

Study of the Brain

Notes

1. Three Components of the Brain

Cerebrum. Most high-level brain functions take place in the cerebrum. It is divided into the **left and right** hemispheres. Many motor and sensory functions have been **mapped** to specific areas of the cerebral cortex. See page 4

Cerebellum. The cerebellum coordinates **voluntary** body movements and is located at the lower back of the brain beneath the occipital lobes.

Brain Stem. The brain stem is responsible for sustaining the **involuntary** basic functions of life, such as breathing and blood pressure.

2. Reticular Formation

The reticular formation is located in the brain stem and controls respiration, cardiovascular function, digestion, **levels of alertness**, and patterns of sleep. Reference (RAS-Reticular Activating System) Knowing God's Voice-page 15.

3. Three Types of Memory

Sensory Memory. Sensory memory refers to the **initial**, momentary recording of information in our sensory systems, i.e. eye, ear etc.

Usually sensory information coming in next replaces the old information. For example, when we move our eyes, new visual input masks or erases the first image. The information in sensory memory vanishes **unless it captures our attention and enters working memory.**

Working Memory. Working memory stores information briefly and allows **manipulation** and use of the stored information.

Long-Term Memory Long-term memory describes a system in the brain that can store vast amounts of information for a lifetime. The brain remains **capable of new learning** throughout one's lifetime. Reference (Knowing God's Voice-page 35)

4. Three Types of Long-Term Memory

Episodic Memory. Episodic memories are connected with a **specific time and place.**

Semantic Memory. Semantic memory refers to our general knowledge of the world and all of the facts we know. **Does not depend on a specific time and place.**

Procedural Memory. Procedural memory refers to the **skills** that humans possess and **does not require conscious effort to recall.**

5. Three Components of Memory:

Encoding. Encoding refers to the initial perception and registration of information. **Another word for encoding is learning.**

Storage. Storage is the retention of **encoded** information over time.

Retrieval. Retrieval refers to the effective use of **stored** information

6. Types of Encoding:

Rehearsal. Keeps information circulating in the working memory until it moves to the long-term memory.

Association. Keeps information in working memory by associating it with an event, time or place.

Recoding. Keeps information in the working memory by grouping it into chunks, or meaningful units. Another word for recoding is **chunking.**

Mental Imagery. Forming mental images of objects leads to better recall than does rote rehearsal.

7. Two Types of Retrieval

Explicit Memory. Explicit memory refers to the deliberate, conscious recollection of facts and past experiences.

Implicit Memory. Implicit memory refers to the ability to subconsciously retain information without knowing it. Another term for implicit memory is Subconscious Reservoir.

8. Retrieval Cues.

A retrieval cue is any stimulus that helps us recall information in long-term memory. Overt cues such as sights and sounds can clearly induce memory.

9. Two Retrieval Principles.

Encoding Specificity Principle. According to this principle, stimuli may act as retrieval cues for an experience if they were encoded with the experience. For example, the smell of cotton candy may trigger your memory of a specific amusement park because you smelled cotton candy there.

Distinctiveness Principle. Distinctive cues specify one or a few items of information.

10. Accuracy and Distortion of Memory

We would like to believe that our cherished memories of childhood and other periods in our life are accurate. However, several case studies and many experiments show that memories can be quite inaccurate.

In many cases recollections can deviate greatly from the way the events actually occurred.

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