Memory
OBJECTIVES

- Storage of memory
- Types of Memory
- Requirements for memory
- Centers of Memory
- Disorders of Memory
1. **Immediate memory (sensory stores)**

   Information is held for less than a second. It is more related to attention.
Storage of memory

2. Short-term memory (primary memory)

- Limited to seconds to min
- It holds and manipulates information for current use (working memory).
- It is of limited capacity, holding an average of seven “bits” of information at any one time.
- This information may be retained for up to several minutes but is lost or replaced by new information if it is not sustained by repetition.
- The center of the verbal working memory is localized in the left hemisphere while the nonverbal is in the right hemisphere.
3. Long-term memory (secondary memory):

- Duration from few minutes to long decades ago. It lasts after the experience had been dropped from consciousness.

- It is the ability to remember information after a delay interval, during which the individual’s attention is directed away from the target information.

- It has extraordinary capacity with the potential for holding information without the need for continued repetition.
Types of Memory

Types of memory

Declarativ
- Episodic
- Semantic

Nondeclarativ
- Procedural
- Conditioning
- Priming
Declarative memory

- It is the memory for facts, experiences and information about events.
- It is directly available for conscious awareness and can be declared (remembered).
- It is fast and flexible.
- They are not reliable and subject to forgetting.
Declarative memory

**Episodic memory:**
- These are information learned at a particular place and time.
- To recall the target information, the individual must be able to access information regarding the time and place of the original event.

**Semantic memory:**
- Refer to general knowledge that is not linked to a particular time or place.
- None of these tasks requires recall of where or when the information was learned.
Nondeclarative memory

- They are expressed through performance rather than remembering, e.g., skill-related memory and classic conditioning.
- They are memories that are not available for conscious awareness.
- They are slow and inflexible, but rapidly expressed by the system involved in learning of that skill.
- They are quite reliable and true.
Nondeclarative memory

- **Procedural memory**: they include behaviors as tying a shoe, riding a bicycle or driving a car. The procedure is automatic and is performed without conscious attention to the mechanics involved.

- **Conditioning**: classic conditioning is another type of nondeclarative memory.

- **Priming**: it is a phenomenon in which previous experience with a stimulus unconsciously facilitates the subject’s ability to later identify those stimuli.
**Anterograde Versus Retrograde Amnesia**

- **Anterograde amnesia**: refers to the inability to recall or recognize new information or events that occurred since the onset of amnesia.

- **Retrograde amnesia**: refers to the inability to recall or recognize information or events that occurred before the onset of amnesia. However, some knowledge related to specific facts and experiences remains fairly intact.
Recent Versus Remote Memory

- **Recent memory:** they are the information acquired just before the onset of amnesia. They are more disrupted than remote memory.

- **Remote memory:** they are information or events acquired years before the amnesia began.
Requirements for memory

- **Registration**: to add new materials to memory stores.
- **Retention**: to store knowledge that can be returned.
- **Retrieval**: it is the capacity to obtain stored materials from memory.
- **Recall**: to remember information into consciousness (no object present).
- **Recognition**: feeling of familiarity of object that is present.
Strategies to enhance retention and recall

- Improve encoding: ensure information understood, make information meaningful, make information interesting, go into the subject more deeply.
- Improve storage: rehearse information, repeated learning of a subject.
- Improve retrieval: encourage frequent recall.
Memory span

- This means the number of items of specified character that can be correctly reproduced immediately after their first presentation, visual or auditory.
- Children 4-6 years have a span of about 4 items, increase to 6-8 items at 18 years.
- It differs according to intelligence and included in most intelligent tests.
- Memory span of average persons, 6-8 items is respected and not exceeded in common use e.g. telephone numbers and automobile numbers. If there is a need to increase it, items of different natures are used e.g. letters.
Methods of facilitating memorizing

- Methods of facilitating memorizing and overcoming limitation of memory span:
- 1- Divide the number into 2 groups
- 2- Repetition
- 3-Intelligent memorizing: the number me be friend’s telephone number, even numbers or odd numbers, similarities between numbers or put it into rhythm to facilitate memorizing.
Methods of efficient memorizing

1. Shutting out distraction.
2. Identify the task: to know what you have to learn.
3. Observing relations: relating parts to each other by finding similarities or dissimilarities, rhythm.
4. Understanding.
5. Reciting
6. Repitition with timing
7. Whole learning
8. Using more than one sense organ
9. Stress the correct performance from the start.
10. Real desire to progress.
Theories of forgetting

- Trace decay theory: gradual decay of the memory traces.
- Interference theory: previous learning interferes with recent learning or recent learning interferes with previous learning.
- Cue-dependent forgetting: information can’t be retrieved due to absence of a suitable cue.
- Repression: conscious effort to forget unpleasant information.
- Mood-state-dependent forgetting: mood state at retrieval similar to that at learning.
- Disuse: if the material learnt is not used for a long time, it is liable to forgetting.
Centers of Memory

Three structures are forming the memory center

- **The medial temporal lobe**: the hippocampus and the amygdala.
- **The diencephalon**: dorsal medial nuclei of the thalamus and the mammillary body.
- **The basal forebrain**: 
The basal forebrain
Disorders of Memory

- Impairment of registration: occur in cases of disturbed consciousness e.g., head injury and alcoholism.
Disorders of Memory

**Impairment of retention:** caused by:

- Dementia.
- Head trauma: events just before the accident is forgotten completely.
- Bilateral temporal lobectomy damaging the hippocampus.
Disorders of Memory

Impairment of retrieval: 2 types are described:

- Diencephalic type: in case of Korsakoff syndrome due to chronic alcoholism causing severe amnesia and confabulation. Confabulation means fabrication of memory. The defect is in retrieval.

- Hippocampal type: in case of bilateral operation of the temporal lobe. No retention or retrieval occurs resulting in severe amnesia without confabulation.

- Misnaming of objects: it is momentary loss of memory for words due to faulty retrieval from memory stores.
Disorders of Memory

- *Impairment of recall*: this is inability to remember. This occurs due to psychogenic causes as hysteria, anxiety and depression.
**Disorders of Memory**

**Impairment of recognition:** 2 types are present:

- *Déjà vu:* events occurring for the first time appear familiar.
- *Jamais vu:* events occurred before appear strange.

- These two phenomena may be occur normally or in cases of epilepsy.
THANK YOU