2.1 The Brain Study Guide by Hisrich

2.1.a. What is communication?

Communication is messages passing from one entity to another & being understood by the 2nd entity.

2.1.b. What are ways communication occurs in machines and in the human body?

Machines→My computer is powered by electricity. Somehow the vibrating electrons cause the computer to turn on & the binary code stores and transmits messages for how programs run.	Human Body→Communication can be chemical (endocrine system, hormones) or electrical (nervous system, impulses)

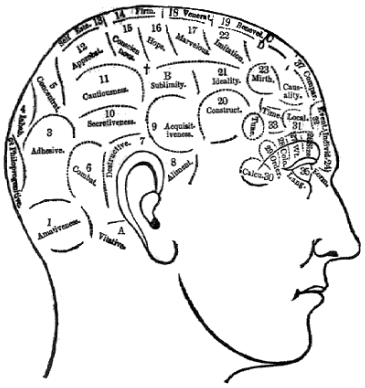
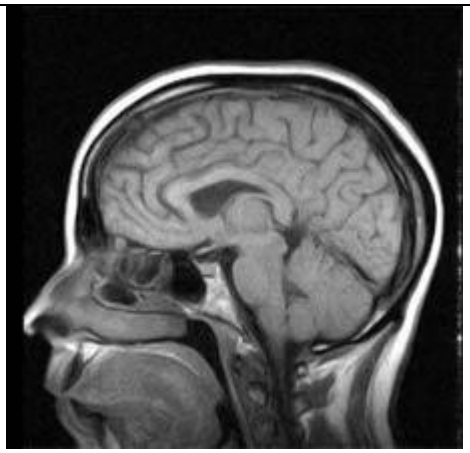
2.1.c. What are consequences of miscommunication in the body?

When there is miscommunication within our **central nervous system** (brain, **brain stem** and spinal cord) we might misunderstand sensory input or (more often) our body's might do things we don't want them to (uncontrolled movements, lack of balance, paralysis, mental illness, etc)

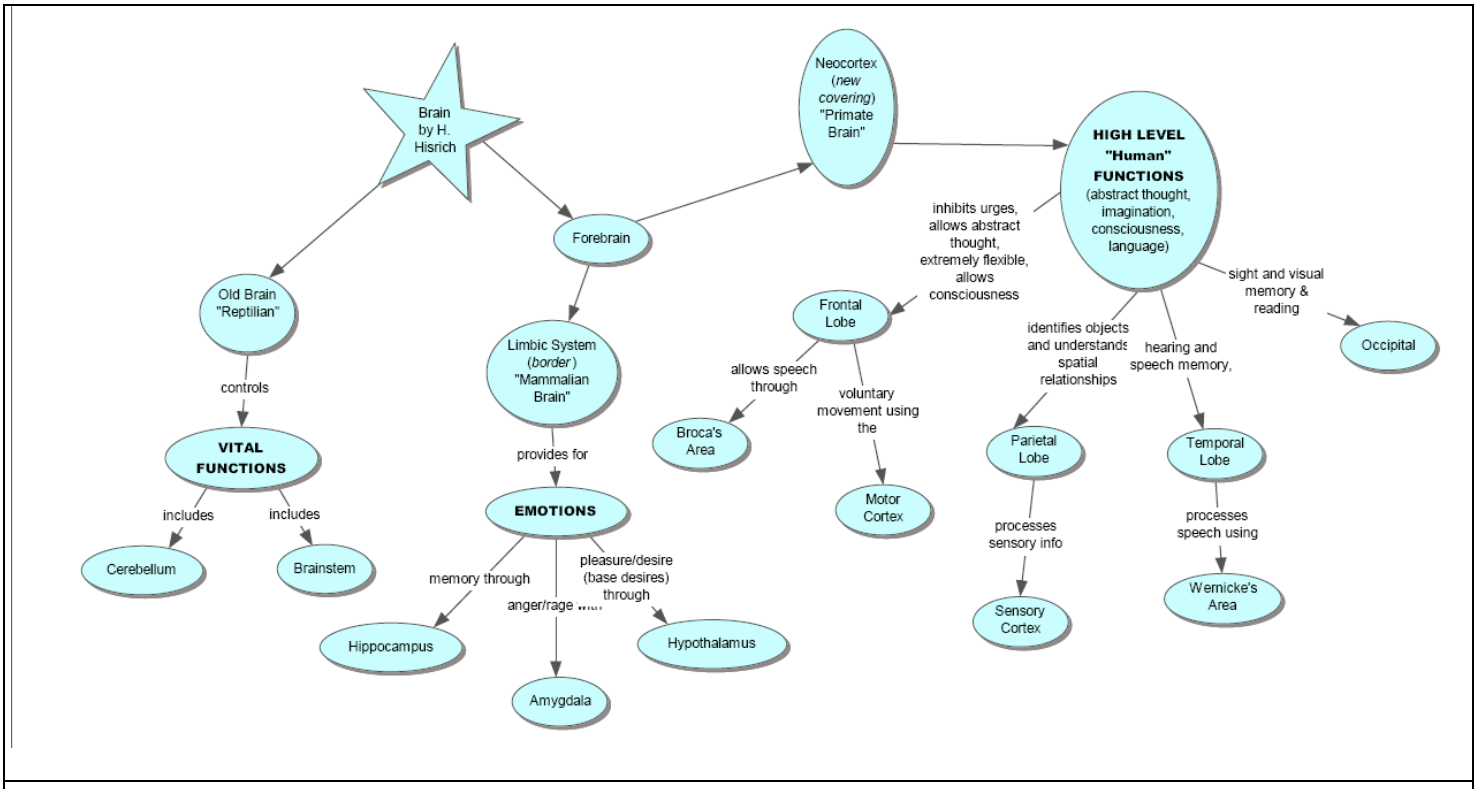
2.1.d. How do the **central nervous system** & the **peripheral nervous system** work together to control the body?

