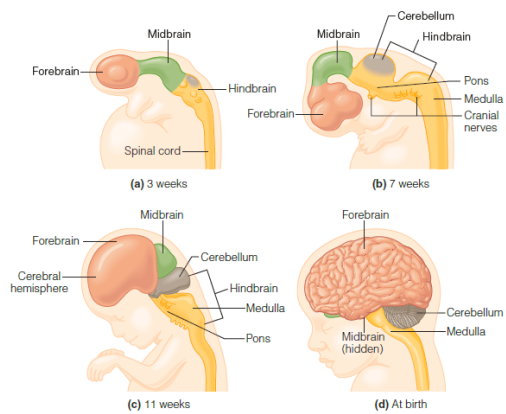


Cognitive Neuroscience II

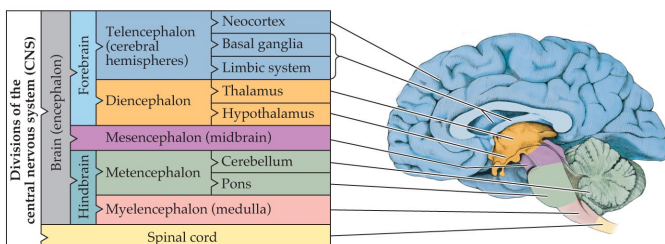
PSYC 313 - Lecture 3

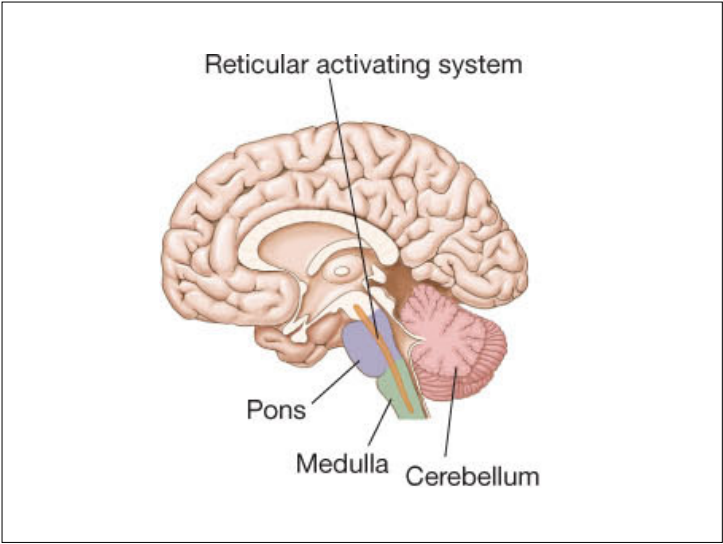
Dr. J. Nicol

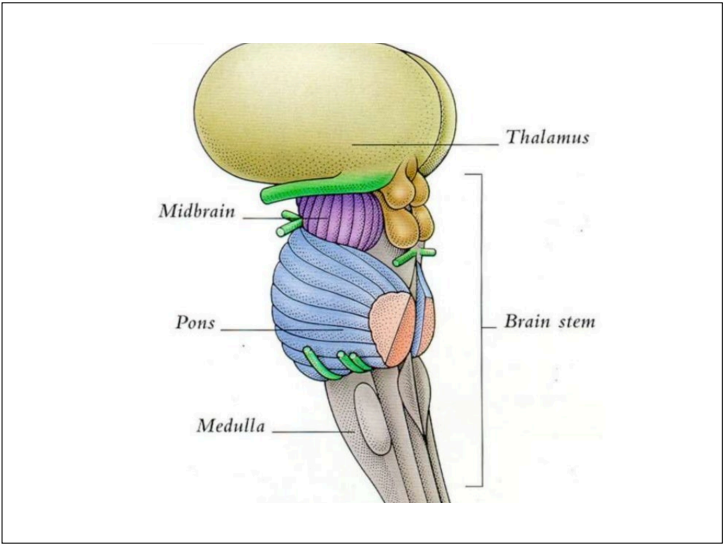
Fetal development of the major regions of the brain: forebrain, midbrain, and hindbrain

