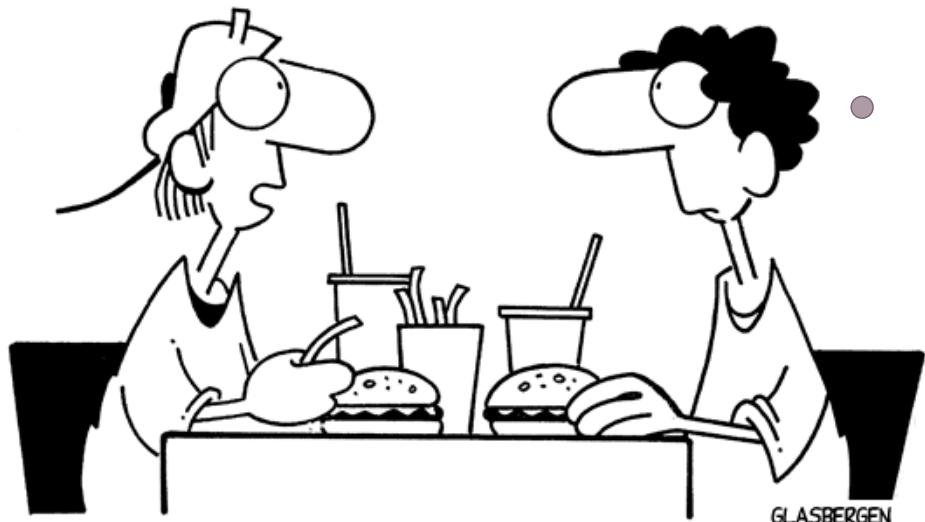


MEMORY



**"I forgot to make a back-up copy of my brain,
so everything I learned last semester was lost."**

You have to begin to loose your memory if only in bits and pieces, to realise that memory is what makes our lives. Life without memory is not life at all . . . Our memory is our coherence, our reason, our feeling, even our action. Without it, we are nothing.

OVERVIEW

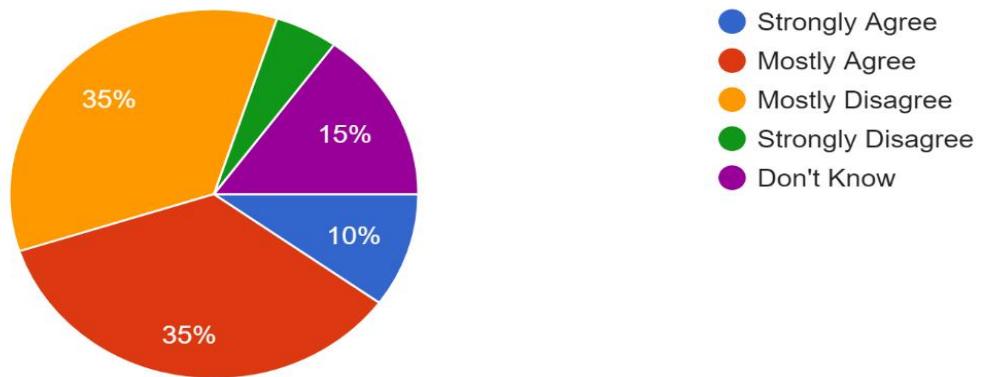
- What is Memory?
- Is it an unitary function?
- Stages in information Processing
- How do we study memory?
- Some models of the memory
- Clinical cases of Memory

LET'S DO A SURVEY

<https://forms.gle/ozyXkVYRNA3CCSKF7>

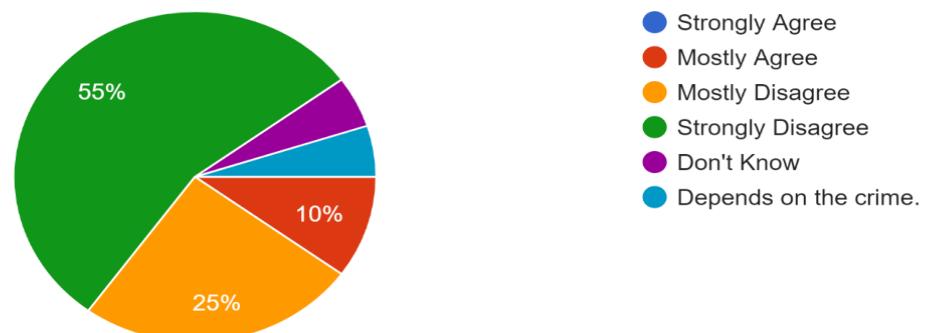
People suffering from amnesia typically cannot recall their own name or identity.

20 responses



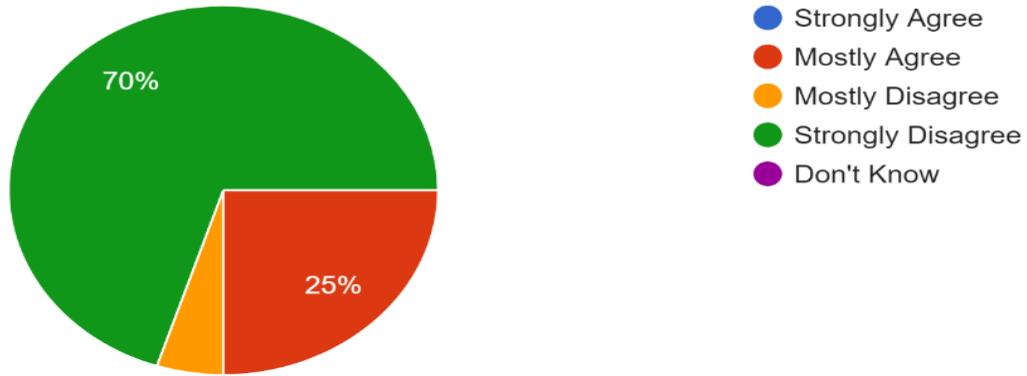
In my opinion, the testimony of one confident eye-witness should be enough evidence to convict a defendant of a crime.

20 responses



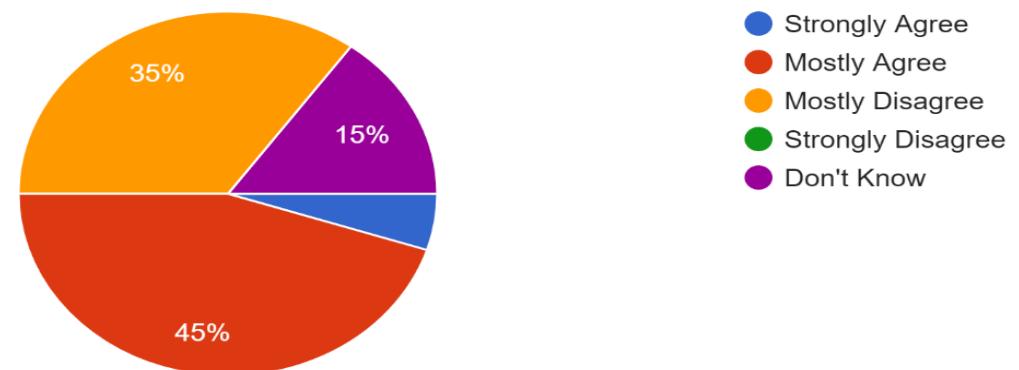
Human memory works like a video camera, accurately recording the events we see and hear so that we can review and inspect them later.

20 responses



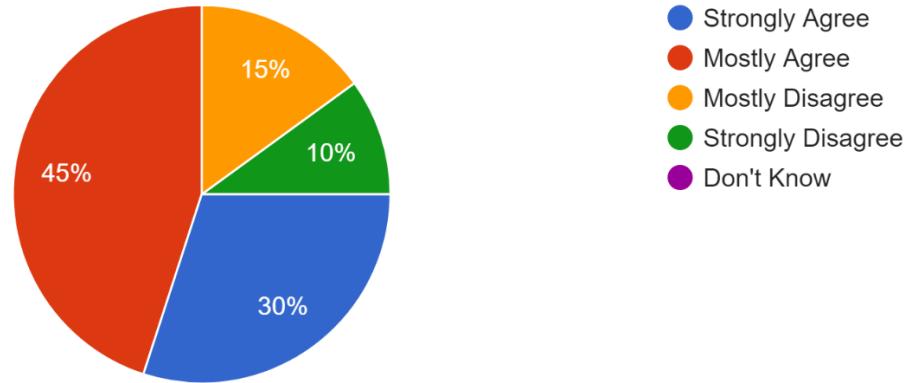
Hypnosis is useful in helping witnesses accurately recall details of crimes.

20 responses



People generally notice when something unexpected enters their field of view, even when they're paying attention to something else.

20 responses



Inattention Blindness – Failure to perceive the object that are not the focus of attention



**Oh no!
You missed it?**



Why this should matter?

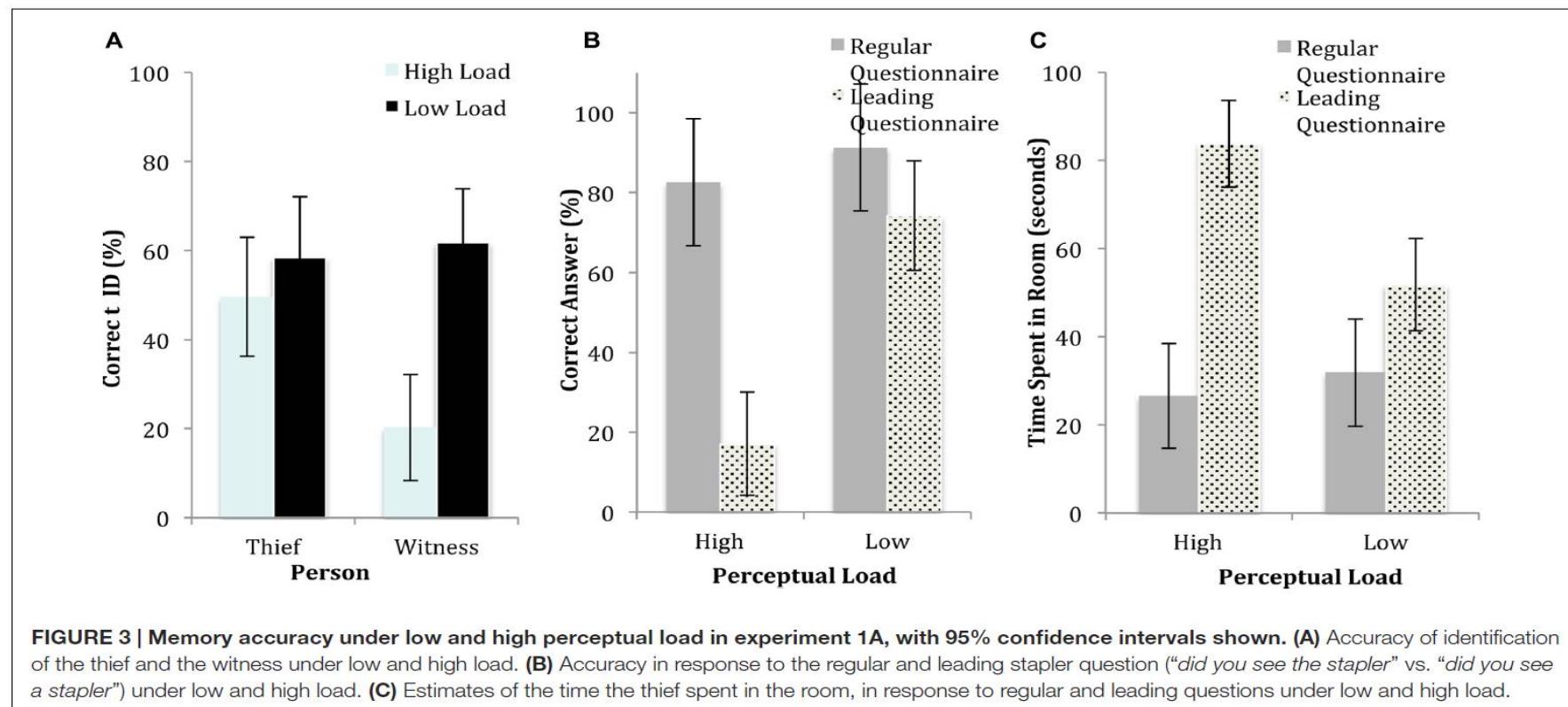
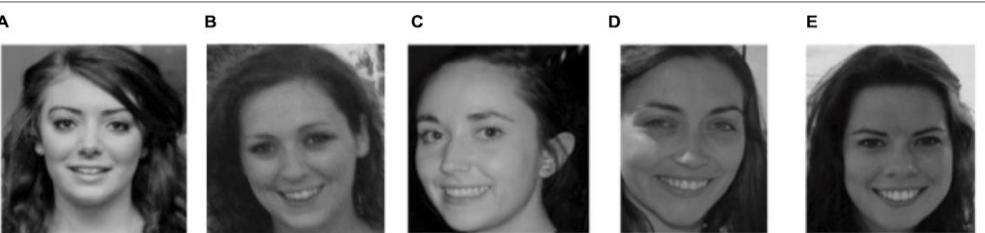
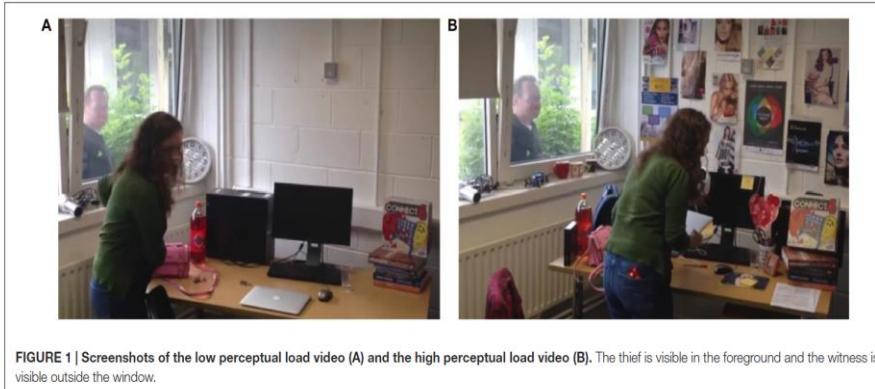




FIGURE 4 | Screenshots of the shopping area in the high load (A) and low load (B) driving tasks. Pictured is the jeep that is about to be involved in the accident at the crossroads under the billboards.

Perceptual Load Affects Eyewitness Accuracy and Susceptibility to Leading Questions

Gillian Murphy^{1*} and Ciara M. Greene²

¹School of Applied Psychology, University College Cork, Cork, Ireland; ²School of Psychology, University College Dublin, Dublin, Ireland

Load Theory (Levin, 1995, 2005) states that the level of perceptual load in a task (i.e., the amount of information involved in processing task-relevant stimuli) determines the efficiency of selective attention. There is evidence that perceptual load affects distractor processing, with increased inattentional blindness under high load. Given that high load can result in individuals failing to report seeing obvious objects, it is conceivable that load may also impair memory for the scene. The current study is the first to assess the effect of perceptual load on eyewitness memory. Across three experiments (two video-based and one in a driving simulator), the effect of perceptual load on eyewitness memory was assessed. The results showed that eyewitnesses were less accurate under high load in auditory or visual tasks. For example, memory for the red car that passed by the window at the edge of the scene was significantly worse under high load. High load memories were also more open to suggestion, showing increased susceptibility to leading questions. High visual perceptual load also affected recall for auditory information, illustrating a possible cross-modal perceptual load effect on memory accuracy. These results have implications for eyewitness memory researchers and forensic professionals.

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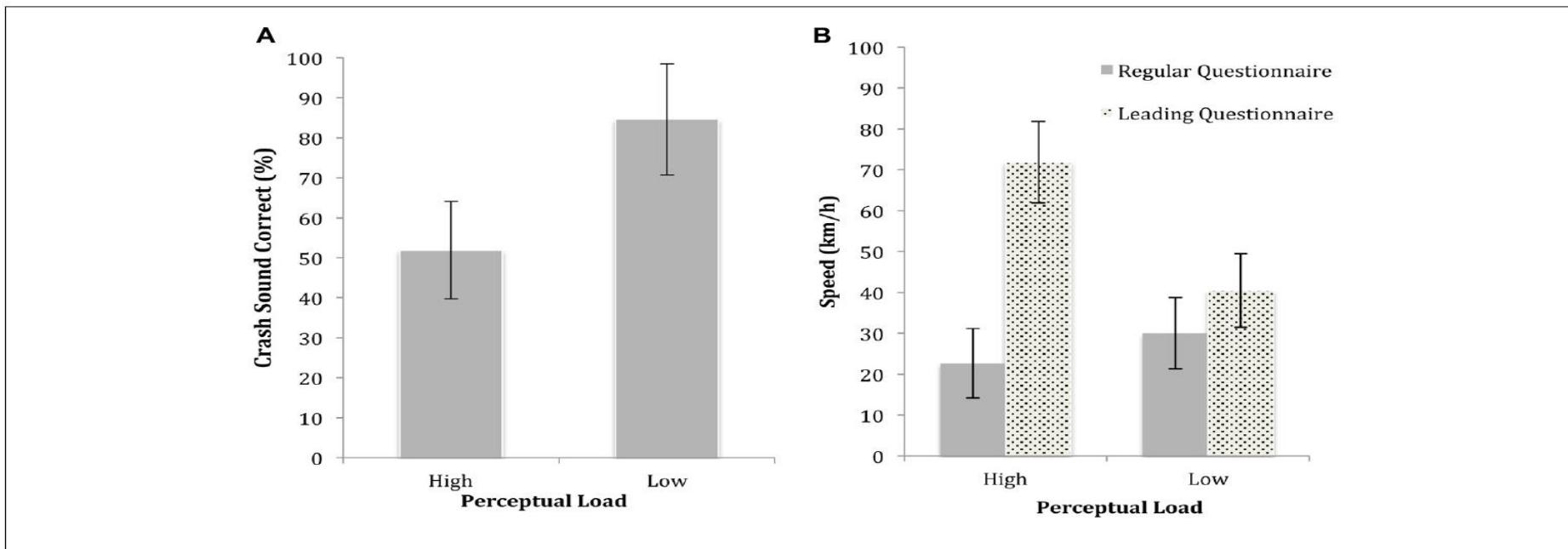


FIGURE 5 | Results from experiment 2 examining (A) cross-modal load effect of the low and high load drives, (B) the effect of a leading question about the speed of the red car, under low and high load.

Table 2. Statements used and percentage of respondents giving each response, with the expert ($N=16$) and the full Psychonomics sample ($N=73$) percentages given for comparison.

