

CEREBRAL HEMISPHERES AND THEIR LOBES

Functions of the Cerebrum (according to lobe)

Lateralization: the left cerebral hemisphere controls language and logical thinking in ~95% of people. The right hemisphere is associated with visual imagery and spatial relationships.

Corpus Callosum is white matter that connects right and left cerebral hemispheres. This is larger in females and gives rise to female ability to “multi-task”. Males, in general, have greater ability to “compartmentalize” thinking.

Frontal lobe:

1. precentral gyrus controls voluntary motor activity, AKA *primary motor cortex*
2. higher mental processing, decision-making, conscience
3. emotional behavior (part of the limbic system)
4. speech output (usually left hemisphere), an area known as *Broca's Area*
5. Memory

Temporal lobe:

1. hearing
2. smell
3. memory—the similar neuronal pathways of olfaction sometimes causes an odor to bring back a vivid memory, often from many years ago.
4. speech recognition

Parietal lobe:

1. postcentral gyrus: sense of touch and taste, AKA *primary somatosensory area*
2. tactile object recognition
3. language (vocabulary—usually left hemisphere), an area known as *Wernicke's Area*

Occipital lobe:

1. primary visual area, AKA *visual cortex*

Aphasia is a language problem, quite common after a stroke:

- **Global aphasia**—The person may be unable to speak or easily understand what is being spoken to her.
- **Broca's aphasia (AKA Expressive aphasia)**— The person understands what is being spoken to them, but is unable to get the words out.
- **Wernicke's aphasia** — A person with this type of aphasia may not understand what is being spoken to him, or say what he wants to say.