Memory and its disorders

Memory is the organism's ability to receive, store and recall previous experiences.

- It enables the preservation of past experience, it is a necessary condition for adaptation.
- Memory is one of the functional systems of the brain (such as emotions, motor skills, ...).
- There are two main types of memory – phylogenetic and ontogenetic.

Phylogenetic Memory

- Unconditioned reflexes
- Instincts

Ontogenetic memory

- Ontogenetic memory can be divided in different ways:

1. **declarative memory** – conscious, explicit, verbal (statements), non-verbal (ideas);
    1. semantic component – information obtained through certain specific experiences;
    2. episodic component – contextual, memories of events.
2. **non- declarative memory** – procedural memory – implicit, not clearly aware, developmentally old memory, memory contents contained in various skills.

- **Clinical division:**

1. immediate – within 30 s;
2. recent – several months;

    - for remote events.

- **Division according to the retention time of the memory trace:**

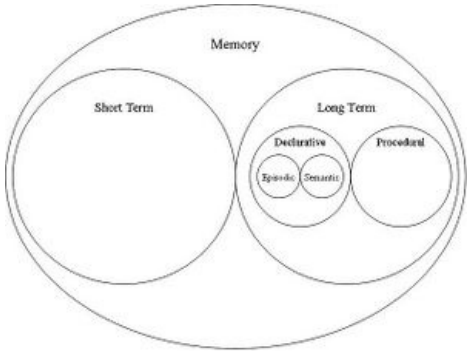
1. short term;
2. long term.

- **Division according to experimental physiology:**

1. working memory – processes in the short term;
2. operational memory;
3. stock.

Basic memory skills:

- Ability to store (implantability, impregnation).
- Ability to keep, fix (retention).
- The ability not to change, to have stored without changes (conservation)
- Ability to recall (reproduction).



Ontogenetic memory

Ultra short memory

- The sensory register, lasting fractions of seconds to a second, is closely related to attention.

Short-term memory

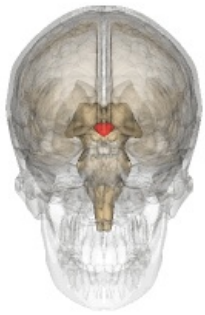
- It is based on **reverberation circuits** (short-term temporary connection of neural networks along which the excitation circulates).
- It lasts on the order of seconds, in the event of a malfunction, the ability to absorb is damaged (disorder of the reticular formation, frontal lobes).

Consolidation phase of memory - medium-term memory

- Some circuits disappear in the short term, others persist, the emotional component, and the **principle of reward and punishment** is important.
- The limbic system and thehypothalamus, are mainly involved in emotional remembering.
- The consolidation phase is the transition to long-term memory, it includes the creation of memory traces.
- The limbic system is activated by reward and punishment, it strengthens the influence of appropriate stimuli.
- Electrochemical changes occur - pharmacologically influenceable.
- **Acetylcholine** is of great importance for this kind of memory.

Long-term memory

- Long-term memory has a structural, morphological basis, the number of dendrites increases; in old age, due to toxins, their number decreases, during intensive learning, the number of dendrites increases; this process appears to underlie memory.
- The mechanism of activation of spines in the hippocampus – AP activates the enzyme calpain I, thereby creating the substance fodrin, which is contained in the neuronal cytoskeleton, degrades and exposes excitatory AMK receptors.
- The issue of localization is highly controversial.
- A prerequisite for conscious memorization is a motive.
- Determinants – the strength of the stimulus, emotional coloring, ability to concentrate, and emotional tuning.
- Everyone has different dispositions, someone has a better visual, ...
- Memory is impaired by fatigue and passivity.



Location of the hypothalamus

Memory failures

Hypomnesia

- Decreased memory performance, either globally or selectively.
- Most often with organic impairment, as part of the dementia syndrome.
- When tired, due to drugs, toxins.
- In dementia, inculpability is mainly impaired.
- Confabulation – the affected person answers the questions closely but factually incorrectly, but he is nevertheless convinced that he is right, and in a moment he can answer the same question differently.
- Amnestic disorientation – a total implantable disorder.

Korczak syndrome

- Impulsivity disorder, confabulation , amnestic disorientation.
- Alcohol dementia, Alzheimer's disease.

Amnesia

- Complete memory loss, usually limited in time, full or selective.
- Retrograde, anterograde.
- Common in quantitative disorders of consciousness, after injury.
- Continuous or island-like (delirium, alcohol intoxication - e.g. window -palimpsest).
- Selective amnesia – in hysterical persons, it displaces unpleasant memories.

Transient global amnesia

- **Amnestic stroke**: a sudden memory disorder, mainly organic, caused by a strong stressor, starts suddenly, ends suddenly.
- **Psychogenic amnesia**
- **Dissociative amnesia**: dissociative fugues (wandering), influenced by hypnosis.

Hypermnesia

- Excessive, disproportionate memorization of certain selective material.
- Usually part of paranoid psychoses (remembers associations related to delusion).
- In neuroses, mania.

Paramnesia

- Distortion of the stored content, but the person has a sense of accuracy.

Memory Delusion

- In pathic paramnesia, the bearer is irresistibly convinced of the reality of a certain idea, typical ofpsychosis and personality disorders.

Ecmnesis

- Inaccurate temporal localization of the correct memory

Cryptomnesia

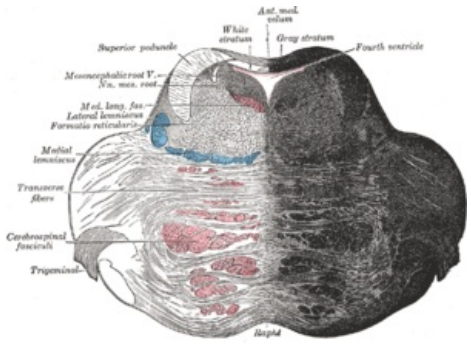
- In unintentional plagiarism, the patient is convinced of the authorship of something that he did not invent himself, but read or heard somewhere.

Pseudologia phantastica

- "Baron Prasil's Syndrome“, is a fabulous lie - it is not a true memory disorder, typical of hysteria, even in children.

Attention (prosexy)

- Attention is a mental function, it can be described as focused perception.
- It is the ability to purposefully select certain perceptions from a complex of perceived stimuli.



Reticular Formation

Characteristics of attention:

1. concentration – the intensity of focus;
2. capacity – an indicator of the extent of attention, the number of perceptions that we can simultaneously monitor;
3. tenacity - constancy, perseverance;
4. irritability – threshold of intensity of stimuli capable of binding attention;
5. vigilance - the ability to distribute it.

Dividing attention

1. active;
2. passive (unintentional).

- A certain level of alertness (ARAS) and sufficient motivation are needed to maintain attention.

Hypoprosexia

- Decreased attention span.
- General or selective.
- Overall, mainly in dementia, and severe depression.
- Oligophrenia, including neuroses, pharmaceuticals (barbiturates, neuroleptics).

Hyperprosexy

- More often selective.
- Manic syndrome – increased irritability, tenacity, and distribution, but attention tends to be unstable and oscillates.

Paraprosexy

- The incorrect focus of attention.
- For example,schizophrenia – excessive focus on delusions.

Links

Related Articles

- Amnestic syndrome

Source

- BENEŠ, Jiří. *Study Material* [online]. [cit. 2009]. <http://jirben.wz.cz>.