Statement	Group	Strongly Agree	Mostly Agree	Mostly Disagree	Strongly Disagree	Don't Know
Amnesia: People suffering from amnesia typically cannot recall their own name or identity.	Public	47.8	34.9	10.1	3.7	3.7
	Experts	0.0	0.0	12.5	87.5	0.0
	Psychonomics	0.0	1.4	31.5	57.5	9.6
Confident testimony: In my opinion, the testimony of one confident eyewitness should be enough evidence to convict a defendant of a crime.	Public	11.2	25.9	35.1	24.7	3.1
	Experts	0.0	0.0	6.2	93.8	0.0
	Psychonomics	0.0	0.0	11.0	87.7	1.4
Video memory: Human memory works like a video camera, accurately recording the events we see and hear so that we can review and inspect them later.	Public	23.9	39.1	23.4	11.3	2.4
	Experts	0.0	0.0	6.2	93.8	0.0
	Psychonomics	0.0	0.0	2.7	97.3	0.0
Hypnosis: Hypnosis is useful in helping witnesses accurately recall details of crimes.	Public	15.0	39.6	26.9	10.4	8.1
	Experts	0.0	0.0	18.8	68.8	12.5
	Psychonomics	0.0	0.0	15.1	69.9	15.1
Unexpected events: People generally notice when something unexpected enters their field of view, even when they're paying attention to something else.	Public	27.2	50.3	18.3	2.1	2.1
	Experts	0.0	18.8	31.2	50.0	0.0
	Psychonomics	2.7	15.1	35.6	43.8	2.7
Permanent memory: Once you have experienced an event and formed a memory of it, that memory does not change.	Public	16.5	31.1	34.7	14.1	3.6
	Experts	0.0	0.0	0.0	93.8	6.2
	Psychonomics	0.0	0.0	6.8	91.8	1.4

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What People Believe about How Memory Works: A Representative Survey of the U.S. Population

Daniel J. Simons^{1*}, Christopher F. Chabris²

¹ Department of Psychology, Beckman Institute, University of Illinois, Champaign, Illinois, United States of America, ² Department of Psychology, Union College, Schenectady, New York, United States of America

Abstract

Incorrect beliefs about the properties of memory have broad implications: The media conflate normal forgetting and inadvertent memory distortion with intentional deceit; juries issue verdicts based on flawed intuitions about the accuracy and confidence of testimony, and students misunderstand the role of memory in learning. We conducted a large representative telephone survey of the U.S. population to assess common beliefs about the properties of memory. Substantial numbers of respondents agreed with propositions that conflict with expert consensus: Amnesia results in the inability to remember one's own identity (83% of respondents agreed), unexpected objects generally grab attention (78%), memory works like a video camera (63%), memory can be enhanced through hypnosis (55%), memory is permanent (48%), and the testimony of a single confident eyewitness should be enough to convict a criminal defendant (37%). This discrepancy between popular belief and scientific consensus has implications from the classroom to the courtroom.

Across all six items, an average of 60.4% of respondents agreed with statements that the expert sample almost uniformly rejected. In other words, fewer than 40% of the responses agreed with the scientific consensus. More than half of respondents disagreed with

Amnesia: 82.7% of respondents agreed that “people suffering from amnesia typically cannot recall their own name or identity.” All 16 experts disagreed.

Confident Testimony: 37.1% agreed that “in my opinion, the testimony of one confident eyewitness should be enough evidence to convict a defendant of a crime.” All 16 experts disagreed.

Video Memory: 63.0% agreed that “human memory works like a video camera, accurately recording the events we see and hear so that we can review and inspect them later.” All 16 experts disagreed.

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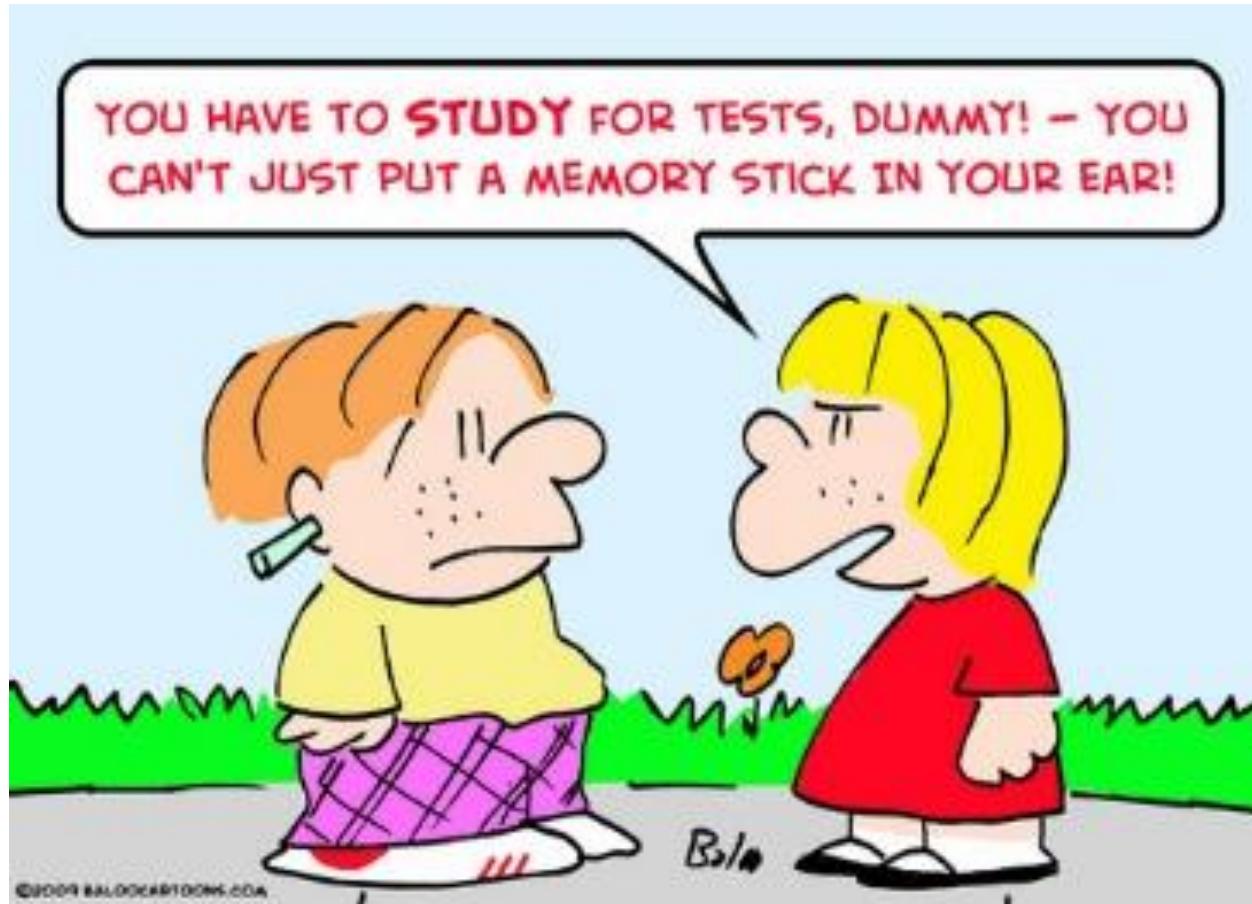
¹ Department of Psychology, Beckman Institute, University of Illinois, Champaign, Illinois, United States of America, ² Department of Psychology, Union College, Schenectady, New York, United States of America

Abstract

Incorrect beliefs about the properties of memory have broad implications: The media conflate normal forgetting and inadvertent memory distortion with intentional deceit, juries issue verdicts based on flawed intuitions about the accuracy and confidence of testimony, and students misunderstand the role of memory in learning. We conducted a large representative telephone survey of the U.S. population to assess common beliefs about the properties of memory. Substantial numbers of respondents agreed with propositions that conflict with expert consensus: Amnesia results in the inability to remember one's own identity (83% of respondents agreed), unexpected objects generally grab attention (78%), memory works like a video camera (63%), memory can be enhanced through hypnosis (55%), memory is permanent (48%), and the testimony of a single confident eyewitness should be enough to convict a criminal defendant (37%). This discrepancy between popular belief and scientific consensus has implications from the classroom to the courtroom.

Hypnosis: 55.4% agreed that “hypnosis is useful in helping witnesses accurately recall details of crimes.” 14 experts disagreed and 2 responded “Don’t Know/Unclear.”

Unexpected Events: 77.5% agreed that “people generally notice when something unexpected enters their field of view, even when they’re paying attention to something else.” 13 experts disagreed and 3 agreed.



Discussion about recording and construction ... leads us realize the individual differences in constructing memory in reference to the same information available at a particular time and space ... ; STM loss; Jill Price; Encoding ...

Recall the details of activities you had last week !

5 mins.

AN INTERESTING CASE OF MEMORY – JILL PRICE



JILL PRICE

Neurocase (2006) 12, 35–49
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ISSN: 1355-4795 print
DOI: 10.1080/13554790500473680

 Psychology Press
Taylor & Francis Group

A Case of Unusual Autobiographical Remembering

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This report describes AJ, a woman whose remembering dominates her life. Her memory is “nonstop, uncontrollable, and automatic.” AJ spends an excessive amount of time recalling her personal past with considerable accuracy and reliability. If given a date, she can tell you what she was doing and what day of the week it fell on. She differs from other cases of superior memory who use practiced mnemonics to remember vast amounts of personally irrelevant information. We propose the name *hyperthymestic syndrome*, from the Greek word thymesis meaning remembering, and that AJ is the first reported case.

Introduction

What would it be like to live with a memory so powerful that it dominates one’s waking life? We present here the case of AJ, a woman who told us:

My memory has ruled my life.... It is like my sixth sense ... There is no effort to it ... I want to know why I remember everything. I think about the past all the time... . It's like a running movie that never stops. It's like a split screen. I'll be talking to someone and seeing something else ... Like we're sitting here talking and I'm talking to you and in my head I'm thinking about something that happened to me in December 1982. December 17, 1982, it was a Friday. I started to work at

had an exceptional memory ... I don't think I would never want to have this but it's a burden.

These are quotes from various conversations we have had with A.J.

This delightful and fascinating woman contacted JLM with the following email that describes in her own words her extraordinary recollective abilities and how they impact her life:

*Dear Dr. McGaugh,
As I sit here trying to figure out where to begin explaining
why I am writing you and your colleague (LC) I just hope
somehow you can help me*

ACTIVITY 1 – TOP 10 LIST

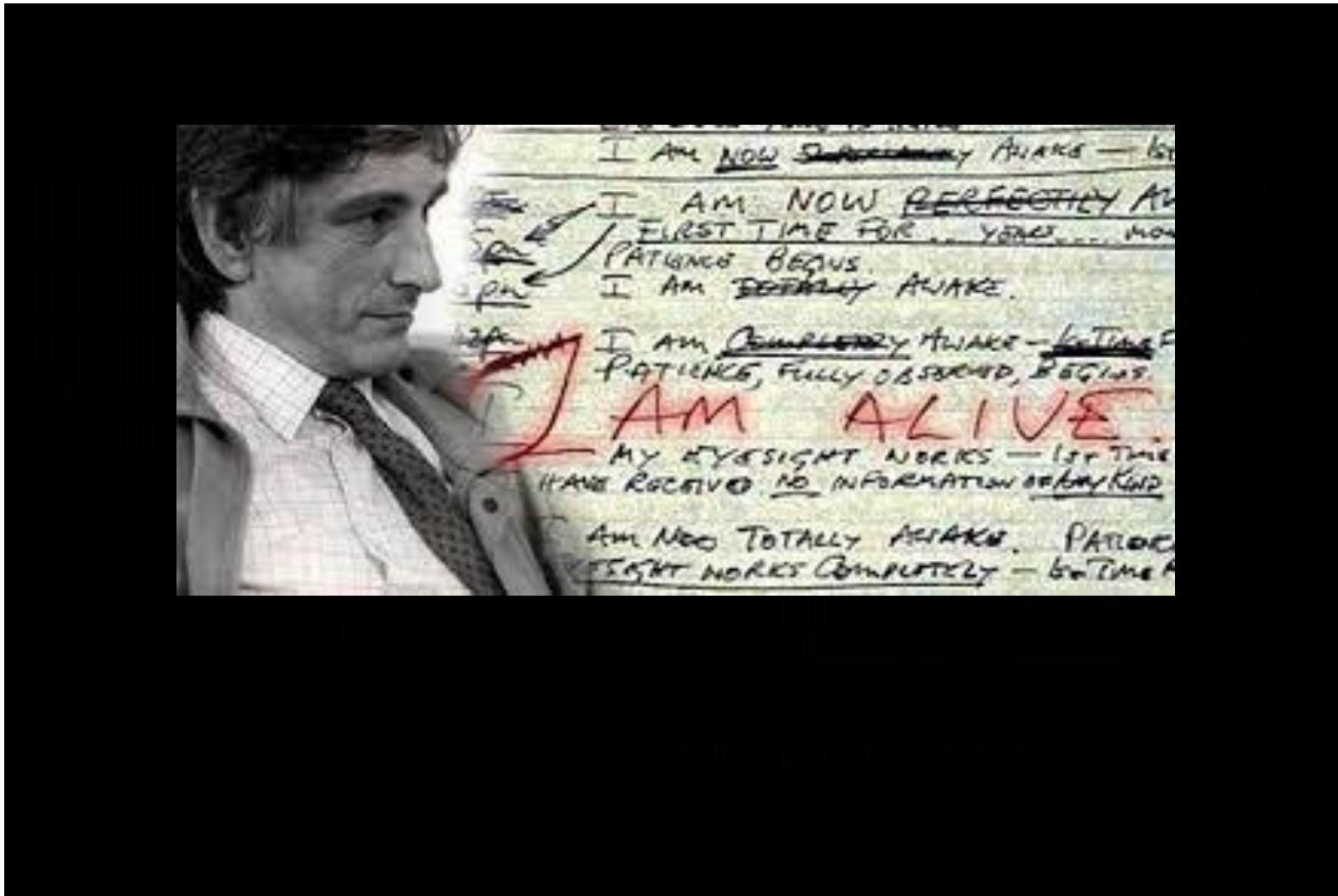
- Top 10 list of what you use memory for:
 - Remembering class timing etc....
 - 2 mins.
 - Categorize (group activity – 1 min.
 - <https://forms.gle/TPfq6j1o7qzJo9PKA>

WHAT ARE THE PURPOSES OF MEMORY?

- Retroactive vs. Prospective Memory
 - Clive Wearing (Annenberg, 2000)
<https://www.youtube.com/watch?v=Vwigmktix2Y>
 - Temporal Lobe damage
 - Memory shorter than 1 mins.
 - Inability to form new memories , i.e. prospective memory
 - Planning of a day, or tasks; learning etc would be a great problem
- Memory is not important just for past, it is equally important for your future ...



CLIVE WEARING



- We sometimes forget something, which we desperately want to remember
- We sometimes remember things that never really happened
- Sometimes it serves us well and other times it miserably fails us
- When we can trust and when we should be skeptical about them?

WHAT IS MEMORY?

- *Everything in life is memory, save for the thin edge of the present*

(Gazzaniga, 2000)

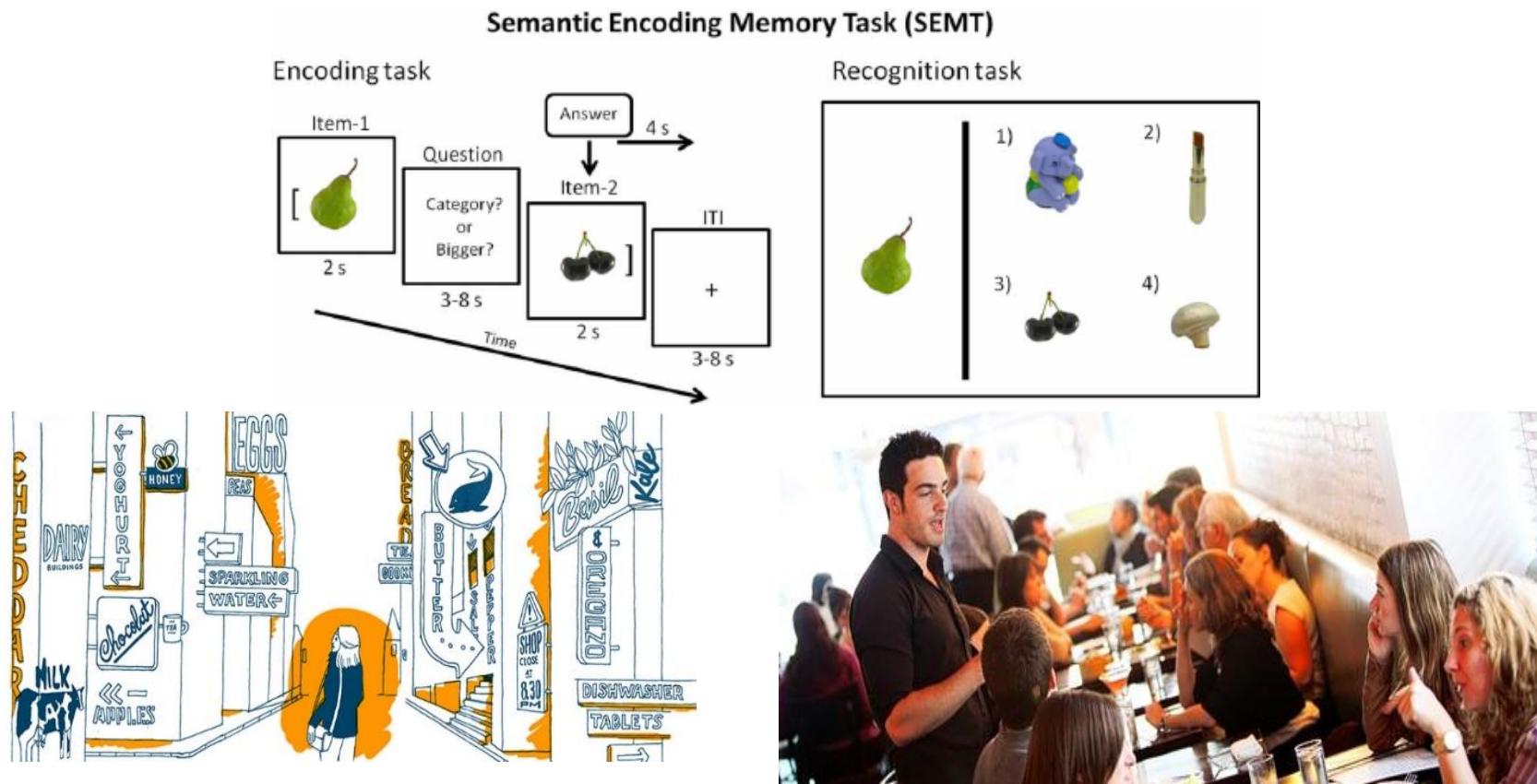
- *The thin edge of the present is what is happening right at this moment, but a moment from now the present will become the past, and some of the past will become stored in memory. “Everything in life is memory”*
- *Memory is the process involved in retaining, retrieving, and using information about stimuli, images, events, ideas and skills after the original information is no longer present*

(Goldstein, 2008)

- What is memory? Is it a recording device? Or it can be manipulated, and constructive in nature?
- What is the difference between the two?

Encoding, storage, retrieval

Encoding: Process of transforming into a lasting memory the information our senses take in



Visual Imagery – encoding – method of loci

Organizational - encoding

**Semantic
22061823**

Can you remember this?

You have a chit in your hand, open them and do the tasks – as instructed

Think of a meaning of the information, like a gambler would see these numbers like – betting about \$220 at 6-to-1 odds on horse number 8 to place 2nd in the 3rd race – **semantic , elaboration**

Do you see any rhyming here? Or any sort of matching? – **Rhyme**

Think about the visual properties of the word – **Visual or basic properties – like odd / even**

HAT

Which one is the effective?

Activity : Recall the items

Divide into three groups, by asking only the active group look at the screen, rest close their eyes

Organization: categories

Peach, Cow, Chair, Apple, Table, Cheery, Lion, Couch, Horse, Desk

Visual Imagery: place them with their images in head

Peach, Cow, Chair, Apple, Table, Cheery, Lion, Couch, Horse, Desk

Semantic: Organize them with elaborative associations

Peach, Cow, Chair, Apple, Table, Cheery, Lion, Couch, Horse, Desk

Peach, Cow, Chair, Apple, Table, Cheery, Lion, Couch, Horse, Desk

Emotional quotients: survival, emotional association leads to varied form of semantic, visual and organization and in turn formation of better memory

STORAGE - IS MEMORY AN UNITARY FUNCTION?

