Cerebral Cortex: Right and Left Brain

by Sophia Tutorial

WHAT'S COVERED

This tutorial will discuss the structure of the brain by focusing on:

1. Cerebral Cortex
2. Hemispheres of the Brain
3. Lobes of the Cerebral Cortex

1. Cerebral Cortex

The **cerebral cortex** is probably the most recognizable part of the brain. The cerebral cortex is the outer layer of the brain, consisting of different kinds of wrinkles, little folds and bumps that are all put together from grey matter and sometimes some white matter.

This cerebral cortex area is responsible for most of the recognizable aspects of a person's mind--things like personality, thought, language, the storage of memory, movement, and the senses. All of these things are related to the cerebral cortex.

Humans have a very developed cerebral cortex compared to a lot of other animals, which is why we're considered to be more intelligent and aware than those animals. It's important to note that humans don't have the largest brains out of every animal. That would be the whale, which is a much bigger animal, and as a result, it has a much bigger brain.

DID YOU KNOW

Humans do not have the most wrinkled or defined cerebral cortex. The dolphin has a larger, more developed cerebral cortex than humans.

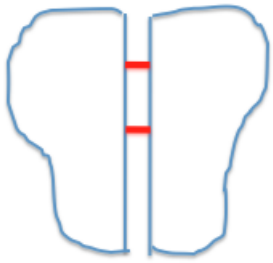
TERM TO KNOW

Cerebral Cortex
The outer layer of wrinkled grey matter on the outside of the brain, responsible for a person's personality, thought, language, storage of memory, movement, and senses

2. Hemispheres of the Brain

If you were to look at the brain from the top, you would see that the brain, or the cerebral cortex specifically, is divided into two halves, or **hemispheres**: the left hemisphere and the right hemisphere, with a little space in between. That space in between is called the medial longitudinal fissure.

The two sides of the brain are connected by a bundle of neurons in between that is shown here in red below. This is known as the **corpus callosum**, that connecting area of the two hemispheres.



LATERALIZATION OF FUNCTION

It is important to note that we have two different hemispheres because it provides a sort of backup system for any brain function. There are always two of each structure, so if one of them has a problem, the other one can help out.

Each side of the brain is responsible for specific functions which are generally relegated just to that side of the brain; this is called lateralization of function.

DID YOU KNOW

Five percent of people might have the functions assigned to each hemisphere flip-flopped, versus the rest of the population.

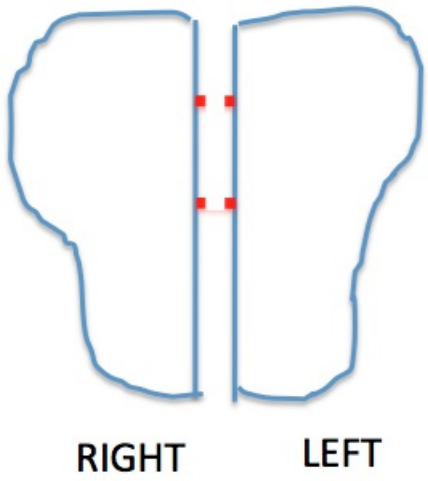
Generally, what is meant by lateralization of function is that people are neither left-brained or right-brained, as each side controls a different side of the body.

The left brain actually controls the opposite, or right, side of the body, meaning that your left brain sends signals to the right side of your body to move. Conversely, the right side of your brain controls the left side of your body.

> EXAMPLE If a stroke victim is having trouble moving their right arm, this means that the stroke damaged the left side of their brain.

Each side also controls different types of thinking. To determine this, there were studies done on people known as "split-brain patients." These are people who have had their corpus callosum--that connecting part in the middle of the brain--severed.

The corpus callosum is cut mainly because of epilepsy. This is a procedure to help people who experience major epileptic seizures.



What did they discover when the corpus callosum was cut? Surprisingly, people acted the same, because both eyes were able to see what was happening around them, which means that both sides of the brain could also see and react in their normal ways.

However, if you showed each eye a different image separately, they found that because that corpus callosum was severed, each eye only responded to one part of the brain.

> EXAMPLE When the left hemisphere/right eye was shown an object, a person with a severed corpus callosum could identify the object. However, if the right hemisphere/left eye was shown an image, they couldn't actually say what that image was. If they were asked to draw whatever came to their mind, they were able to draw the image.

This is because the left side of the brain is related to logic, language, coordination. It's the analytical side of the brain, which is how a left-brained person would be described.

The right side of the brain is related to spatial, visual, or emotional aspects; it is the artistic or holistic side of the brain.

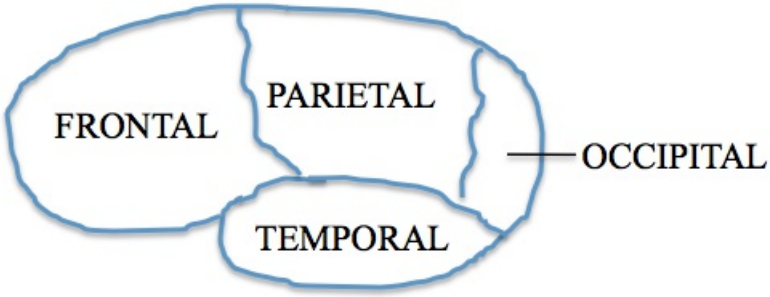
TERMS TO KNOW

Hemisphere
Half of the brain (left or right), divided by the longitudinal fissure; each hemisphere controls certain parts of the brain and can have certain specialized functions

Corpus Callosum
A large bundle of neurons that joins the two hemispheres of the brain

3. Lobes of the Cerebral Cortex

Each hemisphere, the left and the right, is further divided into the four different **lobes of the cerebral cortex**. Each of these lobes is a specific or generally defined area of the cerebral cortex that is related to different kinds of functions of the brain.



The frontal lobe is related to higher-level thinking tasks, like the sense of self, self-awareness, and personality, as well as movements. This is an area of the brain that is very highly developed in humans.

The parietal lobe is the area that is related to sensory issues, such as touch or temperature. The temporal lobe is related to hearing and language. Lastly, the occipital lobe is related to sight. So, each part of the brain is divided first into two hemispheres, right and left, and then into four lobes--frontal, parietal, temporal, and occipital.

TERM TO KNOW

Lobes of the Cerebral Cortex
Specific or generally defined areas of the cerebral cortex related to different functions

SUMMARY

This tutorial focused on the **cerebral cortex**, the outer layer of the brain, composed of wrinkled grey matter. The left and right **hemispheres of the brain** are responsible for specific behaviors, and each corresponds to the opposite side of body, respectively. The left hemisphere is generally responsible for analytical situations, and the right side is responsible for spatial awareness. There are four **lobes of the cerebral cortex**: frontal, parietal, temporal and occipital. The frontal lobe is highly developed in humans and is related to higher level thinking such as self-awareness.
Good luck!

TERMS TO KNOW

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The outer layer of wrinkled grey matter on the outside of the brain, responsible for a person's personality, thought, language, storage of memory, movement, and senses.

Corpus Callosum
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Hemisphere
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Lobes of the Cerebral Cortex
Specific or generally defined areas of the cerebral cortex related to different functions.