

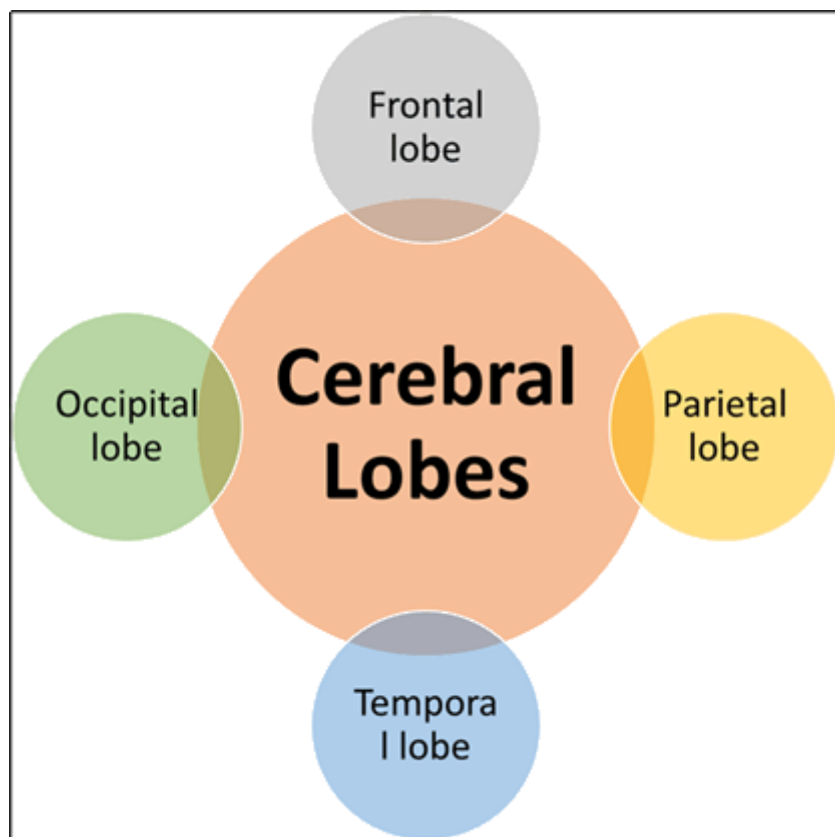
## Examrace

# Psychology Study Material: Cerebral Lobes, Membranes of the Brain

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### **Cerebral Lobes**

- Frontal lobe
- Parietal lobe
- Temporal lobe
- Occipital lobe



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Each lobe controls a different range of activities.

- Each hemisphere is vertically divided by the central sulcus, a groove.
- The lateral fissure, another groove divides each hemisphere horizontally.

Frontal Lobe

Associated with motor control and cognitive activities; reasoning, planning, decision making, problem solving, movement and speech (Broca's Area) .

### **Parietal Lobe**

Associated with controlling incoming sensory information; thus, affecting movement, orientation, recognition, perception of stimuli.

### **Temporal Lobe**

- Associated with perception and recognition of auditory stimuli, memory & speech.
- Wernicke's area: concerned with the understanding of language is located here

### **Occipital Lobe**

Associated with visual processing.

## **Cranium**

The brain is enclosed in the cavity of skull or cranium consisting of eight hard bones: One frontal bone, two parietal bones, two temporal bones, one occipital bone, one sphenoid bone, and one ethmoid bone.

## **Membranes of the Brain**

Between the surfaces of the brain and the skull, there are three layers of membrane called the meninges, which completely cover the brain and spinal cord.

### **These three membranes are:**

- Dura Matter
- Arachnoid
- Pia Matter

## **Cerebrospinal Fluid (CSF)**

- The subarachnoid space contains a fluid called cerebrospinal fluid (CSF) , a clear, colorless fluid covering the entire surface of central nervous system.
- The total volume of CSF is 125 - 150 ml.
- Total production of CSF is about 400 - 500 ml/day (about 0.36ml/min) .

## **Association Areas**

- Areas in the cerebral cortex that are not involved in primary motor and sensory functions; rather they are involved in higher mental functions such as learning, remembering, thinking and speaking.
- Association areas in the Frontal Lobes are concerned with judging and planning.
- Damage may lead to intact memory but inability to plan out something. Personality

- may also be affected.
- Association areas of other lobes are related to other mental functions, i.e.. Temporal Lobe enables us to recognize faces; damage to this area causes inability to identify people (although facial features can be described) , and gender and approximate age too.
- Association areas in the posterior lobes are involved in perception and memory. Damage leads to difficulty in perceiving speech.

## **Spinal Cord**

- Continuation of the Medulla Oblongata.
- The spinal cord is about 45 cm long in men and 43 cm long in women and weighs about 35 - 40 grams.
- The vertebral column (back bone) , encapsulating the spinal cord, is about 70 cm long comprising vertebra in the vertebral column.
- The spinal cord is much shorter than the vertebral column.
- Signals arising in the motor areas of the brain travel back down the cord and leave in the motor neurons.
- The spinal cord also acts as a minor coordinating centre responsible for some simple reflexes like the withdrawal reflex.
- Reflex - rapid (and unconscious) response to changes in the internal or external environment, needed to maintain homeostasis
- Reflex arc: the neural pathway over which impulses travel during a reflex.

### **The components of a reflex arc include:**

- Receptor - responds to the stimulus
- Afferent pathway -- sensory neuron
- Central Nervous System.