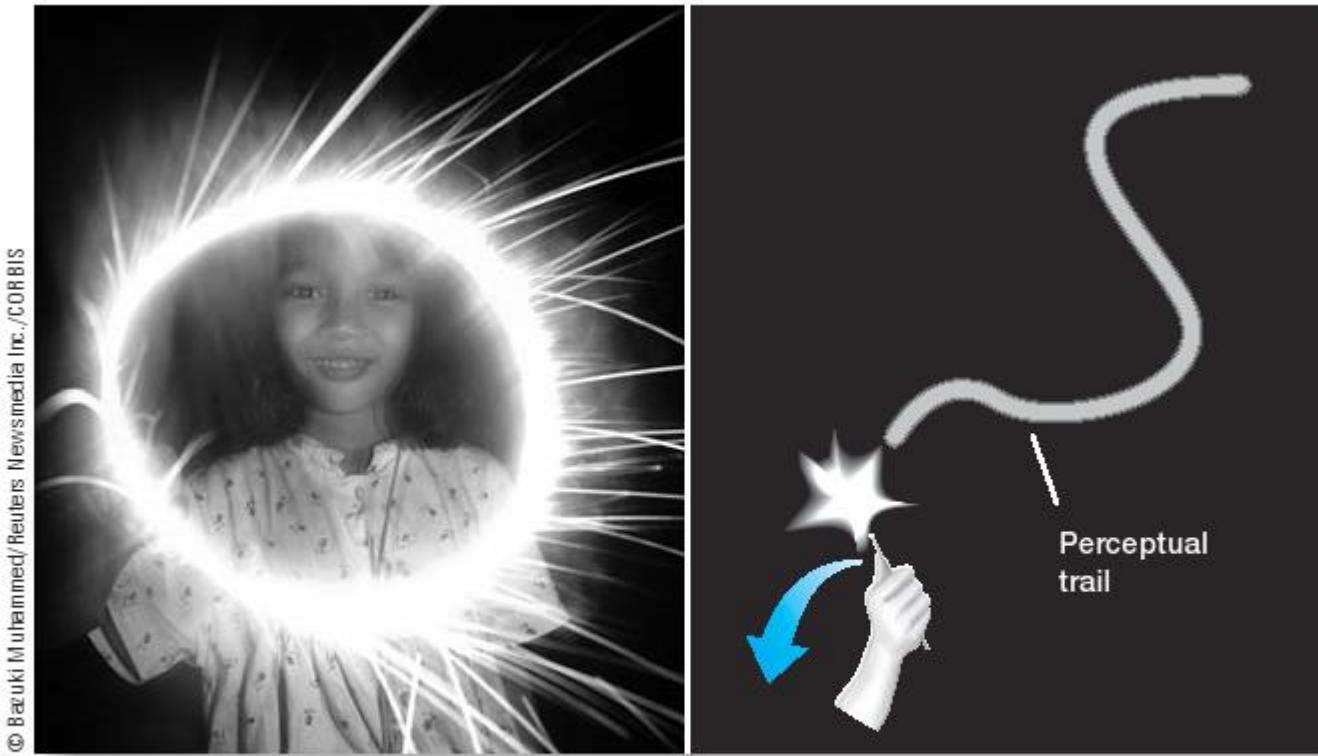
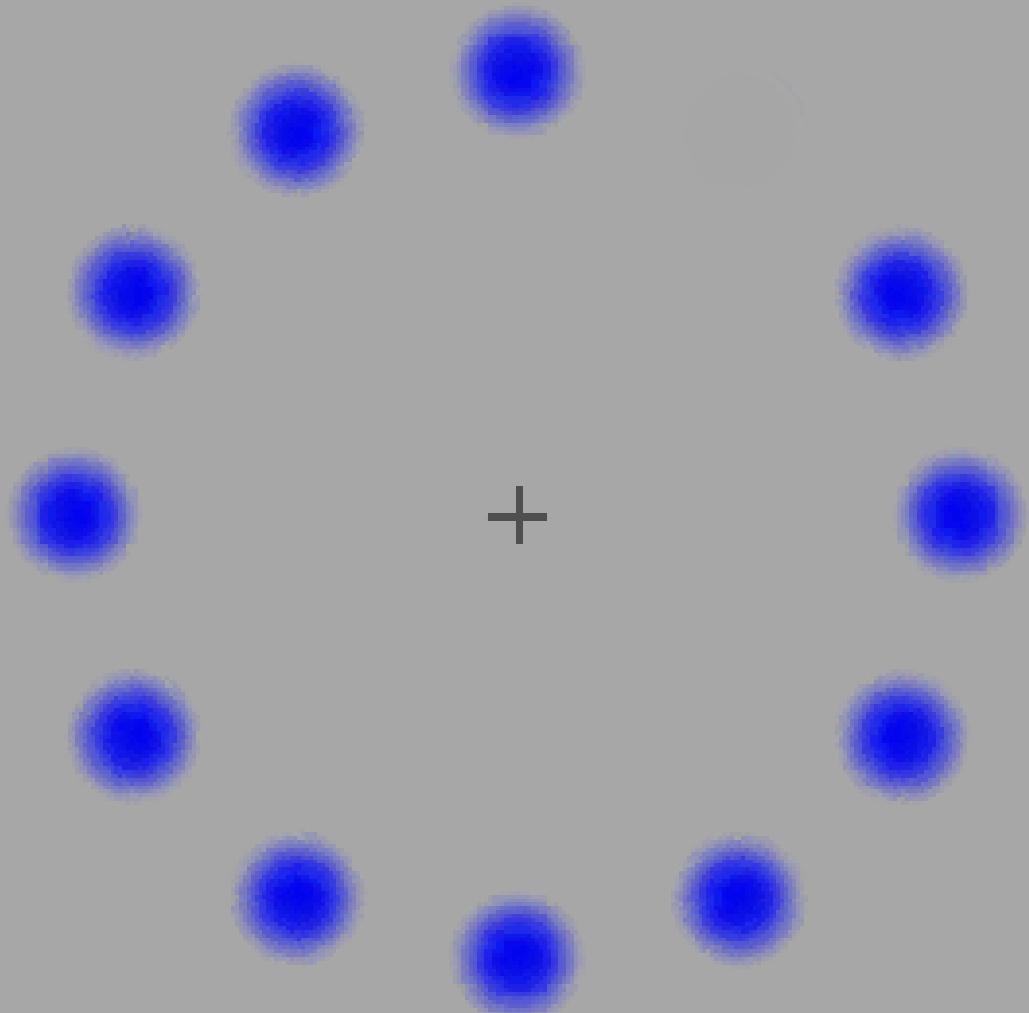


Figure 5.5 (a) A sparkler can cause a trail of light when it is moved rapidly. (b) This trail occurs because the perception of the light is briefly held in the mind.

Storage: process of maintaining information in memory over time, i.e. retaining the information



U

G

J

X

P

J

M

B

F

C

A

L

SENSORY MEMORY

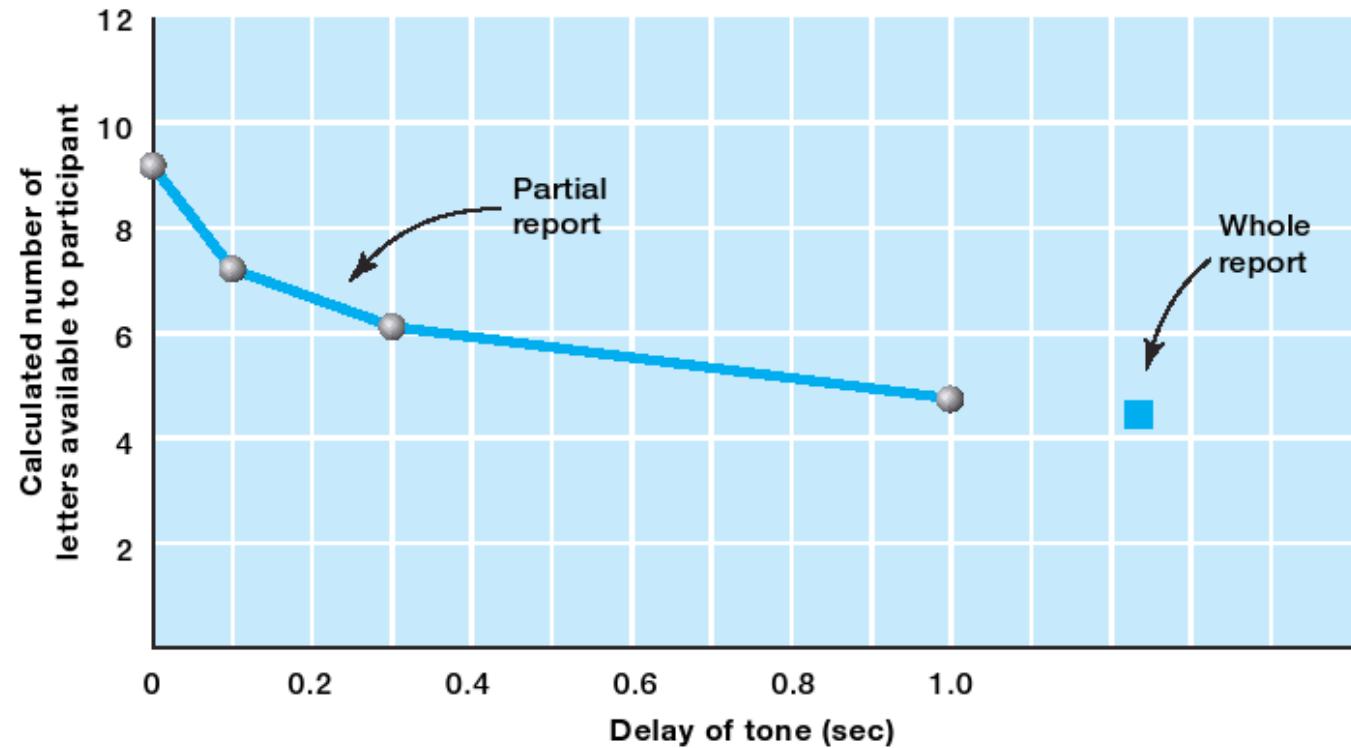
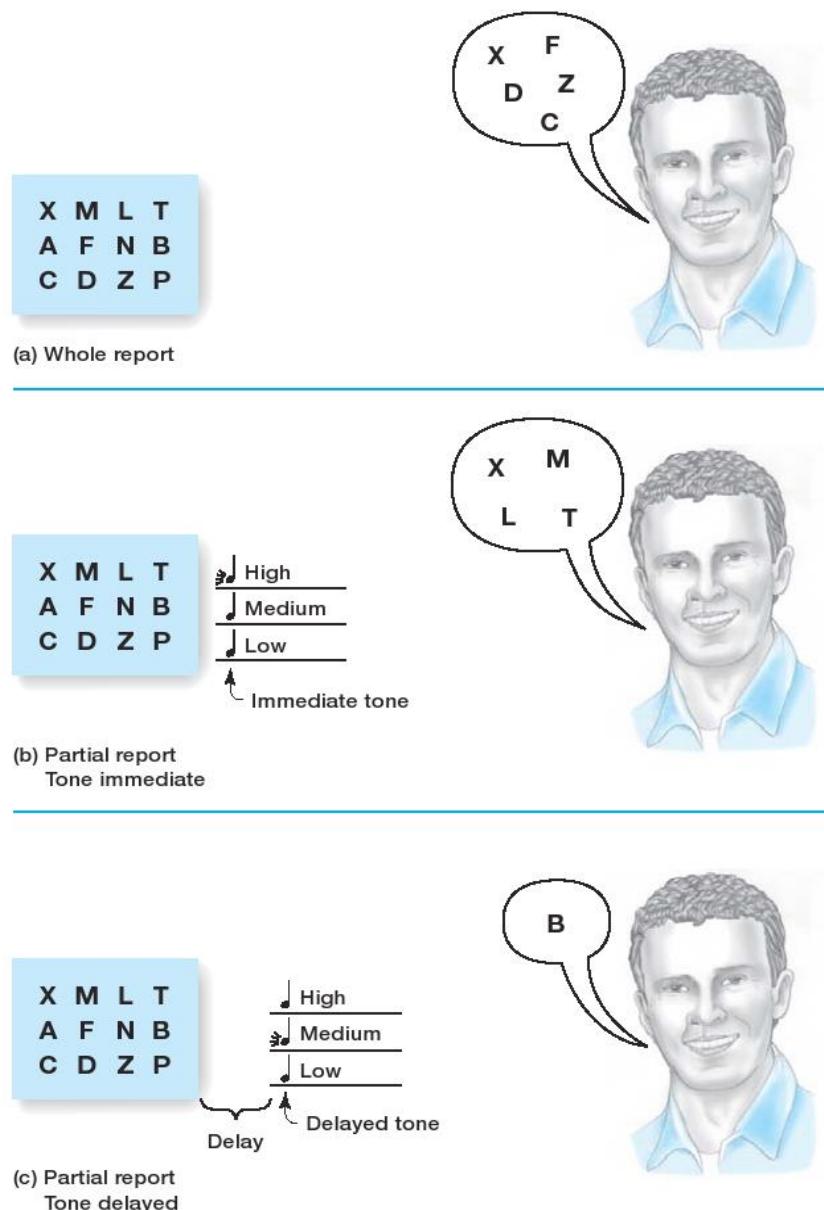


Figure 5.7 Results of Sperling's (1960) partial-report experiments. The decrease in performance is due to the rapid decay of iconic memory (called *sensory memory* in the modal model). (Reprinted from "The Serial Position Effect in Free Recall," by B. B. Murdoch, *Journal of Experimental Psychology*, 64, pp. 482–488. Copyright © 1962 with permission from the American Psychological Association.)

Figure 5.6 Procedure for three of Sperling's (1960) experiments. (a) Whole report procedure: Person saw all 12 letters at once for 50 msec. and reported as many as he or she could remember. (b) Partial report: Person saw all 12 letters, as before, but immediately after they were turned off, a tone indicated with row the person was to report; (c) Partial report, delayed: Same as (b), but with a short delay between extinguishing the letters and presentation of the tone.

STM VS. LTM – SERIAL POSITION EFFECT

Stimulus

Drum
Curtain
Bell
Coffee
School
Parent
Moon
Garden
Hat
Farmer
Nose
Turkey
Color
House
River

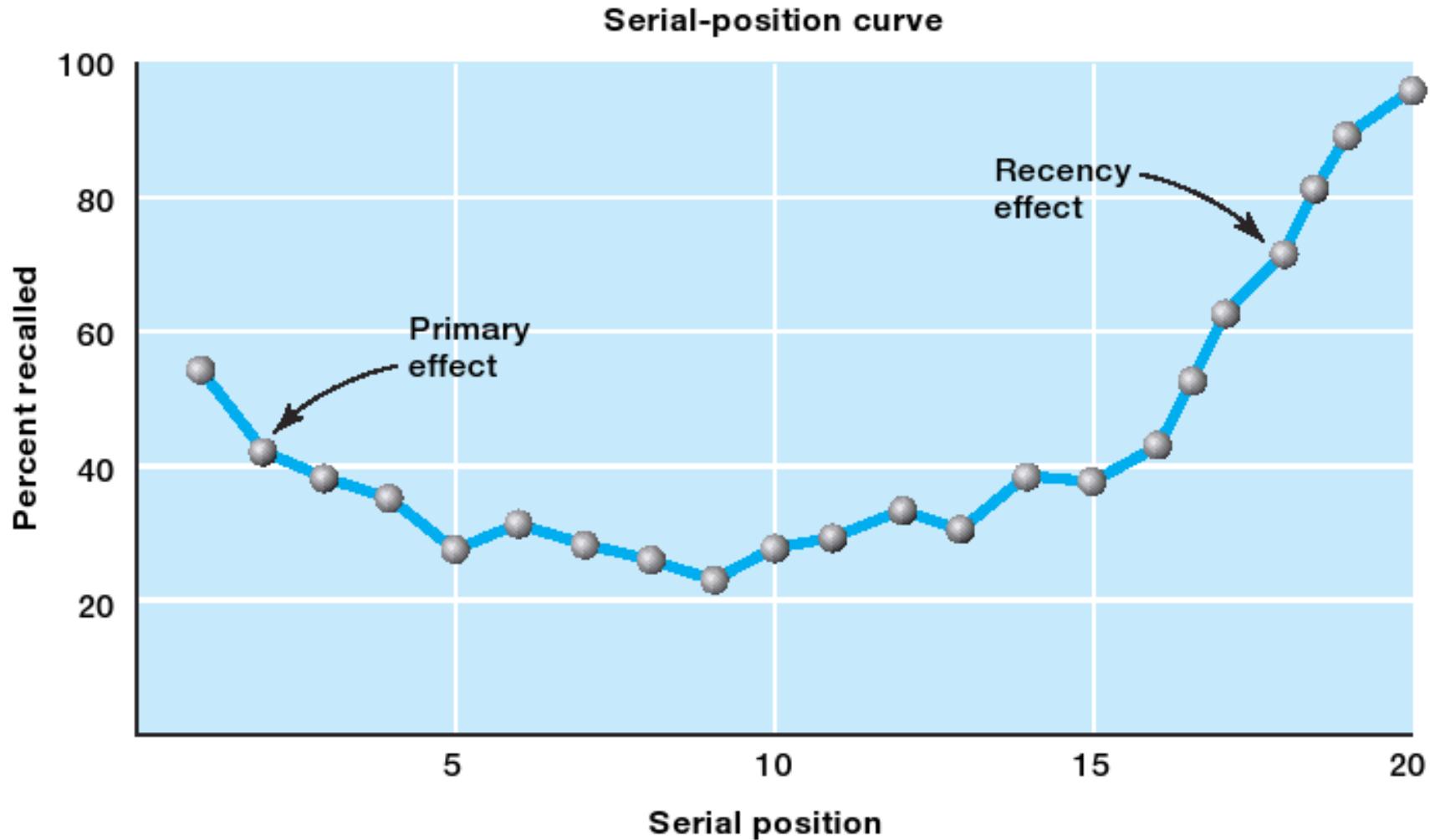
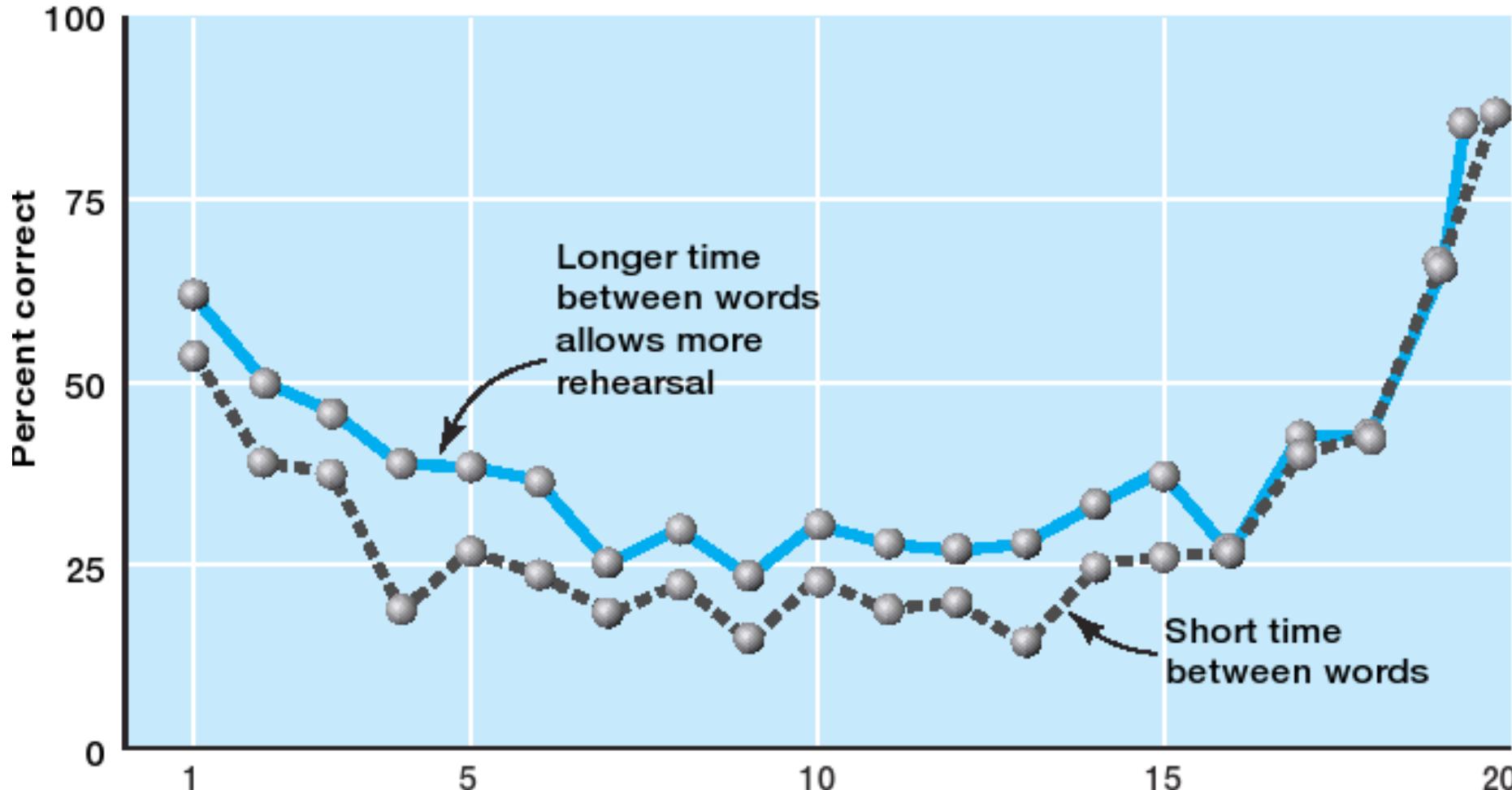


Figure 5.8 Serial-position curve (Murdoch, 1962). Notice that memory is better for words presented at the beginning of the list (primacy effect) and at the end (recency effect).

