCENCE PROJECT 25

ANNIVERSARY

Use DNA evidence to exonerate wrongly convicted persons



<https://www.youtube.com/watch?v=DZsckuKIH94>

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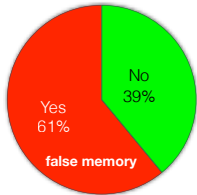
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- Participants heard a list of 15 words read out loud
- All of the words fit into a category
  - example: *nurse, sick, lawyer, medicine, health, hospital, dentist, physician, ill, patient, office, stethoscope, surgeon, clinic, cure*
- They were then asked "Did you heard the word \_\_\_\_\_?" where \_\_\_\_\_ was a word that belonged to the category but **they hadn't actually heard** (e.g., *doctor*)
- Most people **falsely remembered** hearing a word that they didn't actually hear
- explanation: list activated concepts & people then remembered the concept (not the words on the list)
- Upshot: The meaning-making reflex can fill in gaps and produce false memories

Stadler, Roediger, & McDermott (1999)

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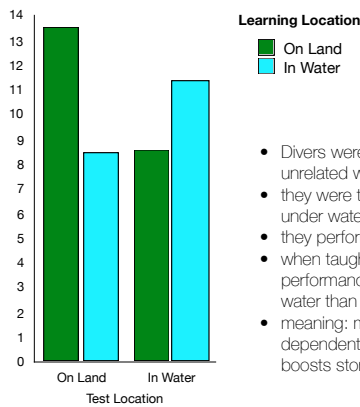
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# Words Recalled



- Divers were taught a list of 36 unrelated words on land
- they were then tested on land or under water
- they performed better on land
- when taught in the water, their performance was better in the water than on land
- meaning: memory is context-dependent: the environment boosts storage and retrieval

Godden & Baddeley (1975)

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## Hermann Ebbinghaus (1885)

pioneer of the science of memory

- created a series of 3-letter nonsense syllables
- he then crammed: memorized them by rehearsing them over and over and over
- then systematically tested how much he remembered over time



JIR SOQ MEF LYP KEF BUX  
VOG PAZ WID TUS

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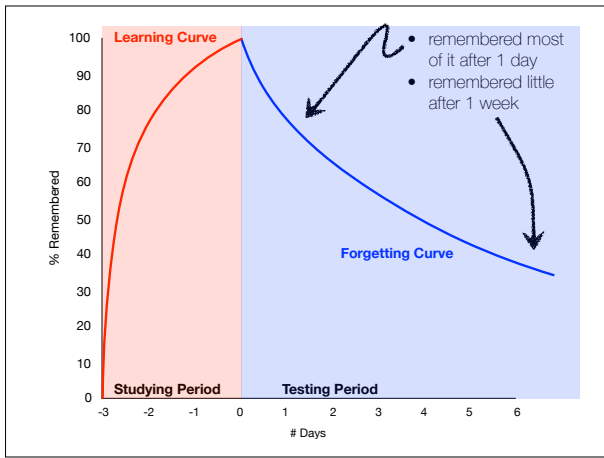
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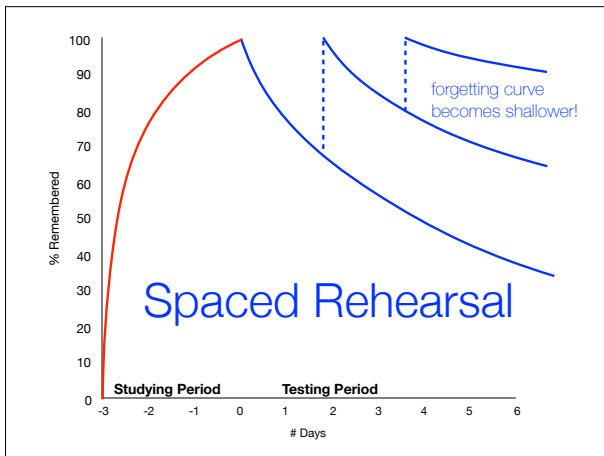
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## Ebbinghaus Memory Studies

- repeating things over and over makes us remember them
- once we stop rehearsing, we begin to forget pretty quickly
  - therefore: cramming is
    - effective for performing well on a test
    - ineffective for long-term retention
- to remember things for a long time, **spaced rehearsal** works
  - has two effects
    - refreshes memory (back to 100%)
    - causes memory decay to slow down (long term retention)

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optional but highly recommended podcast about the "Foot Soldier of Birmingham"



<http://revisionisthistory.com/episodes/14-the-foot-soldier-of-birmingham>

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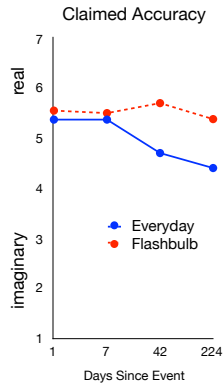
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- The day after Sept. 11, 2001 terrorist attacks, students were asked to describe, in detail
  - how they learned about the terrorist attacks (**flashbulb** memory)
  - or, about an **everyday** event in the days leading up to 9/11 (e.g., a party or sporting event)
- they then reported how accurate/real their memories felt 1, 7, 42, and 224 days after 9/11
- flashbulb memories felt more real



Talarico & Rubin (2003)

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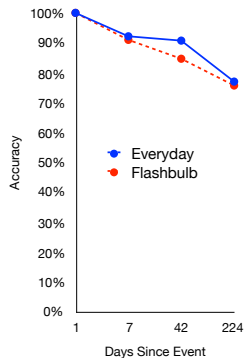
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- they then asked participants on subsequent days to recall the events
- Later coded for accuracy (how well they matched up with original recollection)
- Flashbulb memories were no more accurate. Perhaps slightly less accurate!
- Both flashbulb and everyday memories faded at the same rate
- Meaning: flashbulb memories only feel special. In reality, they are ordinary.



Talarico & Rubin (2003)

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## People do not have photographic memory.

photographic



human




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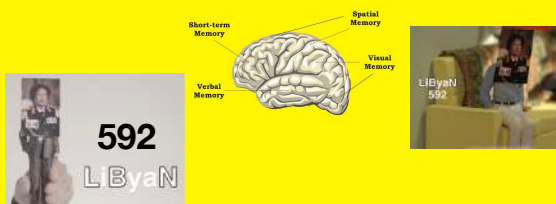
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the key to excellent memory is recoding




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