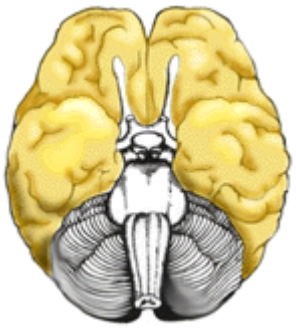
A Guide to Brain Anatomy, Functions

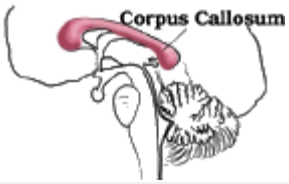
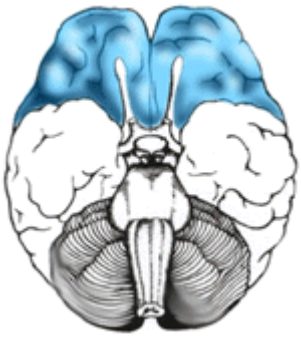
Upon completing the map, it was becoming clear to researchers that each side of the brain had a characteristic way that it both interpreted the world and reacted to it. The chart below will help illustrate the characteristics which are known to reside on each side of our brains.

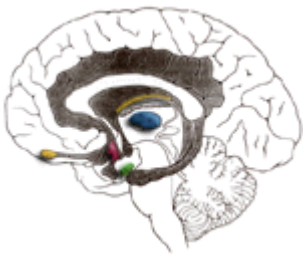
LEFT BRAIN FUNCTIONS	RIGHT BRAIN FUNCTIONS
uses logic	uses feeling
detail oriented	"big picture" oriented
facts rule	imagination rules
words and language	symbols and images
present and past	present and future
math and science	philosophy & religion
can comprehend	can "get it" (i.e. meaning)
knowing	believes
acknowledges	appreciates
order/pattern perception	spatial perception
knows object name	knows object function
reality based	fantasy based
forms strategies	presents possibilities
practical	impetuous
safe	risk taking

Our personality can be thought of as a result of the degree to which these left and right brains interact, or, in some cases, do not interact. It is a simplification to identify "left brain" types who are very analytical and orderly. We likewise certainly know of the artistic, unpredictability and creativity of "right brain" types. But each of us draws upon specific sides of our brain for a variety of daily functions, depending on such things as our age, education and life experiences. The choices of which brain is in control of which situations is what forges our personalities and determines our character.

Experiments show that most children rank highly creative (right brain) before entering school. Because our educational systems place a higher value on left brain skills such as mathematics, logic and language than it does on drawing or using our imagination, only ten percent of these same children will rank highly creative by age 7. By the time we are adults, high creativity remains in only 2 percent of the population.

Brain Structure	Function	Associated Signs and Symptoms
Cerebral Cortex  Ventral View (From bottom)	The outermost layer of the cerebral hemisphere which is composed of gray matter. Cortices are asymmetrical. Both hemispheres are able to analyze sensory data, perform memory functions, learn new information, form thoughts and make decisions.	
Left Hemisphere	Sequential Analysis: systematic, logical interpretation of information. Interpretation and production of symbolic information: language, mathematics, abstraction and reasoning. Memory stored in a language format.	
Right Hemisphere	Holistic Functioning: processing multi-sensory input simultaneously to provide "holistic" picture of one's environment. Visual spatial skills. Holistic functions such as dancing and gymnastics are coordinated by the right hemisphere. Memory is stored in auditory, visual and spatial modalities.	
Corpus Callosum	Connects right and left hemisphere to allow for	Damage to the Corpus Callosum may result in

	communication between the hemispheres. Forms roof of the lateral and third ventricles.	"Split Brain" syndrome.
Frontal Lobe  Ventral View (From Bottom)  Side View	Cognition and memory. Prefrontal area: The ability to concentrate and attend, elaboration of thought. The "Gatekeeper"; (judgment, inhibition). Personality and emotional traits. Movement: Motor Cortex (Brodman's): voluntary motor activity. Premotor Cortex: storage of motor patterns and voluntary activities. Language: motor speech Diagram	Impairment of recent memory, inattentiveness, inability to concentrate, behavior disorders, difficulty in learning new information. Lack of inhibition (inappropriate social and/or sexual behavior). Emotional lability. "Flat" affect. Contralateral plegia, paresis. Expressive/motor aphasia.
Parietal Lobe 	Processing of sensory input, sensory discrimination. Body orientation. Primary/ secondary somatic area.	Inability to discriminate between sensory stimuli. Inability to locate and recognize parts of the body (Neglect). Severe Injury: Inability to recognize self. Disorientation of environment space. Inability to

		write.
Occipital Lobe 	Primary visual reception area. Primary visual association area: Allows for visual interpretation.	- Primary Visual Cortex: loss of vision opposite field. - Visual Association Cortex: loss of ability to recognize object seen in opposite field of vision, "flash of light", "stars".
Temporal Lobe 	Auditory receptive area and association areas. Expressed behavior. Language: Receptive speech. Memory: Information retrieval.	- Hearing deficits. - Agitation, irritability, childish behavior. - Receptive/ sensory aphasia.
Limbic System 	Olfactory pathways: Amygdala and their different pathways. Hippocampi and their different pathways. Limbic lobes: Sex, rage, fear; emotions. Integration of recent memory, biological rhythms. Hypothalamus.	- Loss of sense of smell. - Agitation, loss of control of emotion. Loss of recent memory.
Basal Ganglia 	Subcortical gray matter nuclei. Processing link between thalamus and motor cortex. Initiation and direction of voluntary movement. Balance (inhibitory),	- Movement disorders: chorea, tremors at rest and with initiation of movement, abnormal increase in muscle tone, difficulty initiating

	Postural reflexes. Part of extrapyramidal system: regulation of automatic movement.	movement. Parkinson's.