STM VS. LTM

Evidence that primacy effect is due to LTM



b)

Figure 5.9 Result of Glanzer and Cunitz's (1966) experiment. Memory for earlier words is better when words are presented more slowly (solid line). (Reprinted from *Journal of Verbal Learning and Verbal Behavior*, 5, M. Glanzer et al., "Two Storage Mechanisms in Free Recall," pp. 351–360 (Figures 1 & 2), copyright © 1966, with permission from Elsevier.)

STM VS. LTM

Evidence that recency effect is due to STM

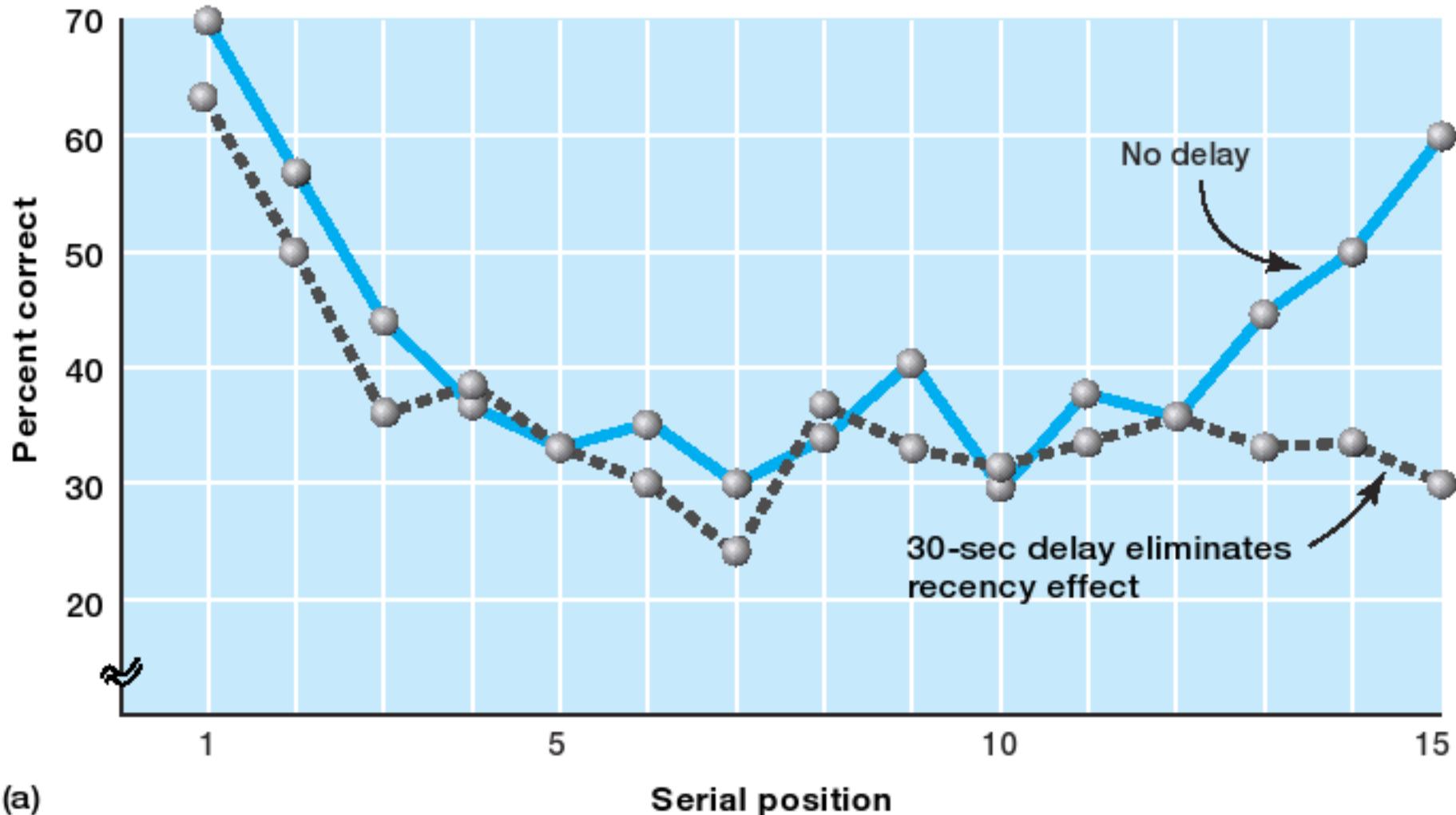
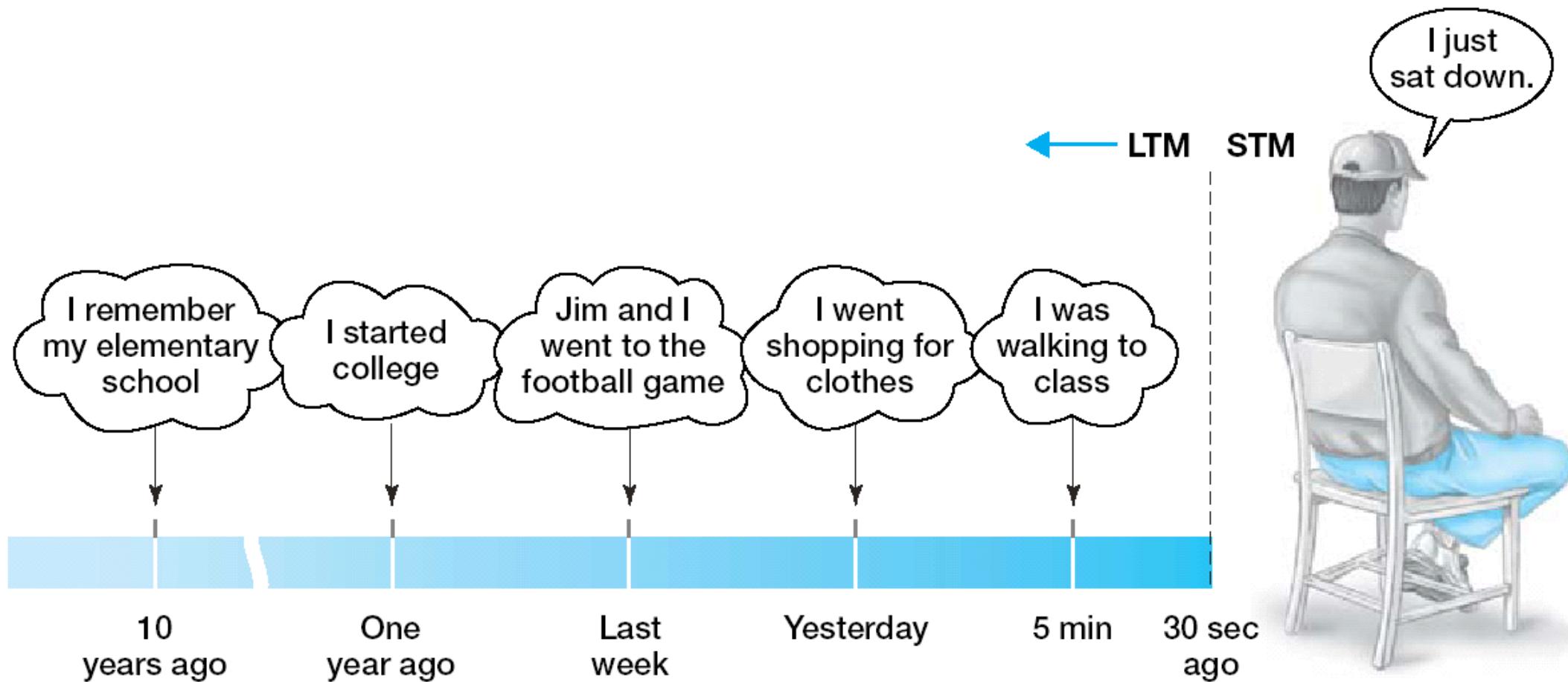


Figure 5.9 Result of Glanzer and Cunitz's (1966) experiment. (a) The serial-position curve has a normal recency effect when the memory test is immediate (solid line), but no recency effect occurs if the memory test is delayed for 30 seconds (dashed line).

STM VS. LTM



Long-term memory covers a span that stretches from about 30 seconds ago to your earliest memories. Thus, all of this student's memories, except the memory "I just sat down," would be classified as long-term memories.

IF IT FAILS SO EASILY, HOW DO WE CONSTRUCT MEMORIES FOR CURRENT AND PAST EVENTS?



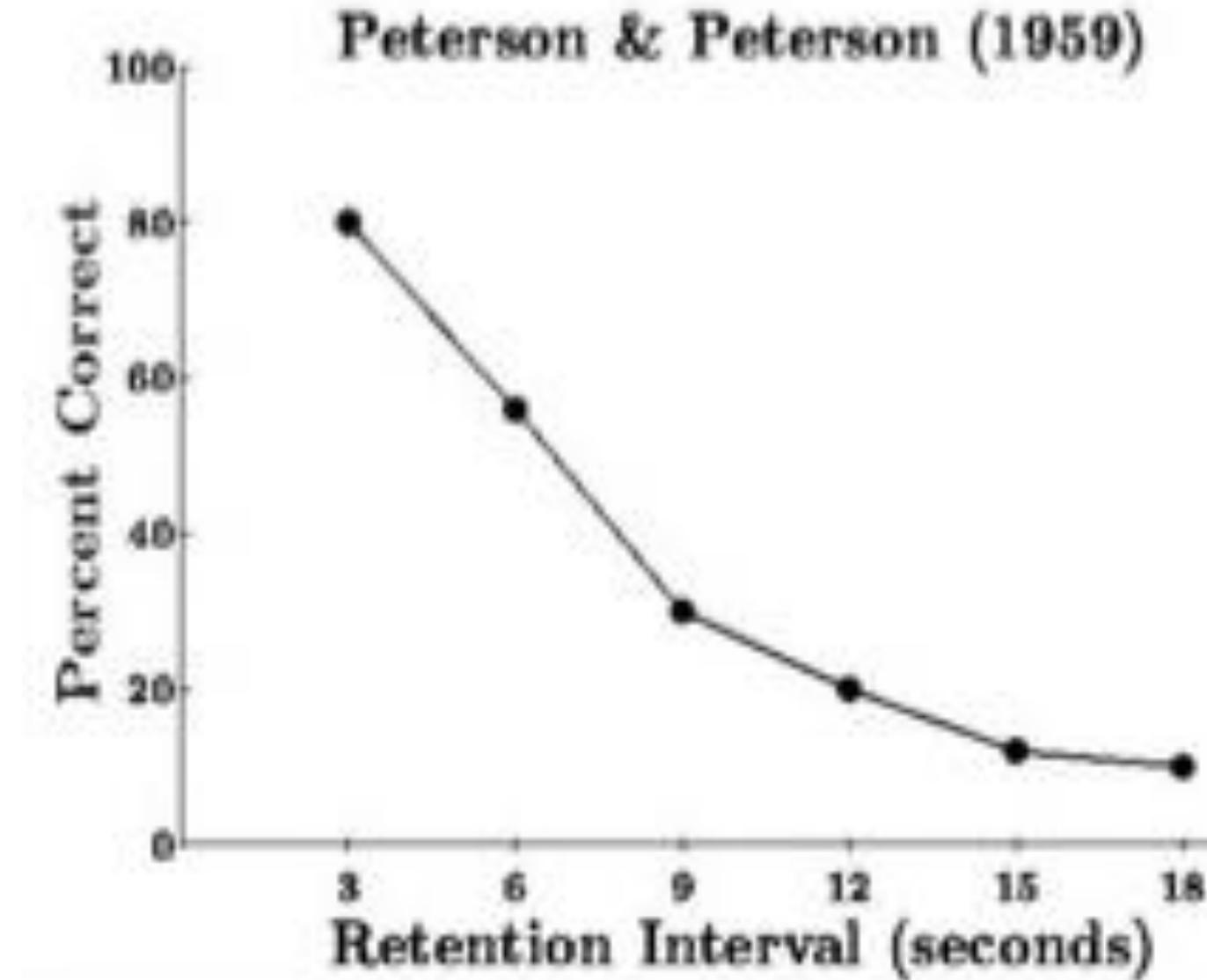
Can “Rehearsal” be used as a technique to save Forgetting?

Asked to recall strings like – DBX; HLM etc., after a varying retention interval

I will say some letters and then a number. Your task will be to remember the letters. When you hear the number, repeat it and begin counting backwards by 3s from that number. For example, if I say ABC 309, then you say 309, 306, 303, and so on, until I say “Recall.” When I say “Recall,” stop counting immediately and say the three letters you heard just before the number.

Trial 1:	F Z L	45
Trial 2:	B H M	87
Trial 3:	X C G	98
Trial 4:	Y N F	37
Trial 5:	M J T	54
Trial 6:	Q B S	73
Trial 7:	K D P	66
Trial 8:	R X M	44
Trial 9:	B Y N	68
Trial 10:	N T L	39

what if 15 – 20 seconds is not enough time?



Wasn't this just about "How Long", i.e. "duration limits", what about "How Much", i.e. "capacity limits" ? –

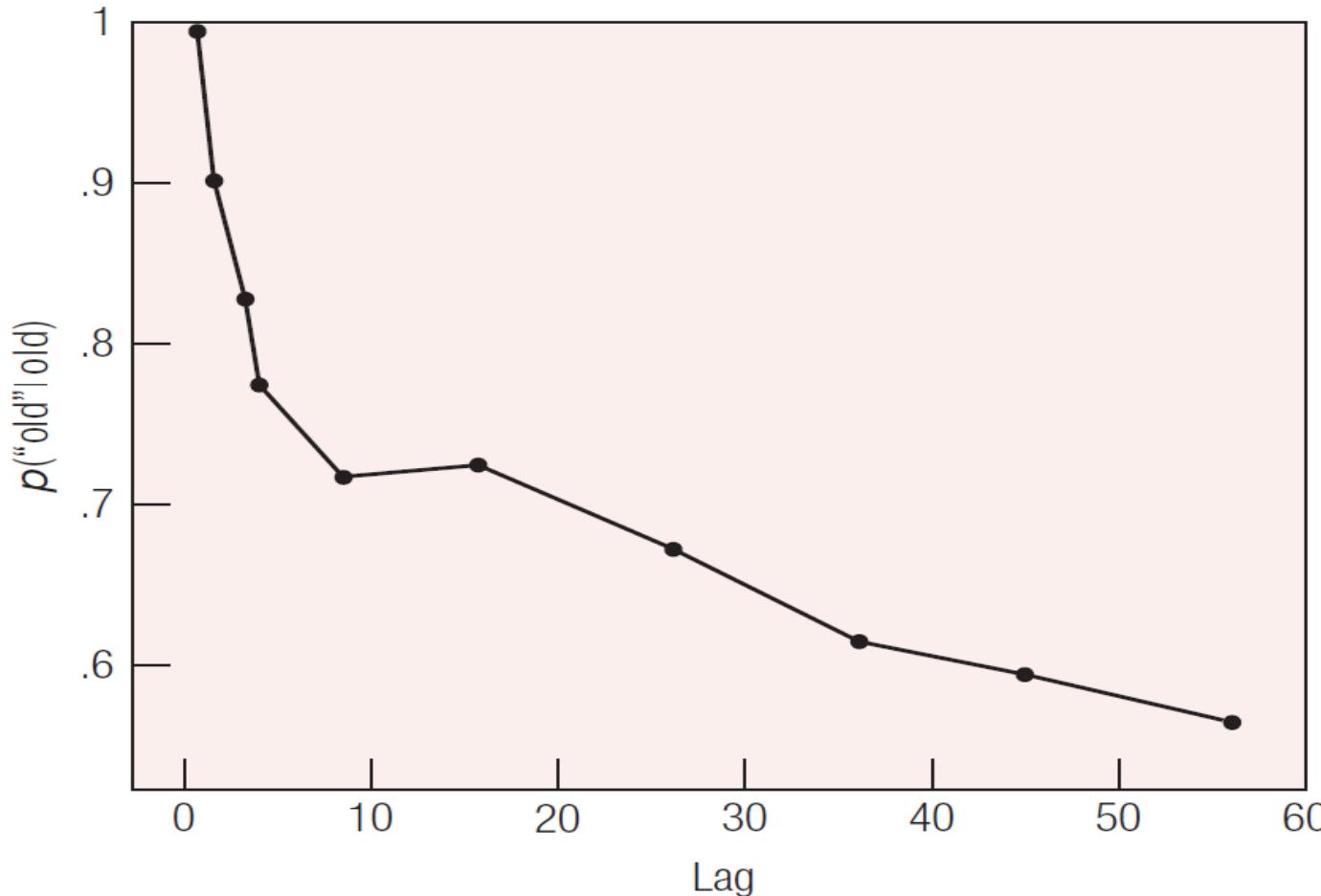
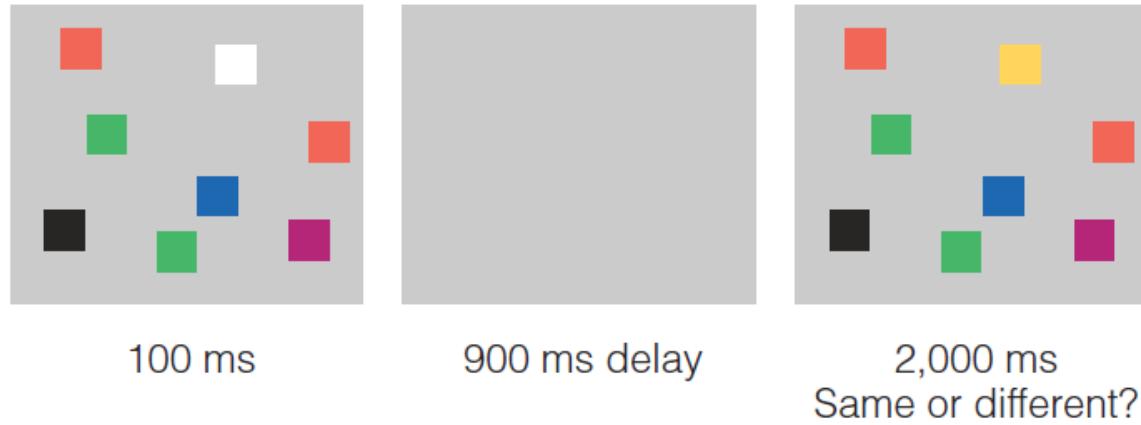
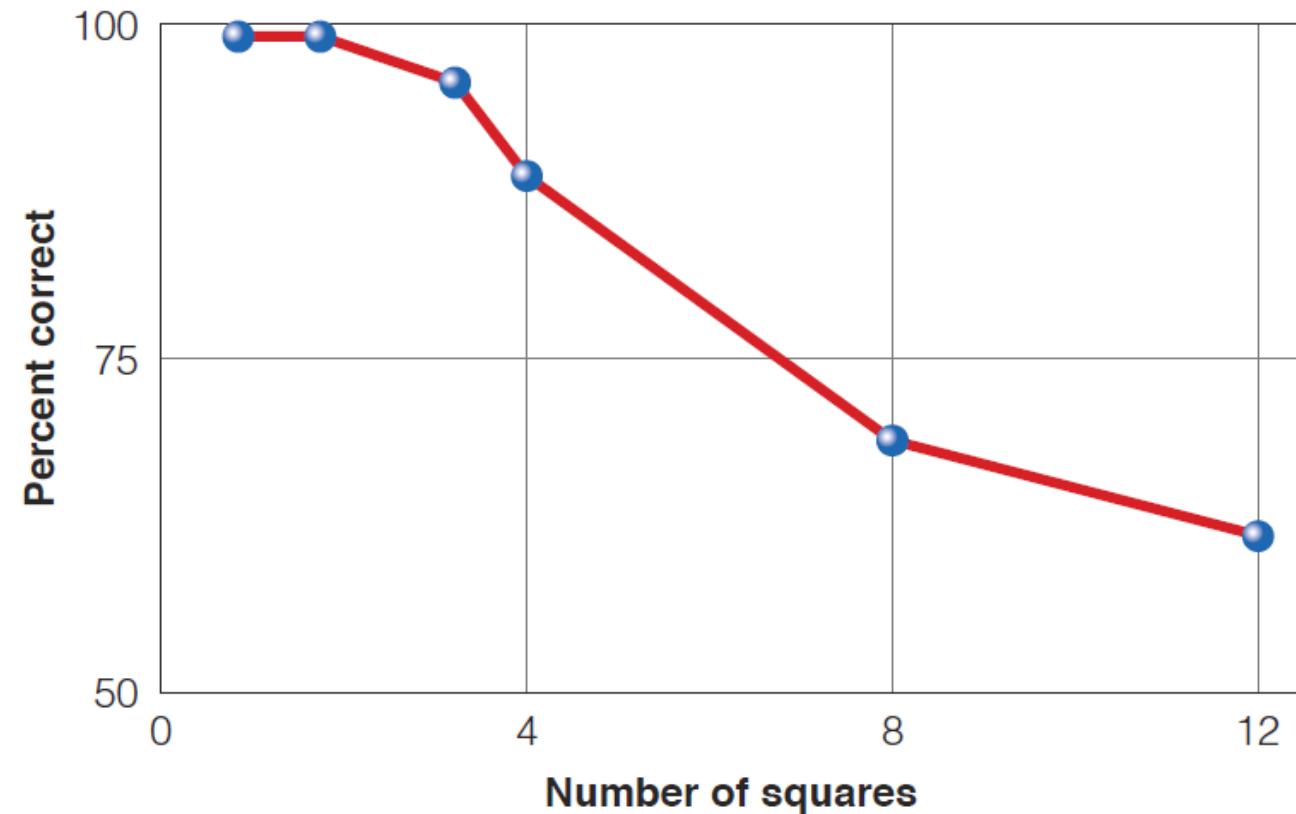


