

# Memory

Made by

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# Definition of Memory

- An internal record or representation of some prior event or experience
- A set of mental processes that receives, encodes, stores, organizes, alters and retrieves information over time

# Types of memory:

**1- Sensory memory.**

**2- Short term memory.**

**3- Long term memory.**

# Sensory Memory

- refers to an initial process that receives and holds environmental information in its raw form for a brief period of time, from an instant to several seconds.

# Sensory Memory

- Purpose: to retain exact image of sensory information long enough to focus on important information and transfer it to next stage
- All senses have a sensory memory
- Duration depends on the sense involved
- Capacity is relatively large

# Short-term memory

Refers to another process that can hold only a limited amount of information for only a short period of time(Temporary storage of information)

# Short-Term Memory

- Purpose - temporarily stores info until it is sent to LTM
- Duration - relatively limited
- Capacity: 5 to 9 items
- Duration and capacity can be increased with maintenance rehearsal and/or chunking
- Also known as “working memory”

# Chunking

**is combining separate items of information into a larger unit, or chunk, and then remembering chunks of information rather than individual items**

# Chunking:

For example, to remember the 11-digit phone number 16228759211, we break it into four or five chunks: 1-622-875- 92- 11

# Long term memory

Refers to the process of storing **almost unlimited amounts of information** over **long periods of time**

# Long Term Memory

- Purpose is to keep info stored for long periods of time
- Unlimited capacity and duration