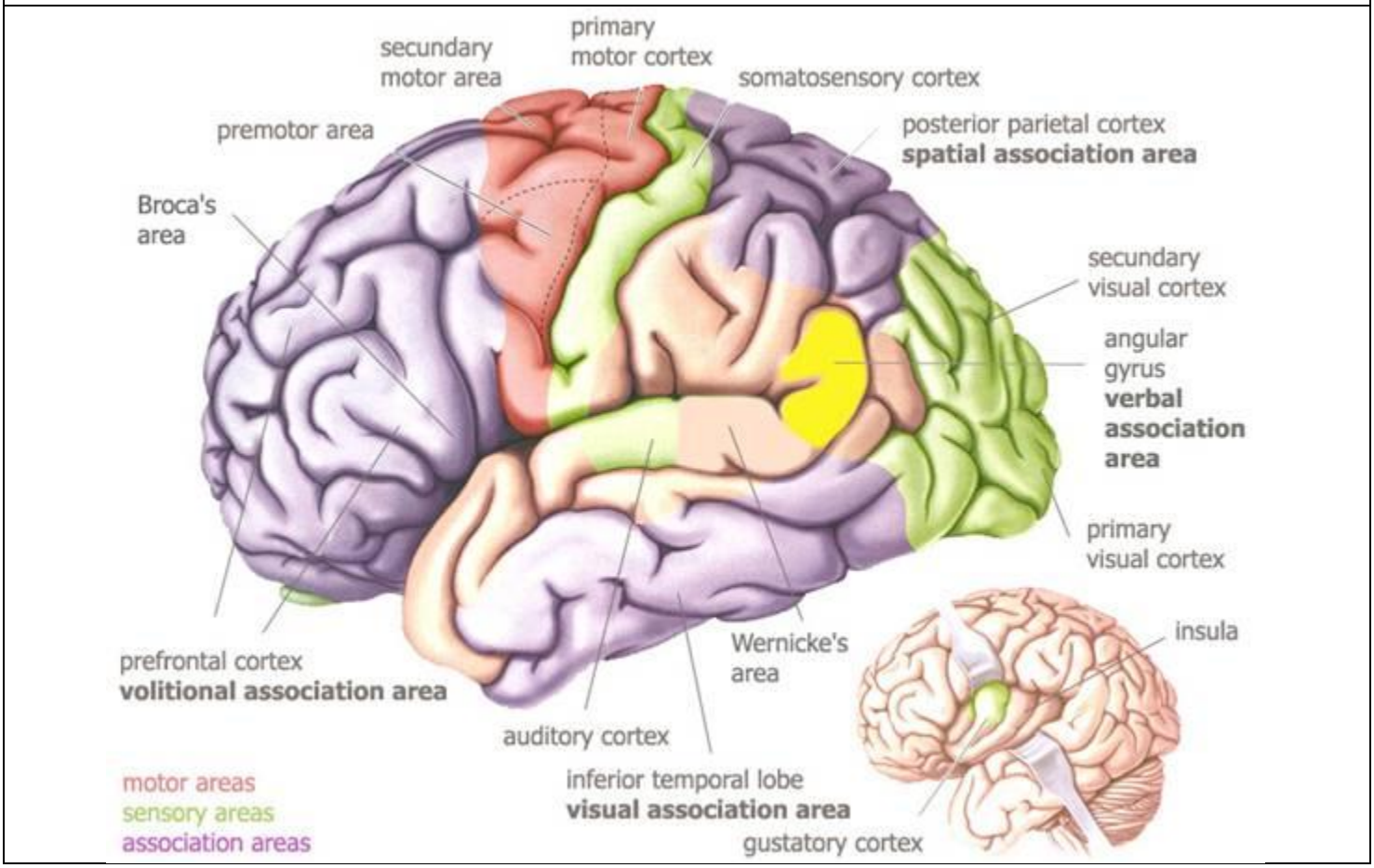
Sensory input—sense information is carried to the brain. Information from the eyes/ears goes directly to the brain. However, information from the lower body is first picked up by the **peripheral** "outer" **nervous system (PNS)** & then passed into the spinal cord, then through the brain stem & then into the brain (all parts of the **central** "middle" **nervous system** or **CNS**)	Motor output—muscle movement is most started in the **CNS** (unless it's a reflex response) and then the impulses travel through the brainstem into the spinal cord and to the **PNS** to activate the neurons in the muscles that need to move.

2.1.f. How do scientists determine which areas of the brain are associated with specific actions, emotions or functions?

Earliest attempts→based on **phrenology** *("study of the mind"),* which used bumps on the skull to determine personality traits. It was very flawed but did initiate the idea that different parts of the brain had different functions.	Then & now→both in the past and today patients with brain injuries are studied. The area of the injury can be linked to changes in behavior or abilities (i.e. Phineas Gage's damaged frontal lobe caused personality changes)	Now→MRIs & electrodes directly implanted into the brain can show which areas of the brain are active during which activities or even when people are thinking about various things.
		

2.1.e. What are the functions of the main regions of the brain?





The **cerebellum** mostly controls fine motor movement & balance. The **cerebrum** is higher thought. The **gyri** are the ridges between grooves/furrows (**sulci**) and get deeper with learning. The **limbic system** controls emotions & motivation. There are 4 major **lobes** (divisions)—frontal, occipital, temporal & parietal.