FIGURE 6.5 Results from Shepard and Teghtsoonian's experiment demonstrating that information cannot be kept in short-term memory indefinitely because new information will always be coming in and pushing out old information. The probability of an "old" response to old items is plotted as a function of the number of intervening presentations (the lag) since the last presentation of a stimulus. (From Shepard & Teghtsoonian, 1961. Reprinted by permission of the publisher. © 1961 by the American Psychological Association.)

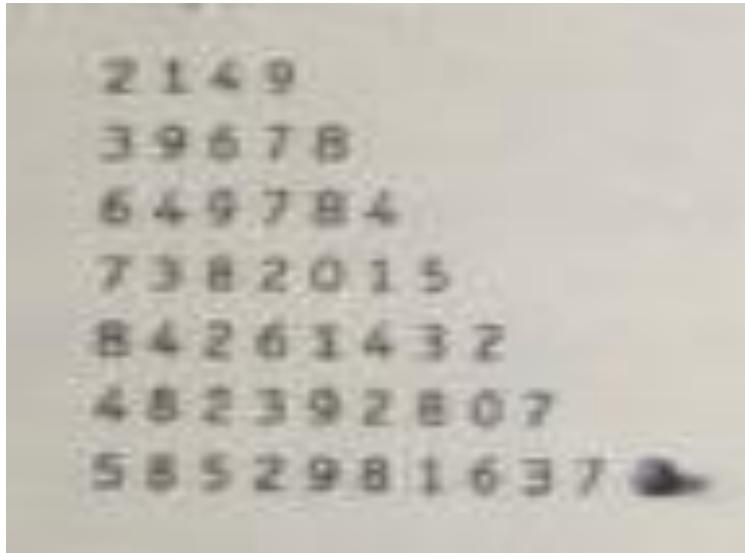
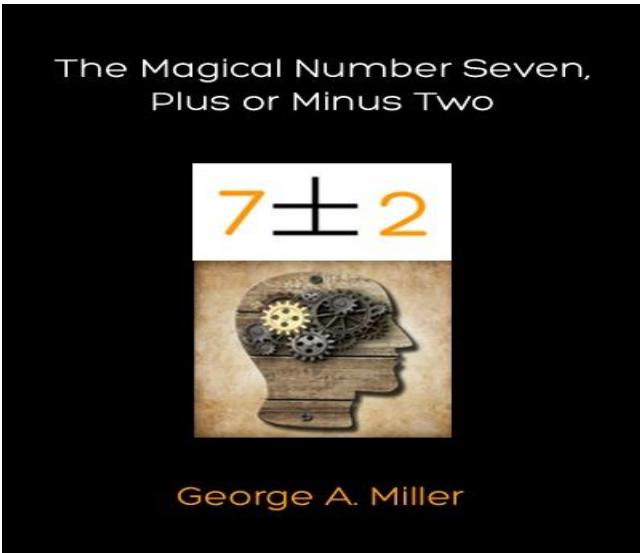
- **Display:** List of sequence 200 three-digits numbers;
- **Task:** identify whenever the number is repeated;
- **Question:** how the ability to recognize the repeated number changes as a function of 'number of the intervening items'



● **FIGURE 5.8** (a) Stimuli used by Luck and Vogel (1997). The participant sees the first display and then indicates whether the second display is the same or different. In this example, the color of one square is changed in the second display. (b) Result of the experiment, showing that performance began to decrease once there were 4 squares in the display. (Source: Adapted from E. K. Vogel, A. W. McCollough, & M. G. Machizawa, "Neural Measures Reveal Individual Differences in Controlling Access to Working Memory," *Nature* 438, 500–503, 2005.)



Chunking



**4408675309
(440) 867-5309**

Is this limited to Numbers or it is beyond that ?

F-B-I-T-W-A-C-I-A-I-B-M

FBI TWA CIA IBM
4 chunks

Recall Activity:
Divide into three groups,
Ask only the active group look at the screen, rest close their eyes

Monkey , child, ringtail, zoo, jumped, city, young , wildly

Ringtail monkey, young child, city zoo, wildly jumped

The *ringtail monkey jumped wildly* for the *young child* at the *city zoo*. Miller (1956)

STM- STORAGE CAPACITY (CHUNKING)- *RECALL*

- Monkey , child, ringtail, zoo, jumped, city, young , wildly
- Ringtail monkey, young child, city zoo, wildly jumped
- *The ringtail monkey jumped wildly for the young child at the city zoo.*

Miller (1956)

1. Recall vs. Recognition
2. Free vs. Cued Recall

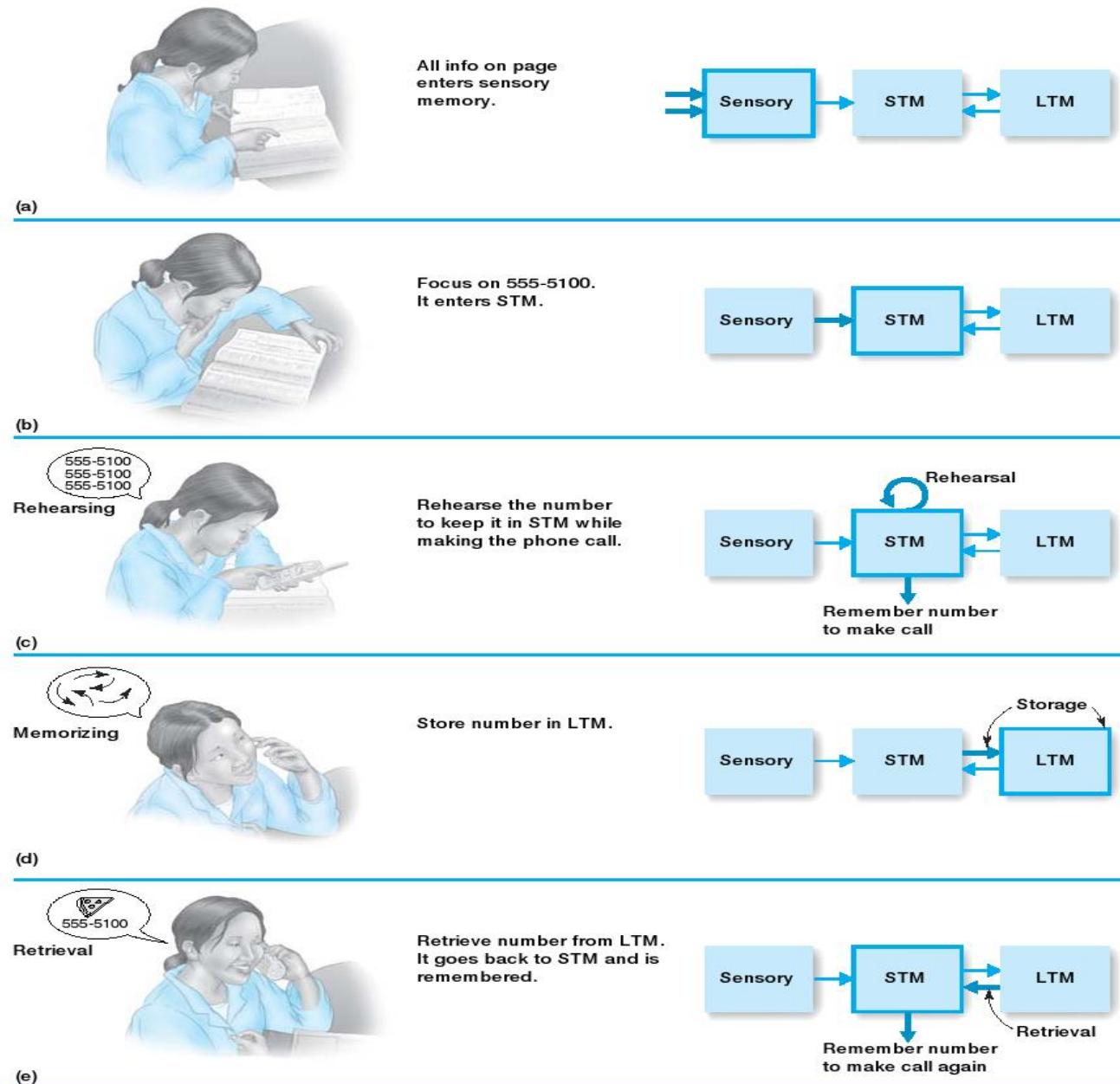
CONTD.

- *The rat that the cat that the dog chased ran.*
- *Literally, sustainable development refers to maintaining development over time, although by the early 1990s, more than 70 definitions of sustainable development were in circulation, definitions that are important, despite their number, because they are the basis on which the means for achieving sustainable development in the future can be built.*

SHORT TERM MEMORY (STM)

- Rephrasing sentence
 - Literally, sustainable development refers to maintaining development over time.
 - By the early 1990s, more than 70 definitions of sustainable development were in circulation.
 - These definitions that are important, despite their number, because they are the basis on which the means for achieving sustainable development in the future can be built.
- Literally, sustainable development refers to maintaining development over time. However, by the early 1990s, more than 70 definitions of sustainable development were in circulation. Despite their number, these definitions are important because they are the basis on which the means for achieving sustainable development in the future can be built.





CAN YOU EXPLAIN THE PRIMACY AND RECENCY EFFECT?

Figure 5.4 What happens in different parts of Rachel's memory as she is (a and b) looking up the phone number, (c) calling the pizza shop, and (d) memorizing the number. A few days later, (e) she retrieves the number from long-term memory to order pizza again. Darkened parts of the modal model indicate which processes are activated for each action that Rachel takes.

Is just a rehearsal or semantics/ association/ meaning?

1. When you score your results, do nothing to correct your answers but mark carefully those answers which are wrong.
2. When you score your results, do nothing to correct your answers but carefully mark those answers which are wrong.
3. When you score your results, do nothing to your correct answers but mark carefully those answers which are wrong.
4. When you score your results, do nothing to your correct answers but carefully mark those answers which are wrong.

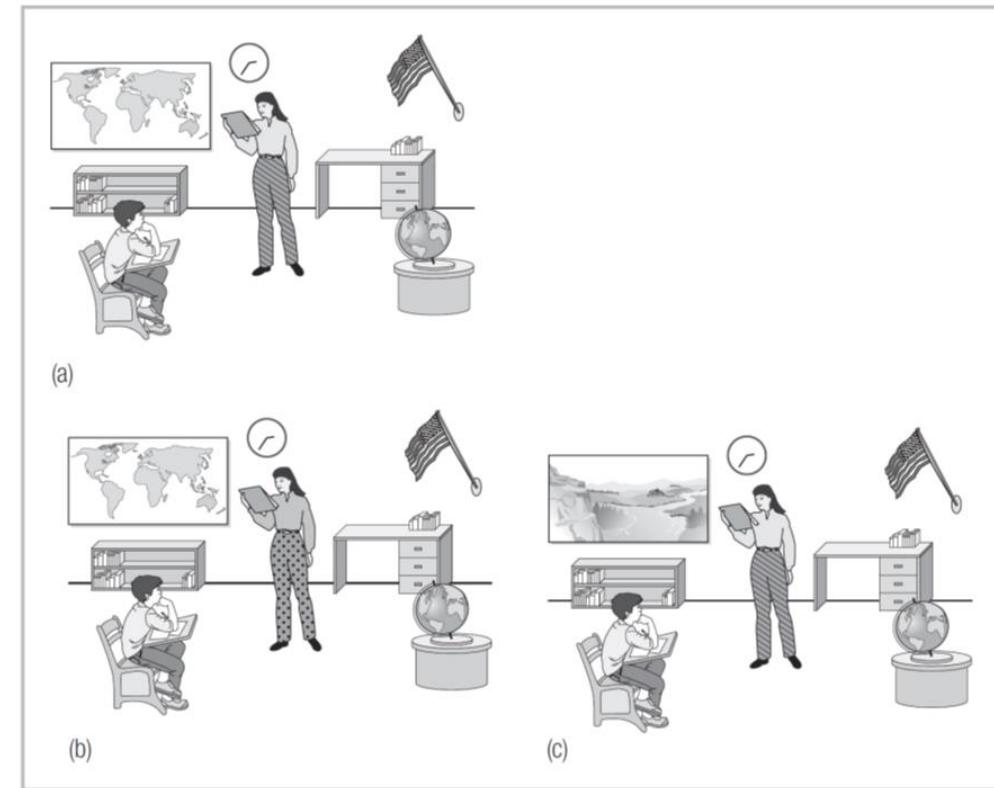
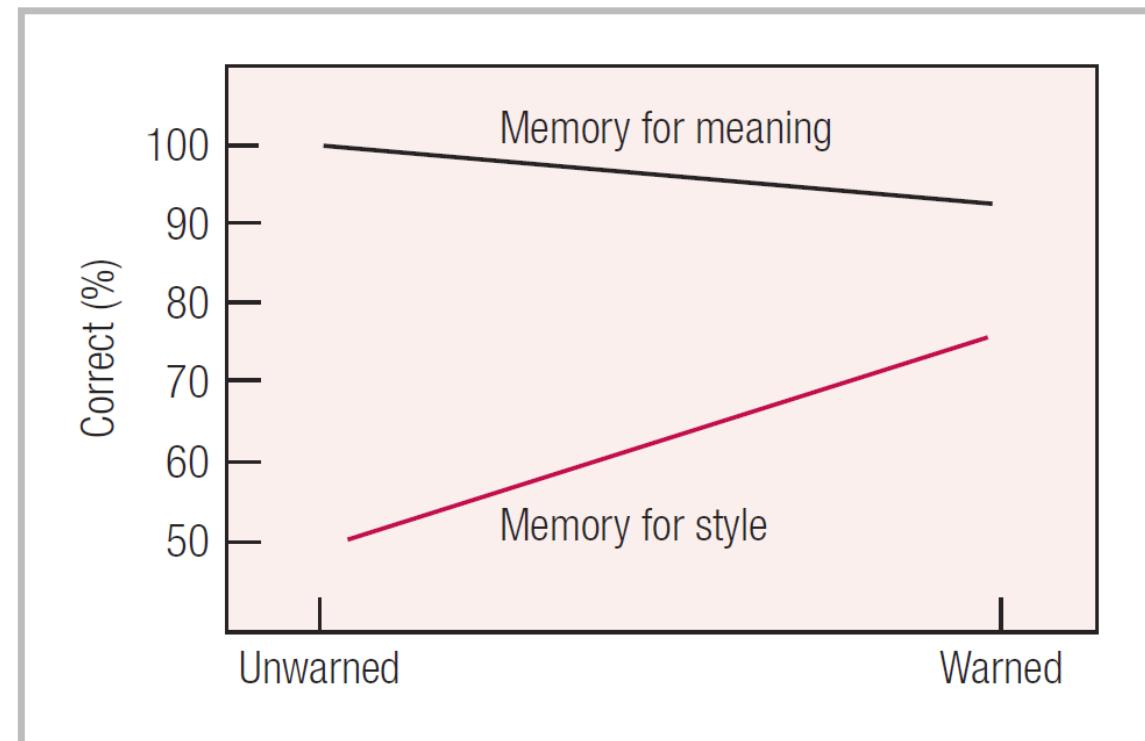


FIGURE 5.2 Results from Wanner's experiment to determine circumstances in which people do and do not remember information about exact wording. The ability of participants to remember a wording difference that affected meaning versus one that affected only style is plotted as a function of whether or not the participants were warned that they would be tested on their ability to recall particular sentences. (After Wanner, 1968. Adapted by permission of the author.)

FIGURE 5.3 Pictures similar to those used by Mandler and Ritchey in their experiment to demonstrate that people distinguish between the meaning of a picture and the physical picture itself. Participants studied the target picture (a). Later they were tested with a series of pictures that included the target (a) along with token distractors such as (b) and type distractors such as (c). (After Mandler & Ritchey, 1977. Adapted by permission of the publisher. © 1977 by the American Psychological Association.)