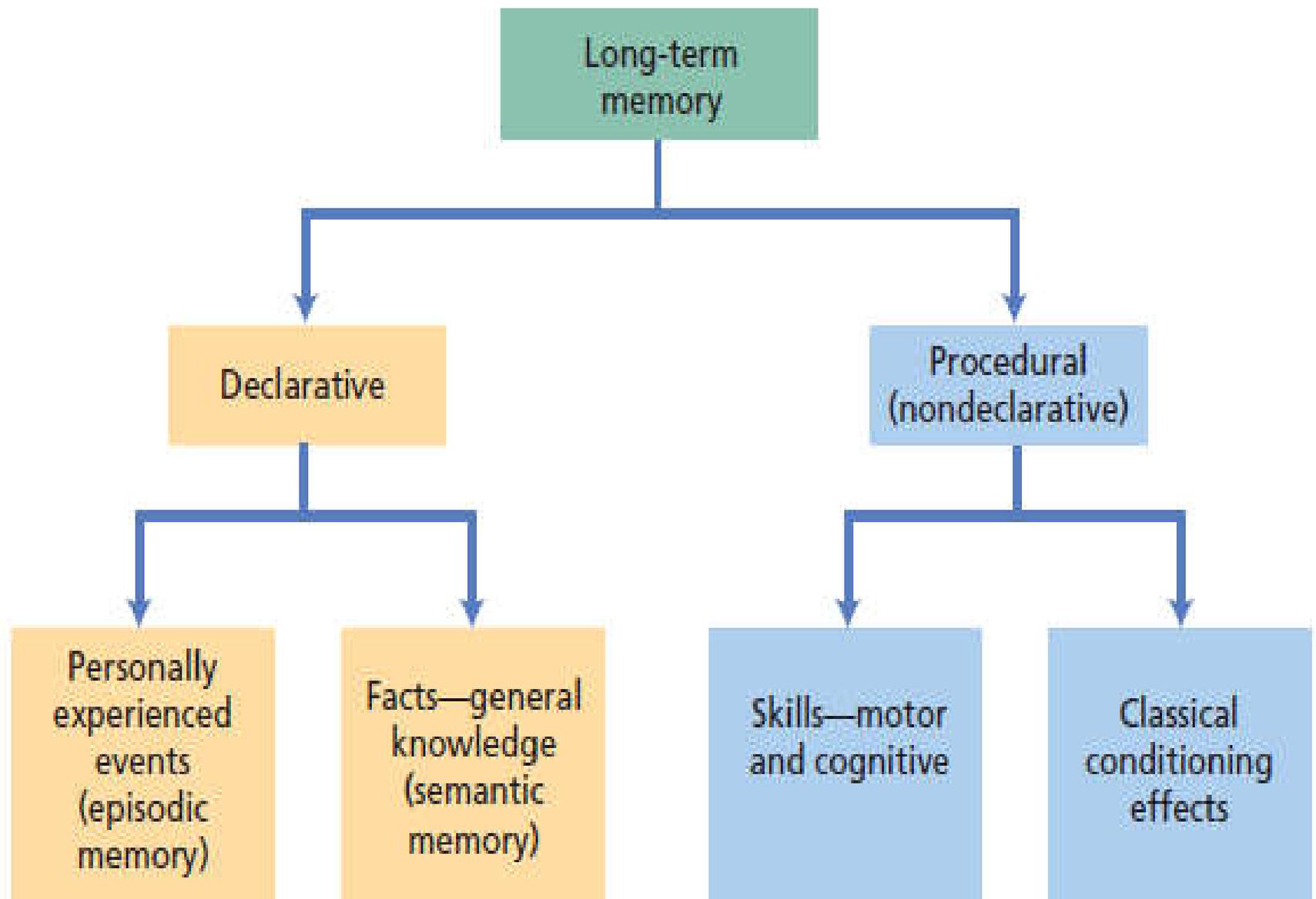


FIGURE 8.12

# Memory Process

- Encoding, Storage, Retrieval Model
- How is info changed as it moves through these operations?
- Process can be compared to a computer

## Encoding

(Initial recording of information)

## Storage

(Information saved for future use)

## Retrieval

(Recovery of stored information)



# Encoding

- Encoding refers to getting information into the system by translating it into a neural code that your brain processes.
- refers to making mental representations of information
- For example, you encodes numbers by visualizing each number
- as having a different shape, color, and texture.
- Such a vivid mental representation helps to store numbers in his memory.

# Storing

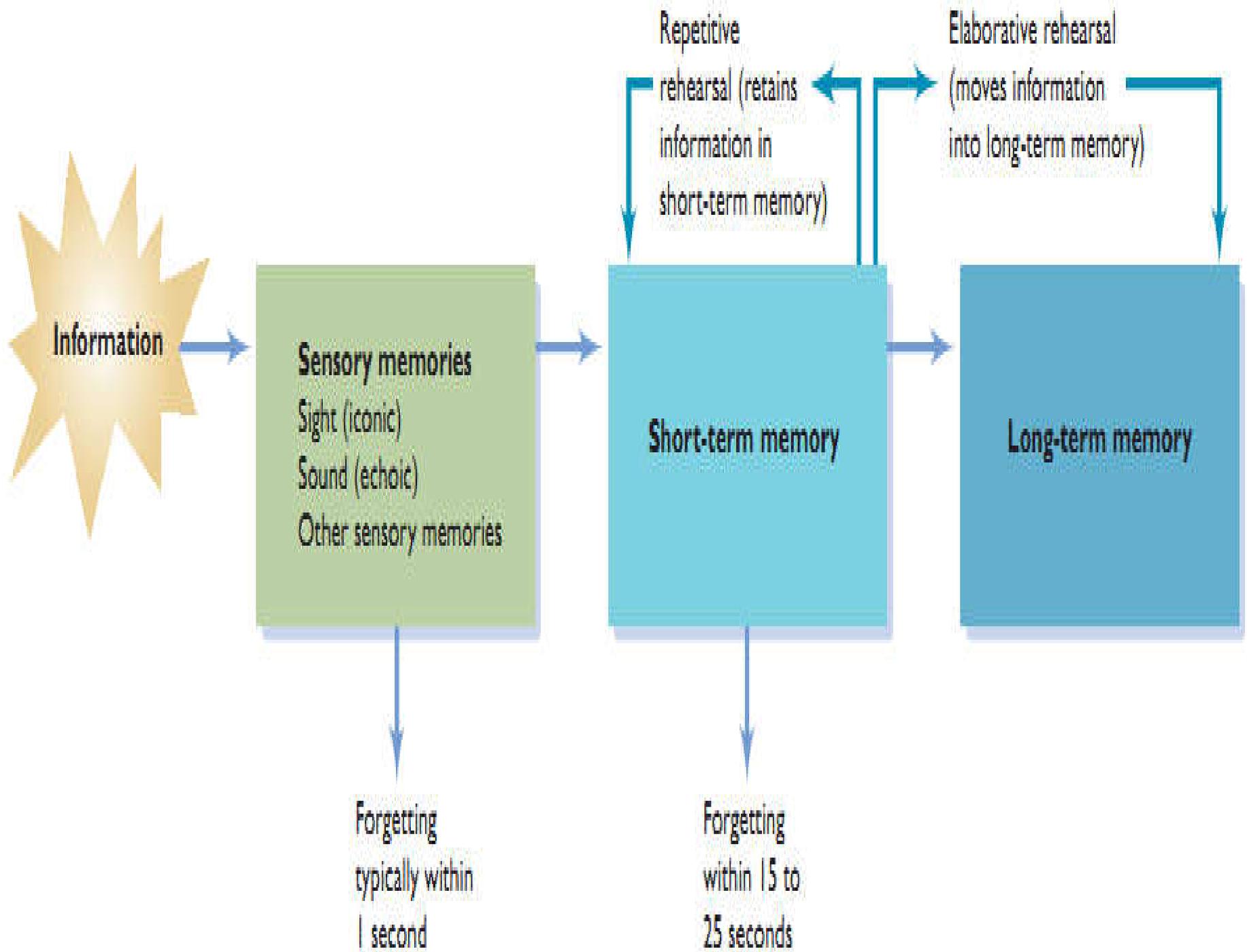
- involves retaining information over time.
- New information that is stored by making associations with old or familiar information is much easier to remember, or retrieve