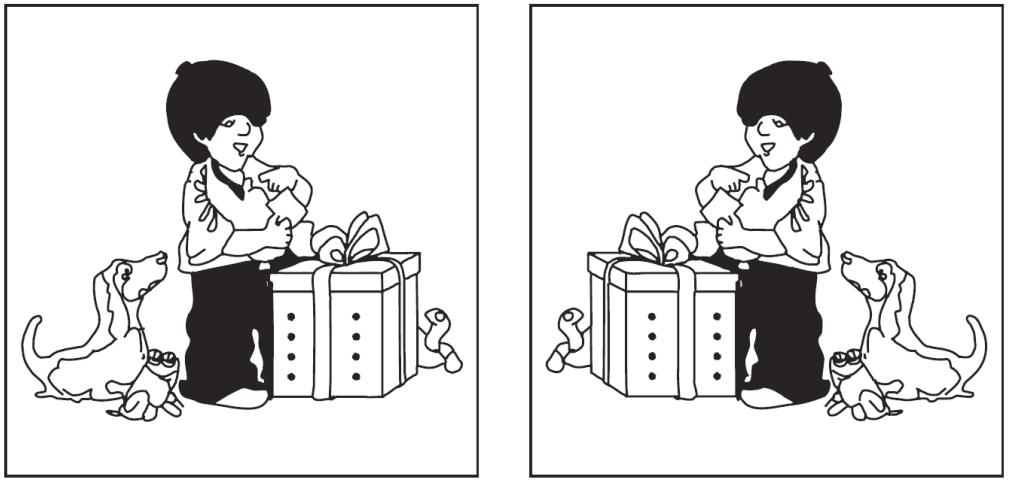


FIGURE 5.5 Example picture from an experiment by Gernsbacher, displayed in one orientation (left) and the reverse (right). The experiment showed that memory for the orientation of a picture is a visual detail that appears to decay rapidly. (From Gernsbacher, 1985. Original illustration from Mercer and Mariana Meyer. *One Frog Too Many*. © 1975 by Mercer and Mariana Meyer. Reprinted by permission of the publisher. Dial Books for Young Readers, New York.)

79% accuracy after 10 sec, but a rapid decay was observed after 10 minute, say around 50-57%.

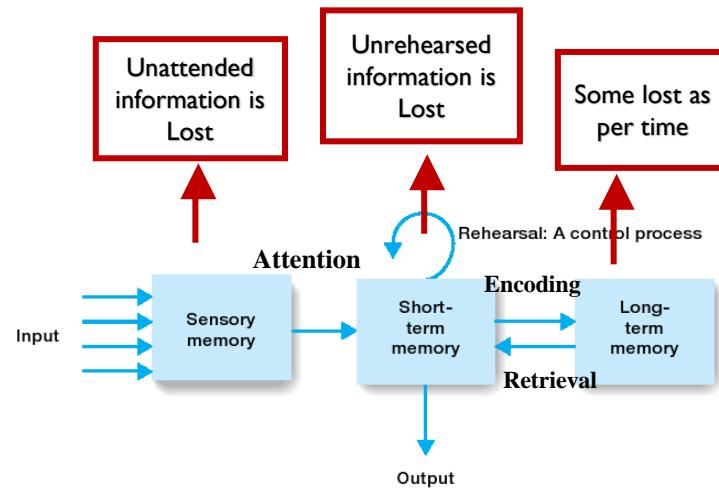
memory task into something more meaningful. For instance, DAX is like *dad* and GIB is the first part of *gibberish*. So I might have created an image of my father speaking some gibberish to me. This would have been a simple **mnemonic** (memory-assisting) **technique** and would have worked quite well as a means of associating the two elements.

The missionary shot the painter.

1. The missionary shot the painter.
2. The painter was shot by the missionary.
3. The painter shot the missionary.
4. The missionary was shot by the painter.

The first two sentences require a positive response to the logical judgment, and the last two require a negative response. Participants were tested either immediately after hearing the sentence or after a delay of about 2 min. The delay had little effect on the accuracy of their logical judgments (e.g., 1 versus 3 above)—98% were correct immediately and 96% were correct after a delay. However, when they were asked to judge which sentence they had heard (e.g., 1 versus 2 above), the delay had a dramatic effect. Participants were 99% correct immediately after hearing the sentence but only 56% correct after a delay.

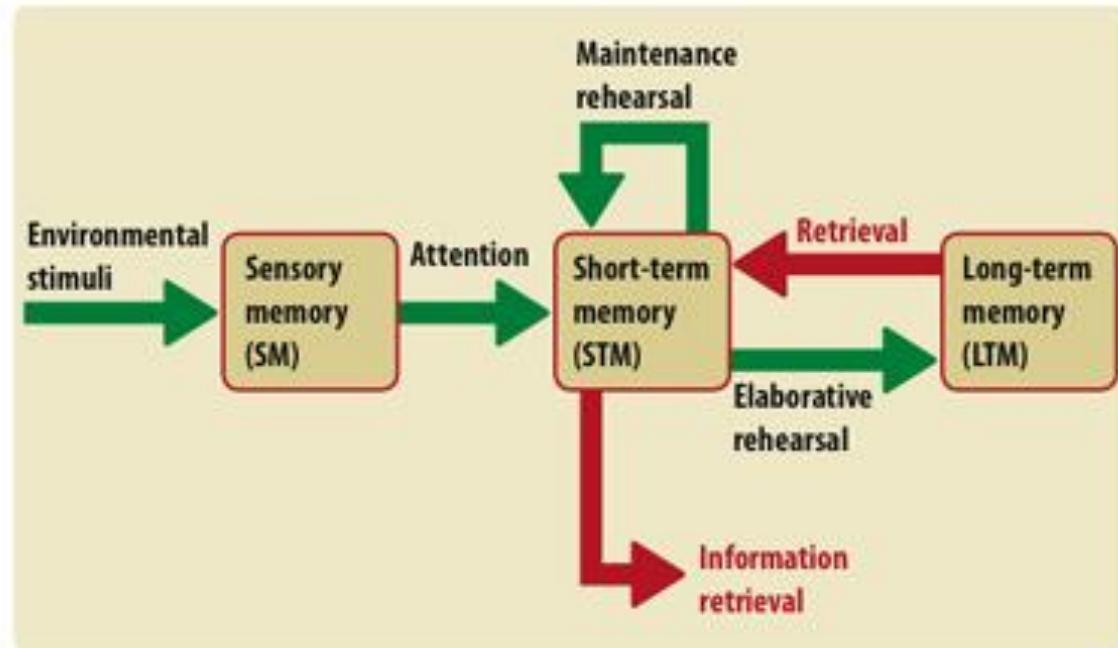
father speaking some gibberish to me. This would have been a simple **mnemonic** (memory-assisting) **technique** and would have worked quite well as a means of associating the two elements.



Is just a rehearsal or semantics/ association/ meaning?

Figure 5.3 Flow diagram for Atkinson and Shiffrin's (1968) model of memory. This model, which is described in the text, is called the *modal model* because of the huge influence it has had on memory research.

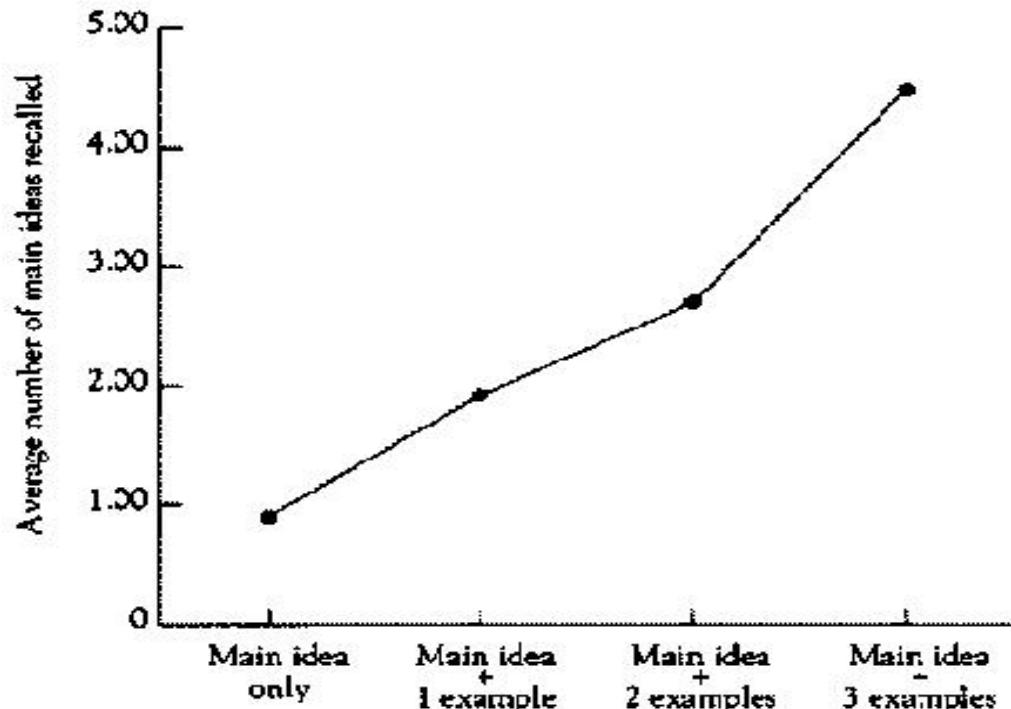
MODAL MODEL



Craik and Lockhart, 1972

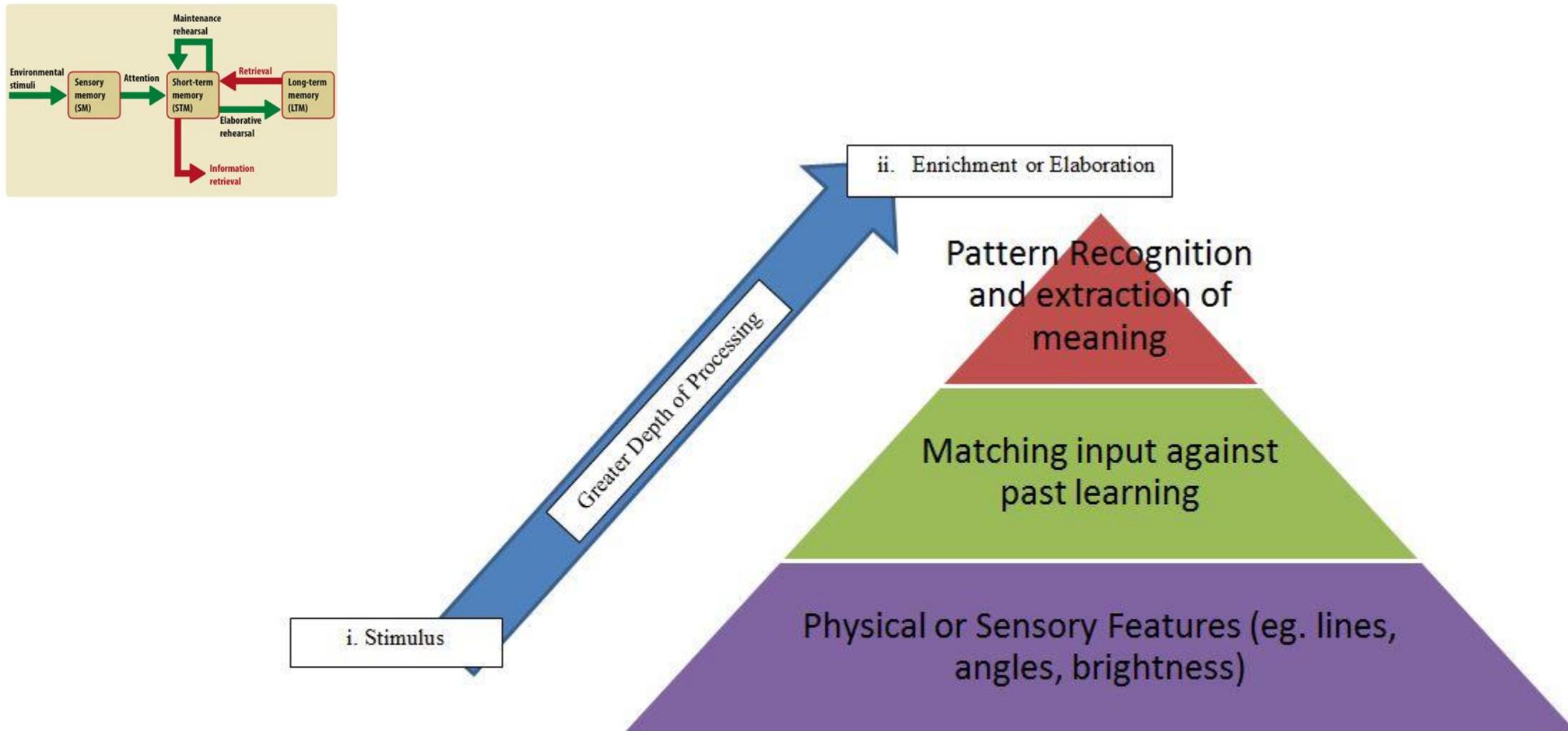
Perception & Cognition Group, (

The Number of Main Ideas Recalled, as a Function of Elaboration (Based on Palmer et al., 1983).



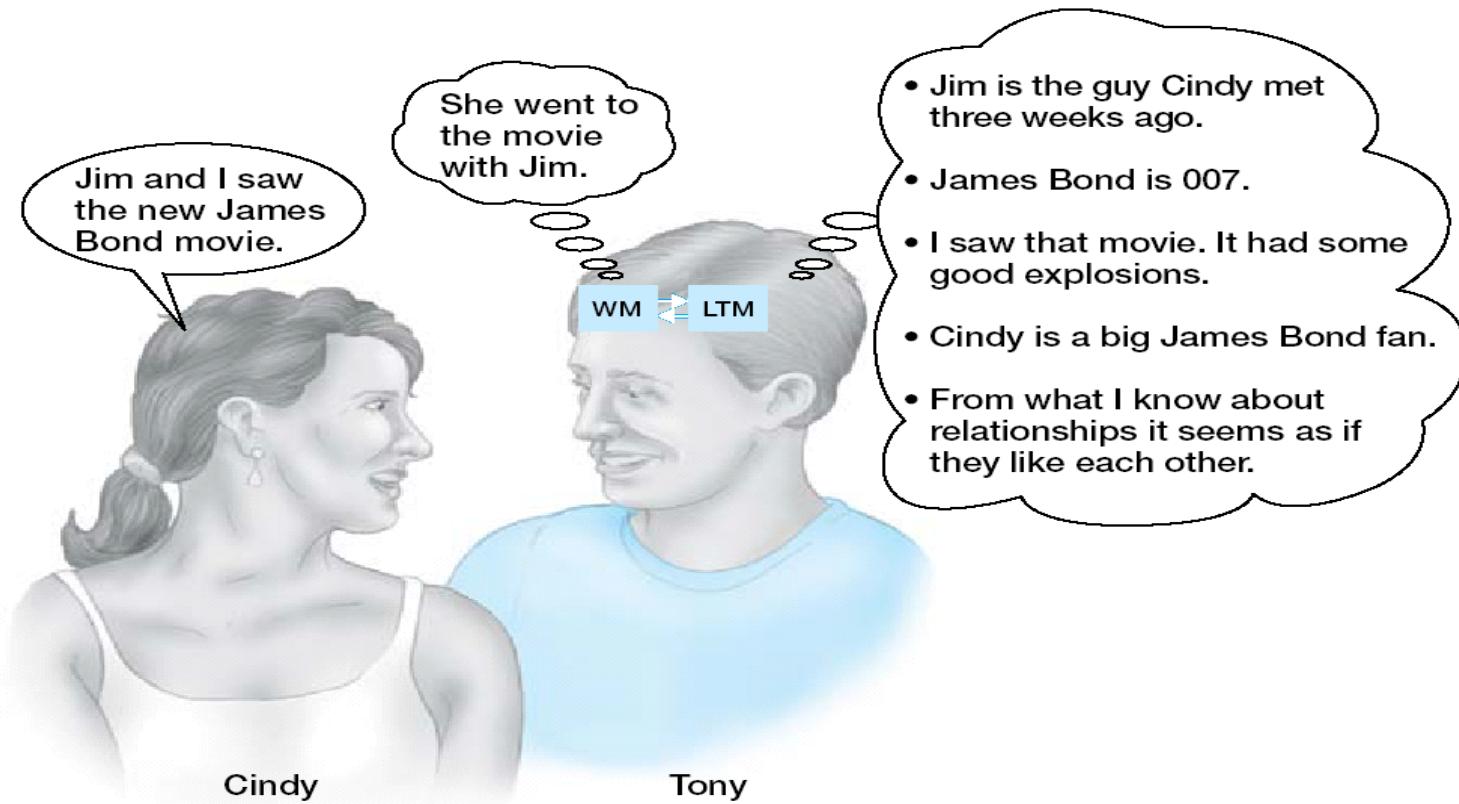
LEVELS OF PROCESSING

Are there different type of rehearsal as well? Can we say about their effectiveness as well?



Based on: Craik, F. I. M., & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior*, 11, 671-684.

CONTD.



Tony's STM, which is dealing with the present, and his LTM, which contains knowledge relevant to what is happening, work together as Cindy tells him something.

WORKING MEMORY

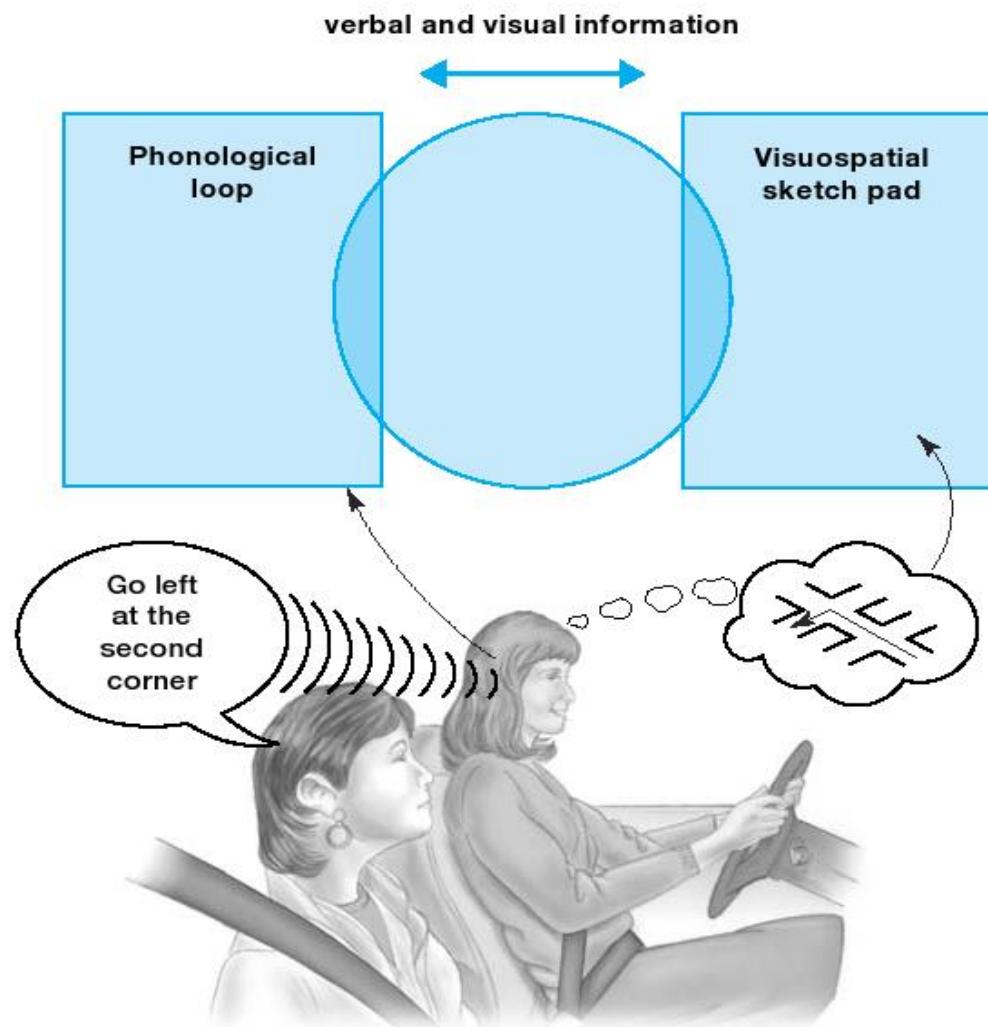


Figure 5.17 Tasks processed by the phonological loop (hearing directions) and visuospatial sketch pad (visualizing the route) being coordinated by the central executive.