# Retrieving

is the process of getting or recalling information that has been placed into short-term or long-term storage.

it refers to processes that access stored information.

**Most people vary in their accuracy to recall information**



# Putting Information into Long-Term Memory

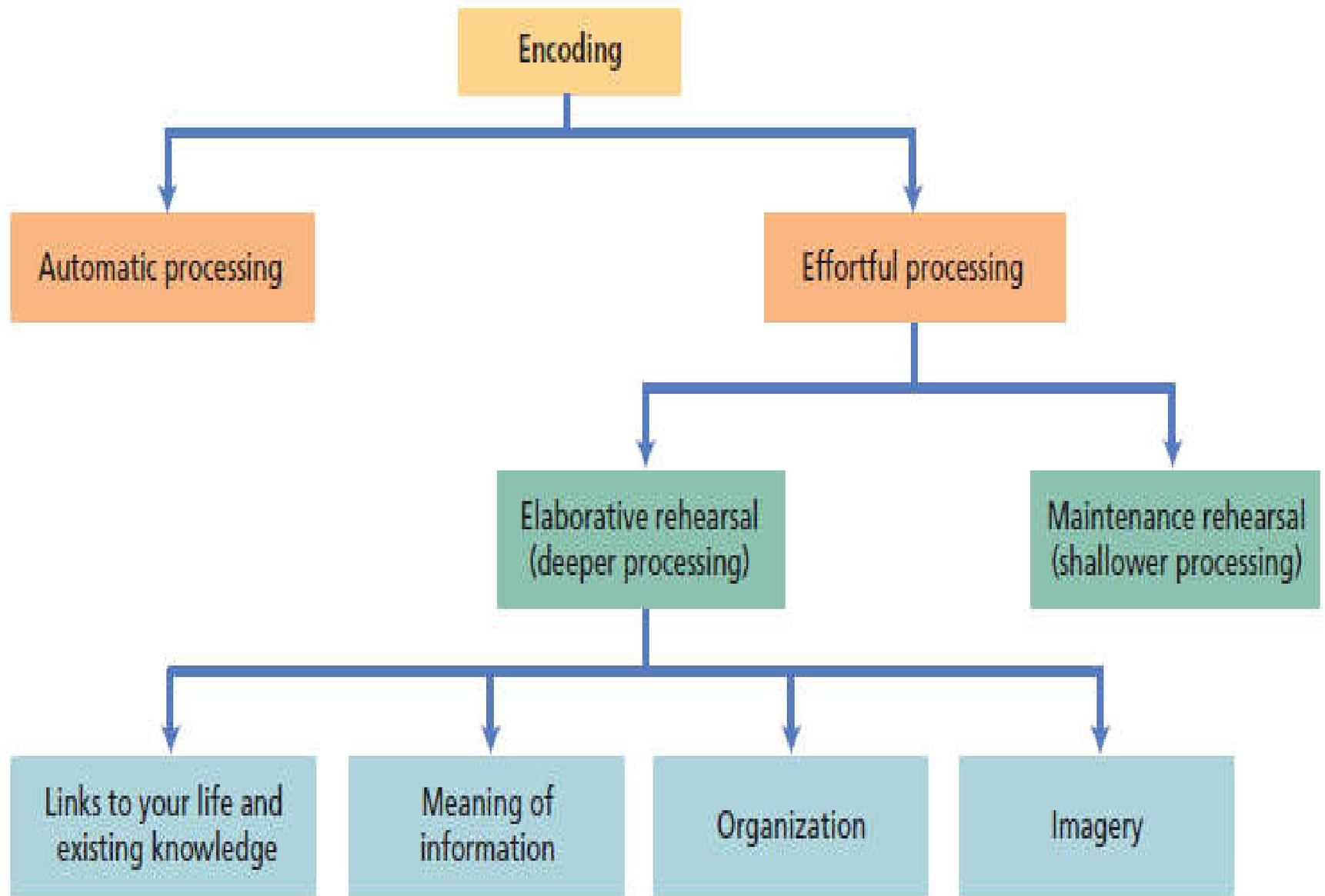
**1- Sensory memory.**

**2- Attention.**

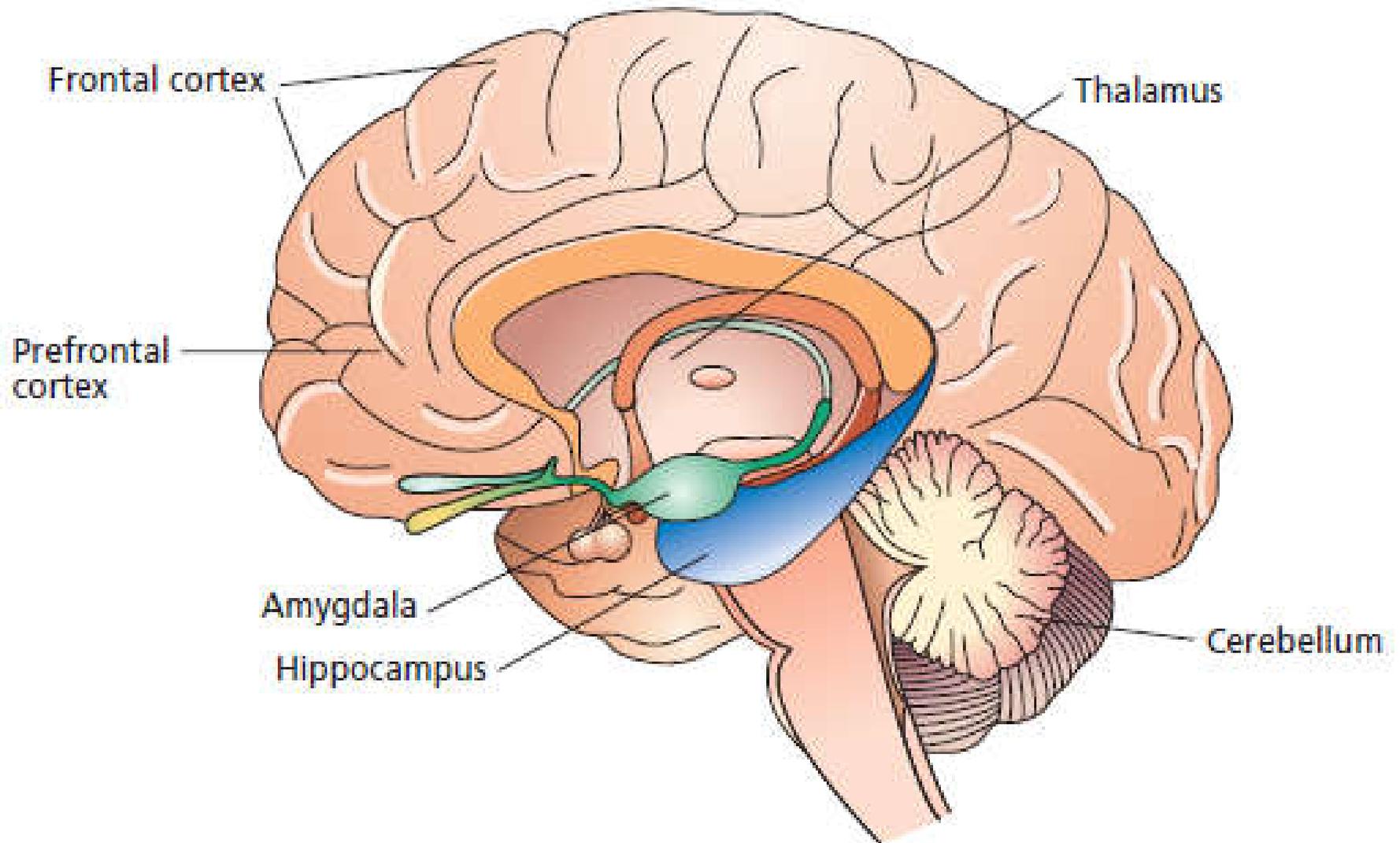
**3- Short-term memory.**

**4- Encoding:** You place information in long-term memory through a process called encoding.

- Encoding is the **process of transferring information from short-term to long-term memory:**
  - by paying attention to it,
  - repeating or rehearsing it, or
  - forming new associations.



# Biological basis of memory:



# Biological basis of memory

1- our visual, auditory, and other sensory systems to detect stimulus information (e.g., the sounds of “Hi, my name is Carlos”), transform it into neural codes, and send it to the brain, where sensory areas of the cerebral cortex initially process it.

# Biological basis of memory

2- The frontal lobes—especially the prefrontal cortex—play key roles in working memory.

3- Amygdala : emotional memory.

4- Hippocampus: Transferring Memories & Retrieving Memories

Just as the “Save” command on your computer transfers a file into permanent storage on your hard drive, the **hippocampus transfers words, facts, and personal** events from short-term memory into permanent long-term memory.

*This hypothetical and gradual binding process is called **memory consolidation**.*

# Forgetting

- Forgetting refers to **the inability to retrieve, recall, or recognize information that was stored or is still stored in long-term memory.**

# Theories of Forgetting

- Decay Theory : *which proposed that with time and disuse the long-term physical memory trace in the nervous system fades away.*
- Interference Theory
  - Proactive interference
  - Retroactive interference
- Encoding Failure
- Retrieval Failure Theory

# Proactive interference

- ***occurs when material learned in the past interferes with recall of newer material.***

# Retroactive interference

**Occurs when newly** acquired information interferes with the ability to recall information learned at an earlier time.

# Memory dysfunction

## Disorders of recall

- A) -Amnesia ( organic and psychological)
- B) -Hypermnesia
- C) -Paramnesia ( distorted memories)

## Disorders of recognition

- 1-De ja vu
- 2- Jamais vu

# Amnesia

- The term amnesia *commonly refers to memory loss due to special conditions, such as brain injury, illness, or psychological trauma.*

# Types of Amnesia

- **Retrograde amnesia**
- *represents memory loss for events that took place sometime in life **before** the onset of amnesia.*
- Football players experience retrograde amnesia when they are knocked out by a concussion, regain consciousness, and cannot remember the events just before being hit.
- **Anterograde amnesia refers to memory loss for events that occur **after** the initial onset of amnesia**

Thank you