WORKING MEMORY

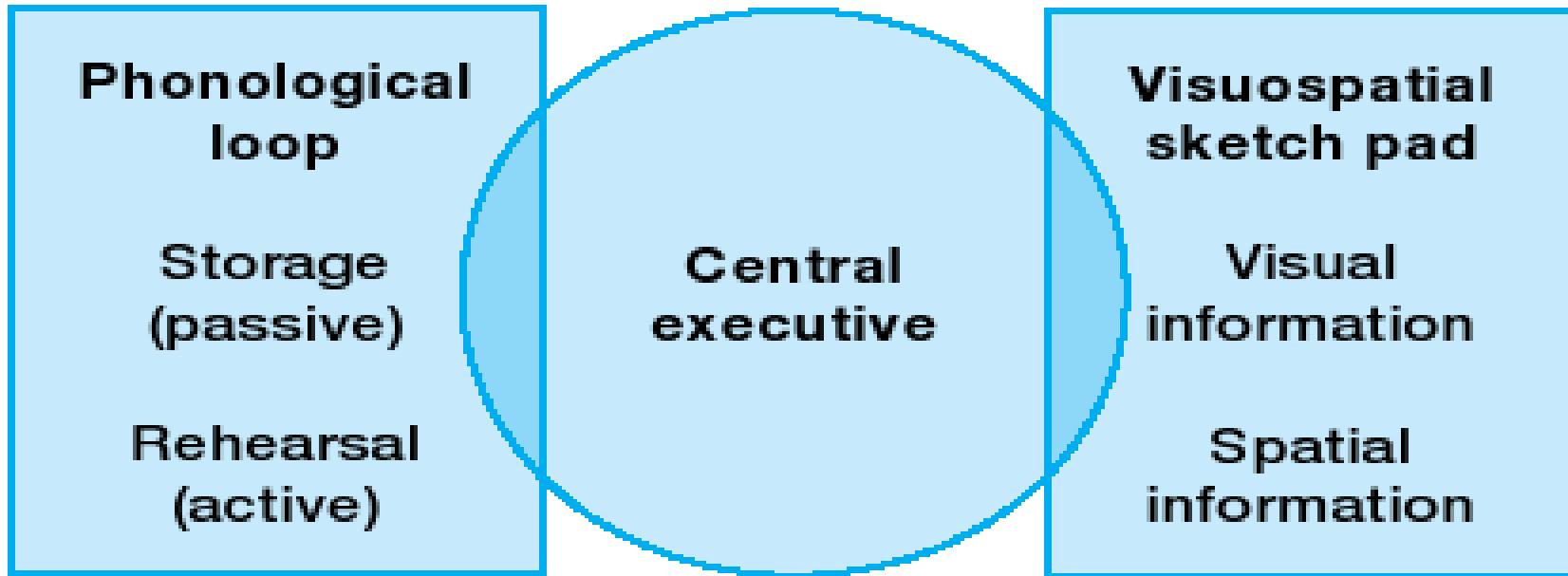


Figure 5.15 Diagram of the three main components of Baddeley and Hitch's (1974; Baddeley, 2000) model of working memory: the phonological loop, the visuospatial sketch pad, and the central executive.

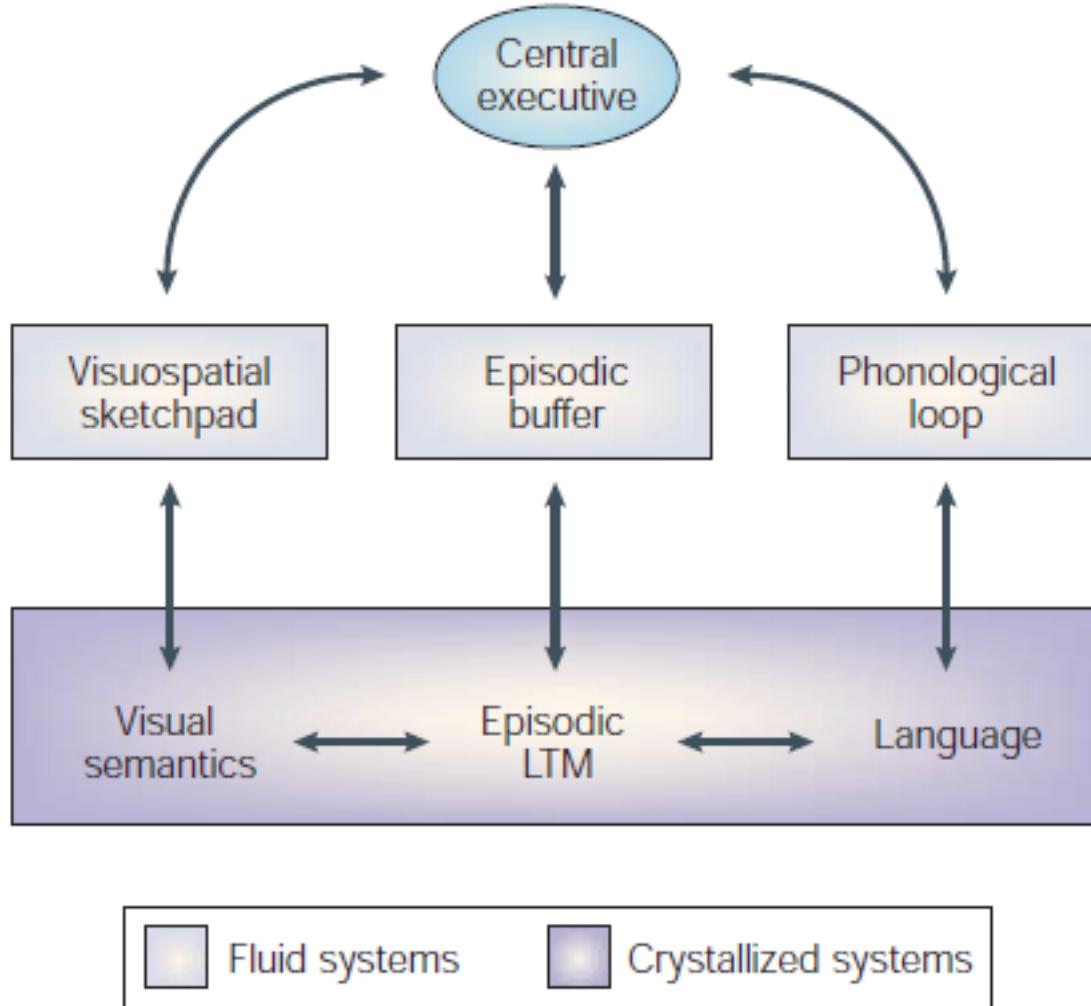


Figure 5 | The multi-component working memory revision. The dark purple areas represent long-term or crystallized knowledge. The episodic buffer provides an interface between the sub-systems of working memory and long-term memory (LTM)¹²⁵.

Activity : Recall the items

Divide into three groups, by asking only the active group look at the screen, rest close their eyes

Organization: categories

Peach, Cow, Chair, Apple, Table, Cheery, Lion, Couch, Horse, Desk

Visual Imagery: place them with their images in head

Peach, Cow, Chair, Apple, Table, Cheery, Lion, Couch, Horse, Desk

Semantic: Organize them with elaborative associations

Peach, Cow, Chair, Apple, Table, Cheery, Lion, Couch, Horse, Desk

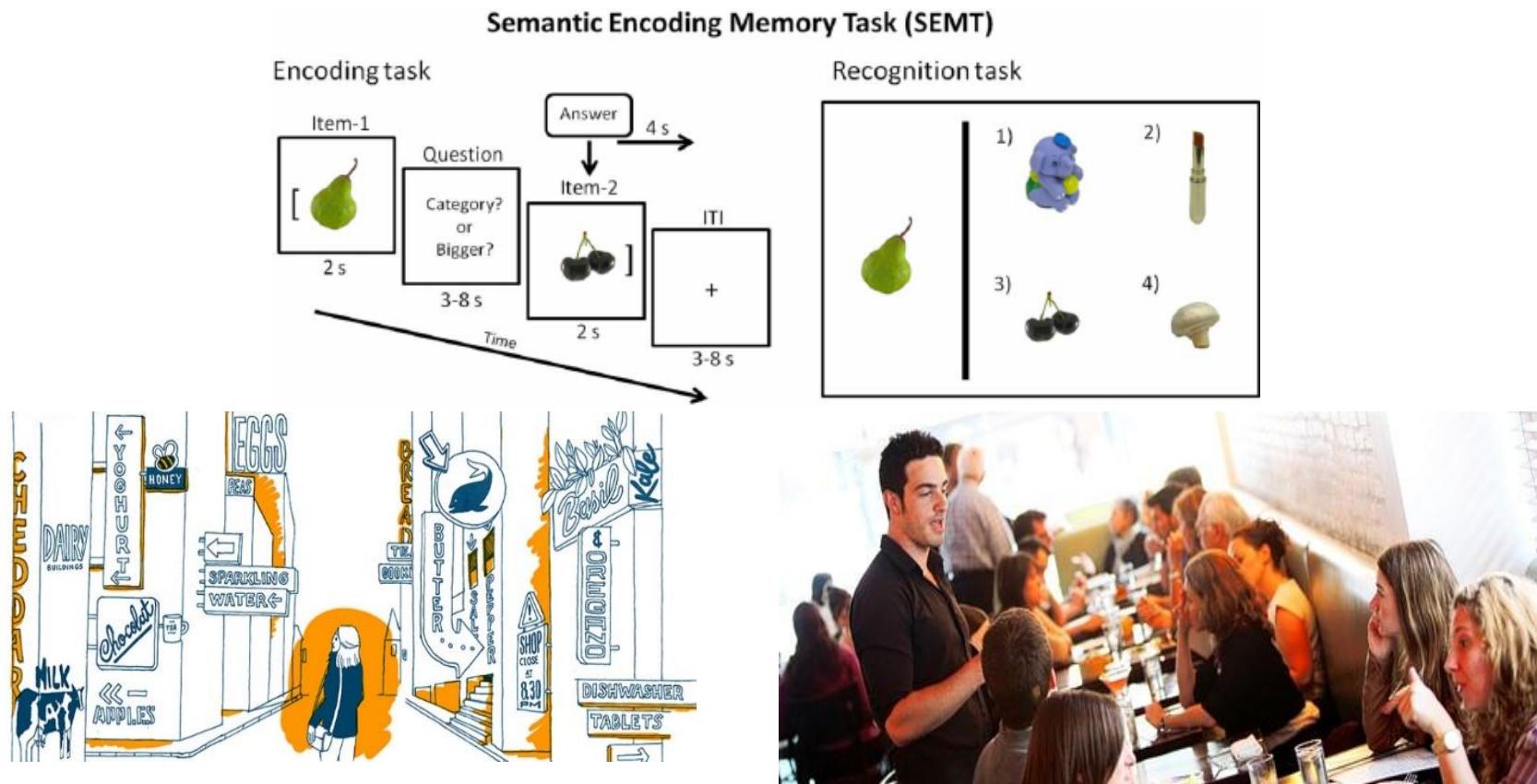
Peach, Cow, Chair, Apple, Table, Cheery, Lion, Couch, Horse, Desk

Emotional quotients: survival, emotional association leads to varied form of semantic, visual and organization and in turn formation of better memory

- What is memory? Is it a recording device? Or it can be manipulated, and constructive in nature?
- What is the difference between the two?

Encoding, storage, retrieval

Encoding: Process of transforming into a lasting memory the information our senses take in



Visual Imagery – encoding – method of loci

Organizational - encoding

**Semantic
22061823**

Can you remember this?

You have a chit in your hand, open them and do the tasks – as instructed

Think of a meaning of the information, like a gambler would see these numbers like – betting about \$220 at 6-to-1 odds on horse number 8 to place 2nd in the 3rd race – **semantic , elaboration**

Do you see any rhyming here? – **Rhyme**

Think about the visual properties of the word – **Visual or basic properties – like odd / even / upper case or lowercase**

HAT

Which one is the effective?

TED Video – HM case

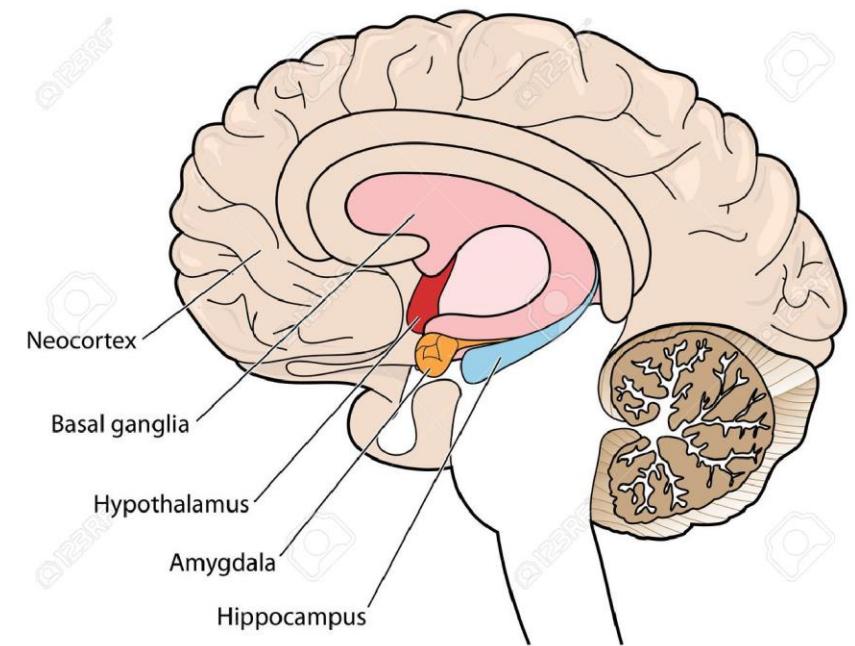
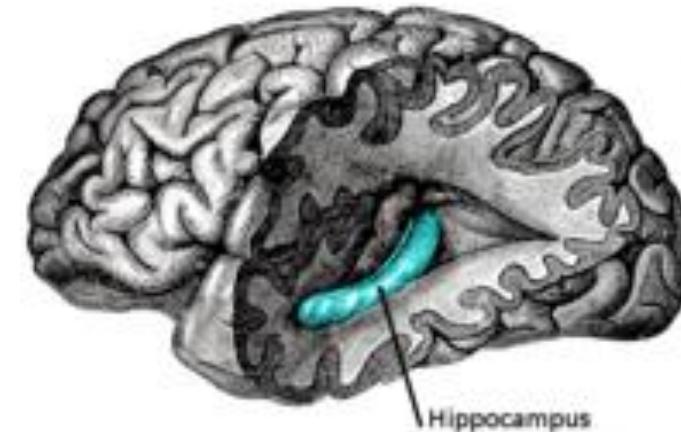


Documentary on Memory – Memory Hackers



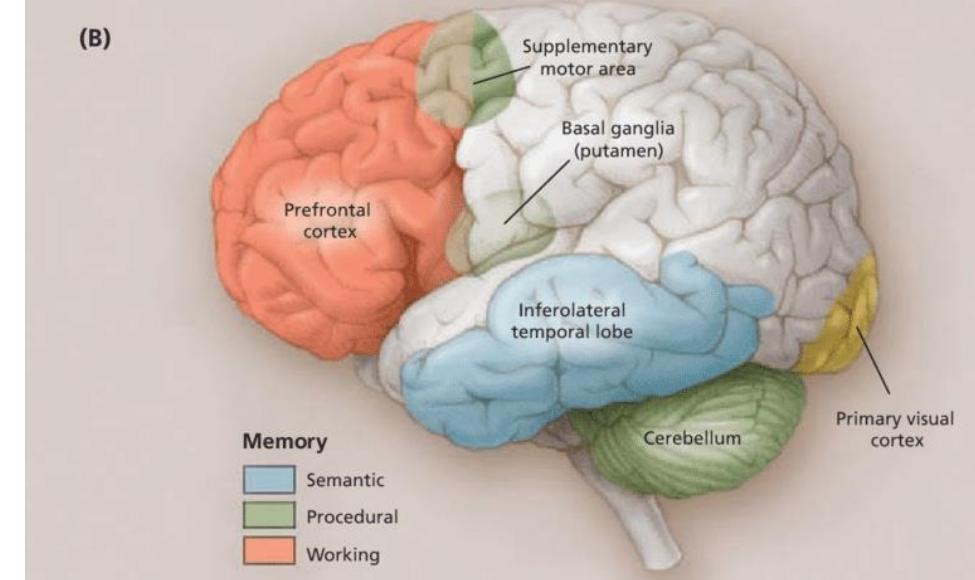
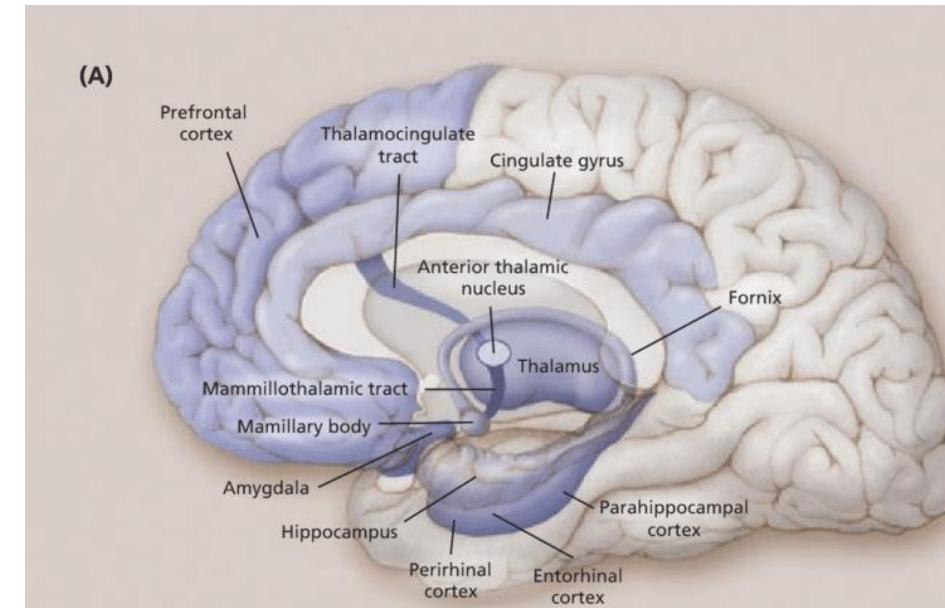
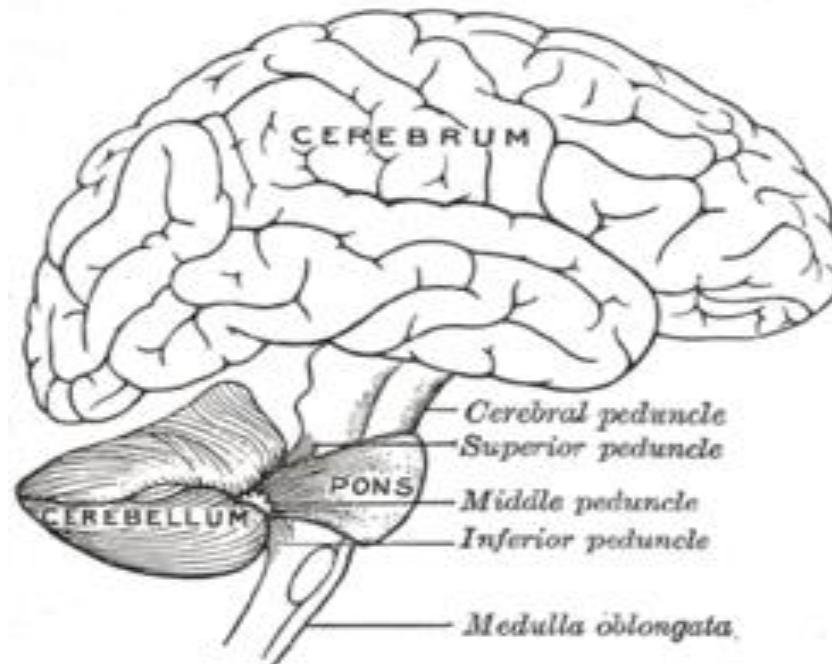
STM AND LTM – NEUROPSYCHOLOGY

- Double Dissociation Task: Task A and task B involve different processing mechanisms.
- Good performance on Task A and poor performance on Task B and vice versa.
- HM and Clive Wearing case – couldn't form new LTM because of the loss of Hippocampus damage lead to **Anterograde Amnesia**
- **HM suffered from Retrograde Amnesia as well, Whereas Clive wearing suffered from graded retrograde amnesia**
- KF case – **NO STM but LTM was intact, perisylvian cortex also referred as lateral sulcus**

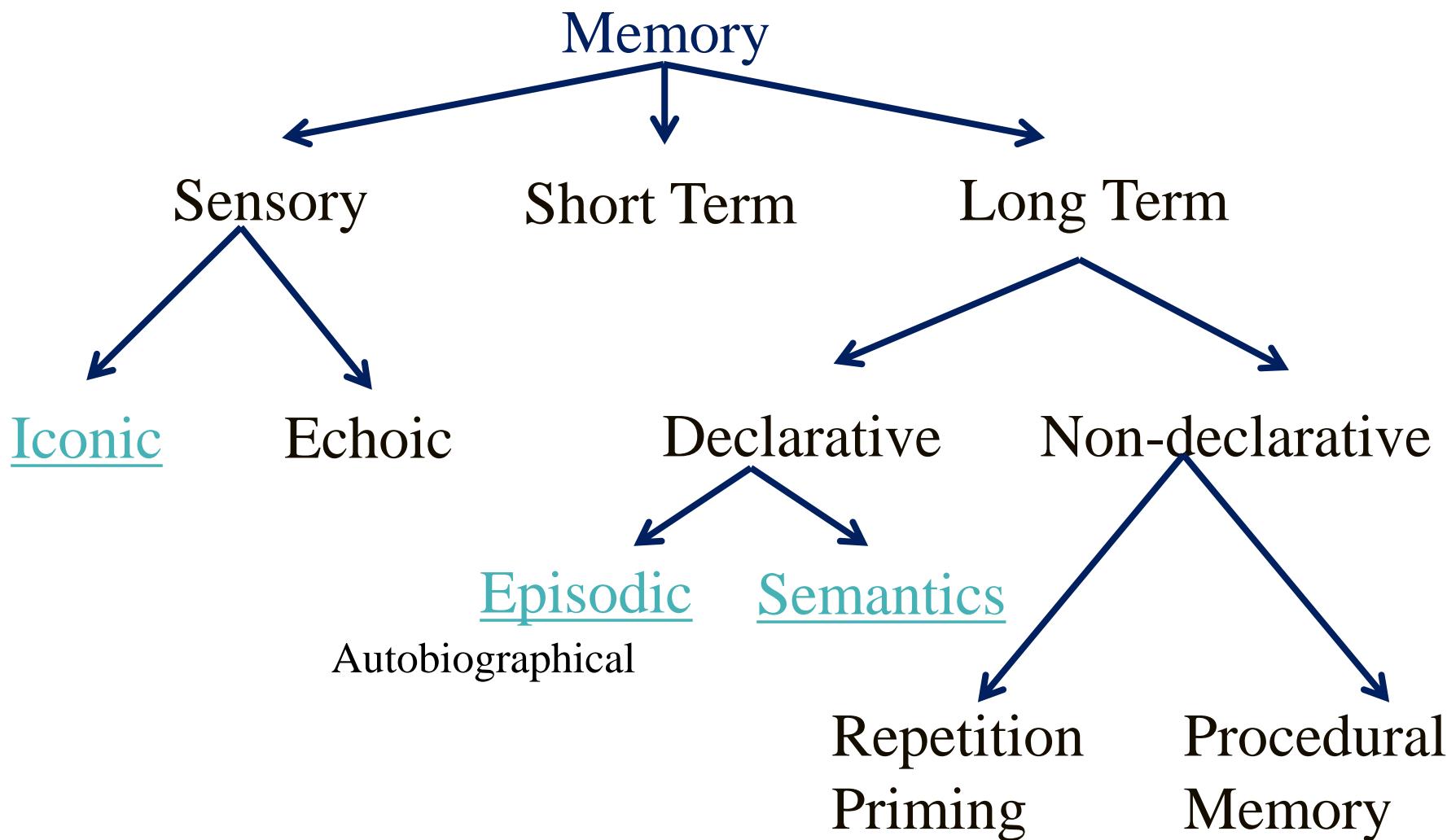


CONTD. – H.M.

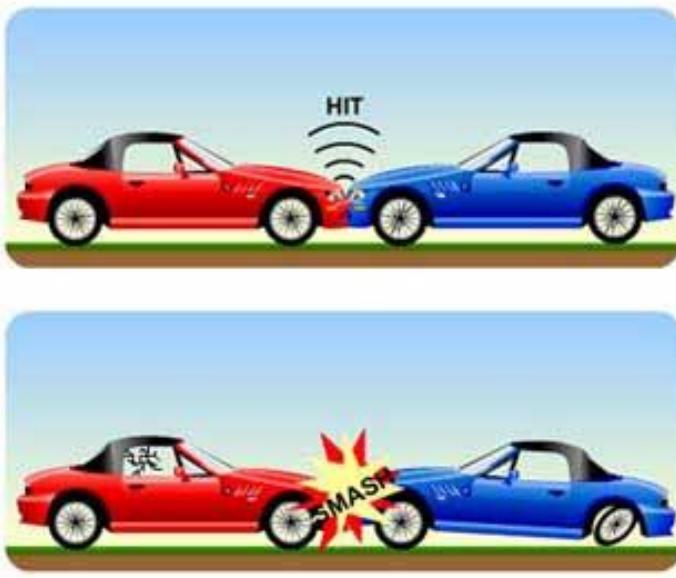
- HM case – medial temporal lobe: hippocampi, parahippocampal cortices, amygdalae were damaged
- Procedural memory was intact
- Episodic memory was lost
- Procedural memory involve cerebellum, putamen and caudate nucleus and motor cortex



TAXONOMY

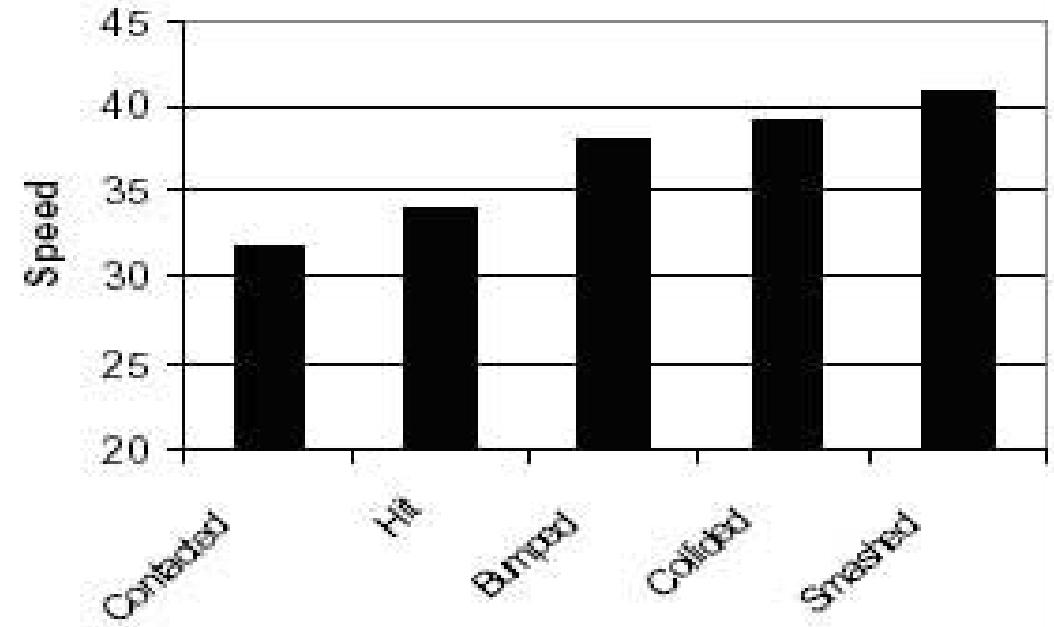


EYE-WITNESS TESTIMONY



- **Aim:** How language/ framing questions influences the memory?
- **Task:** watch a film with car accidents for duration varying from 5-to-30 seconds.
- After watching the film participants were asked to describe what had happened as if they were eyewitnesses. They were then asked specific questions, including the question “About how fast were the cars going when they (smashed / collided / bumped / hit / contacted) each other?”

Expt 1: Estimated Speed for Verb Used



Loftus and Palmer (1974) *Reconstruction of Automobile Destruction*

- The participants in the “smashed” condition reported the highest speed estimate (40.8 mph), followed by “collided” (39.3 mph), “bumped” (38.1 mph), “hit” (34 mph), and “contacted” (31.8 mph) in descending order.
- Possible explanations: Response Bias Factor Or Altered Memory Representation

CONTD.

Task: shown a one minute film which featured a car driving through the countryside followed by four seconds of a multiple traffic accident.

Leading questions as per their groups: 'how fast were the car going when they hit each other?', 'how fast were the car going when they smashed each other?', and the control group were not asked a question at all

A week later after the first assessment, participants were called and tested on critical question, "Did you see any broken glass?", along with other 9 questions ...

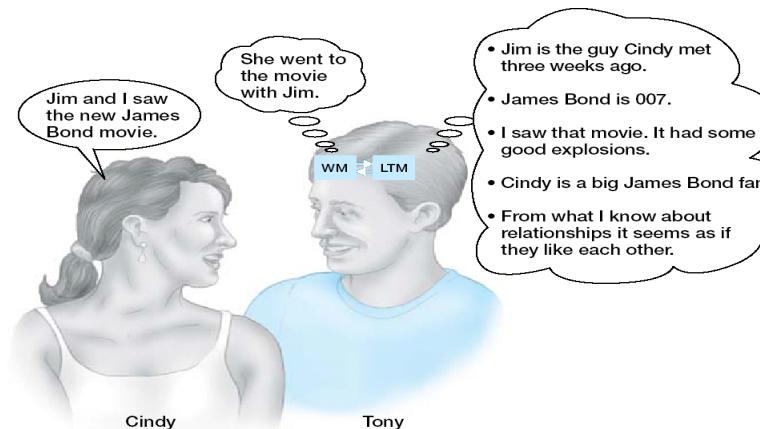
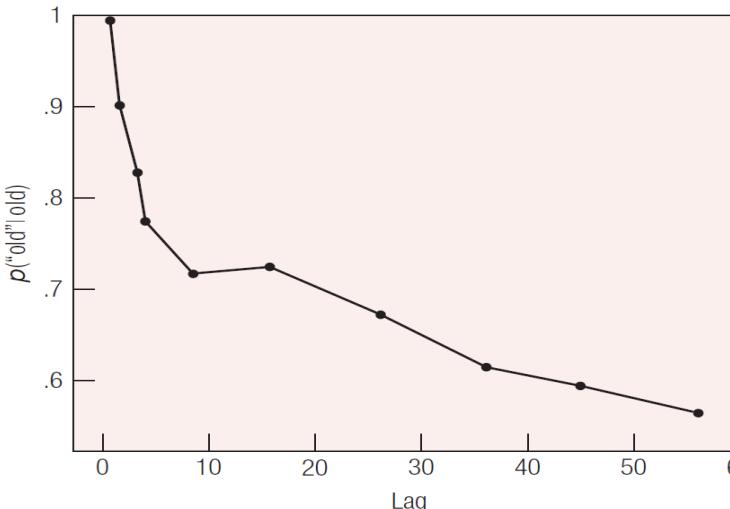
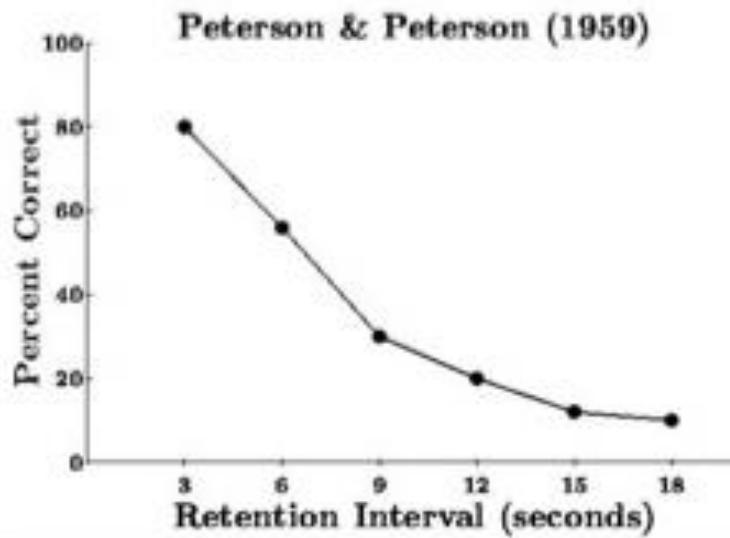
Response	Smashed	Hit	Control
Saw broken glass	16	7	6
Didn't see broken glass	34	43	44

- The difference in the reporting as per the conditions, phrasing leading questions, supports the memory alteration and reconstruction induced by the interrogator
- Further False memory research also supports Loftus Findings.
- Can false memory influence the autobiographic memory as well? Contradictory findings does not provide clear answer ... as false memory can implanted to your personal experiences as well ...

FORGETTING STM

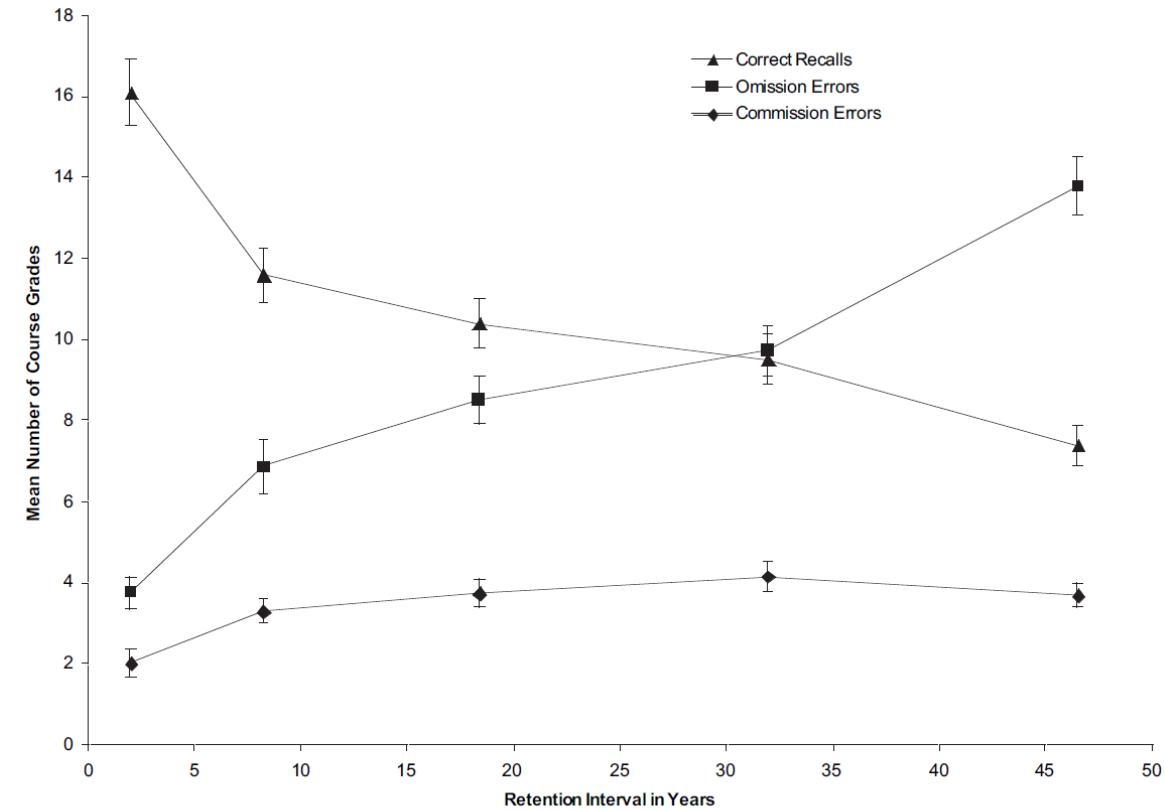
Rehearsal

Interference



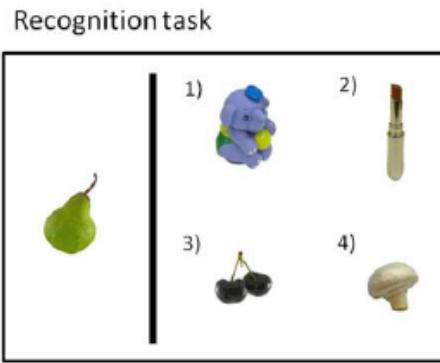
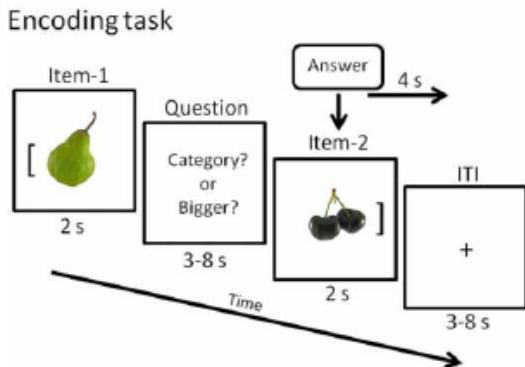
Unlike STM, Forgetting LTM :
Inability of Access

Deletion :
Is it all or None?
Or
Graded ?



Encoding: Process of transforming into a lasting memory the information our senses take in

Semantic Encoding Memory Task (SEMT)



Visual Imagery - encoding

<https://www.youtube.com/watch?v=M6meZA16fGg>



Organizational - encoding

Semantic
22061823

Can you remember this?

You have a chit in your hand, open them and do the tasks – as instructed

Think of a meaning of the information, like a gambler would see these numbers like – betting about \$220 at 6-to-1 odds on horse number 8 to place 2nd in the 3rd race – **semantic , elaboration**

Do you see any rhyming here? Or any sort of matching? – **Rhyme**

Think about the visual properties of the word – **Visual or basic properties – like odd / even**

HAT

Which one is the effective?

READING MATERIAL

- Cognitive Psychology – John Anderson
 - Psychology – from Inquiry to Understanding – Lilienfeld and colleagues
 - Psychology – Schacter and colleagues
-
- Working Memory: Past Present and Future? Baddeley and Hitch, 2012.
 - The information available in brief visual presentations. George Sperling, 1960., Psychological Monographs: General and Applied.