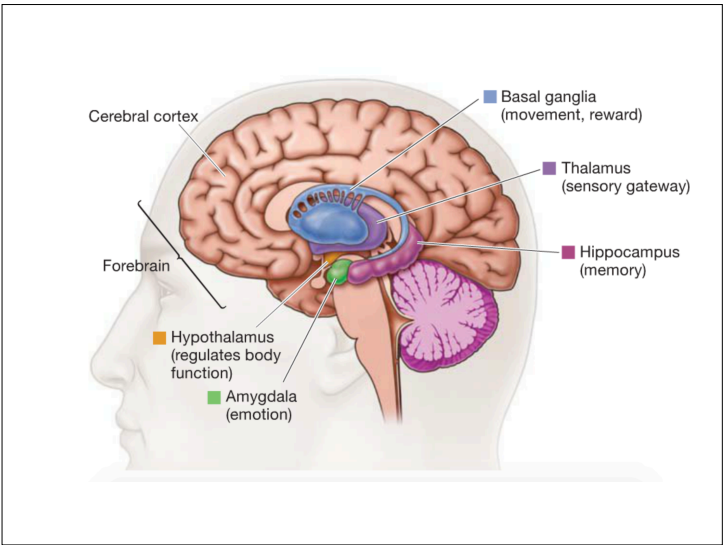


The Organization of the Human Brain





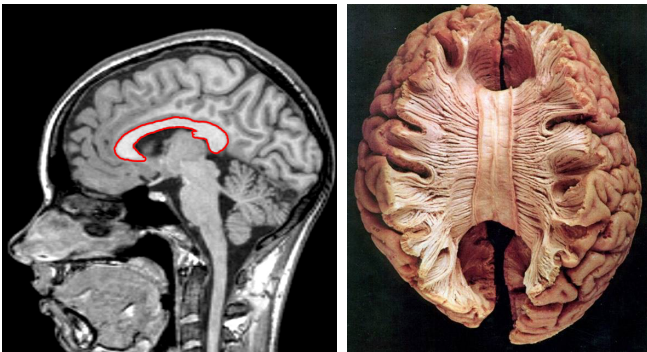




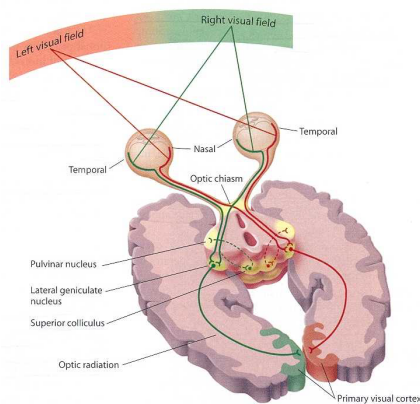
The Two Hemispheres

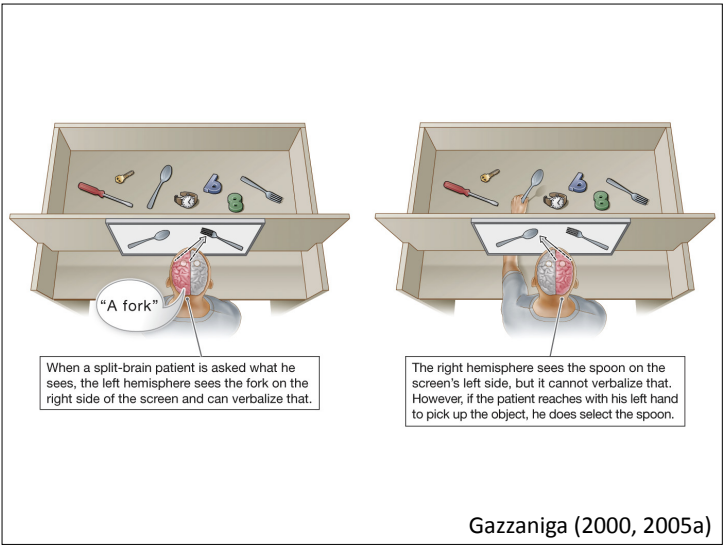
- Structurally the hemispheres are fairly symmetrically, while functionally they have common and unique roles
- A major functional difference is that the left hemisphere processes sensory and motor functions for the right side of the body, while the right hemisphere controls the left side of the body
- Language is stronger in the left hemisphere, while visuospatial tasks are more concentrated in the right hemisphere (Gazzaniga, 20005a)

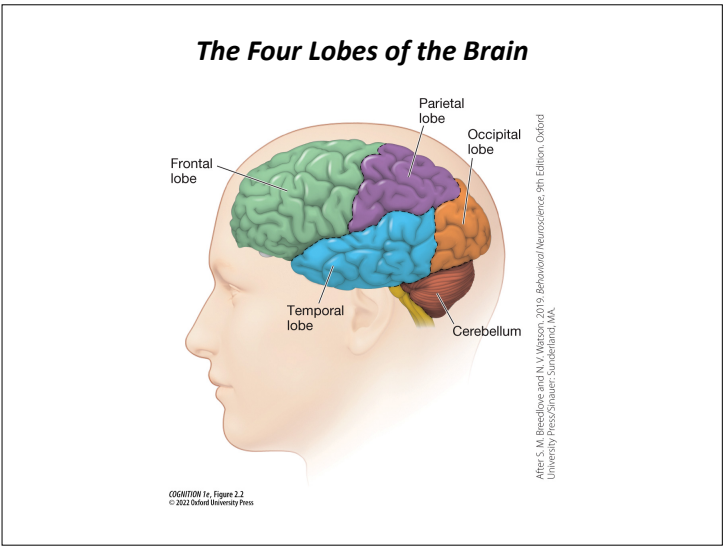
*The **corpus callosum** carries information back and forth between the two hemispheres and ensures that they work together in nearly all mental tasks*

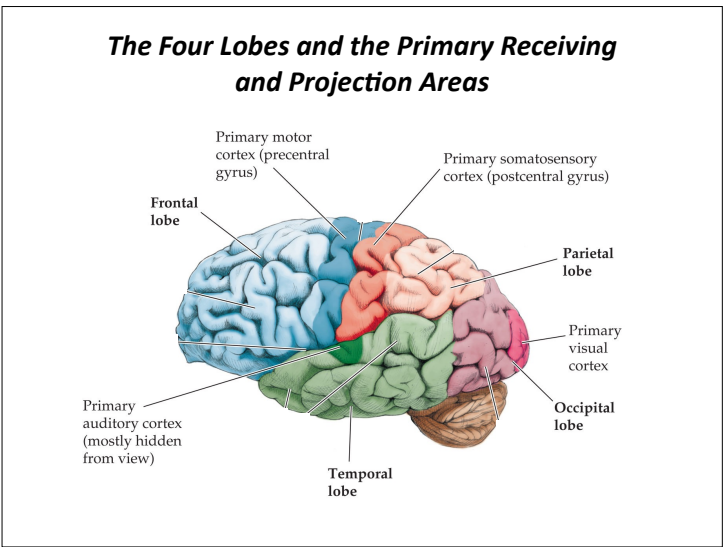


In each eye, the left visual field projects to the right visual cortex and the right visual field projects to the left visual cortex



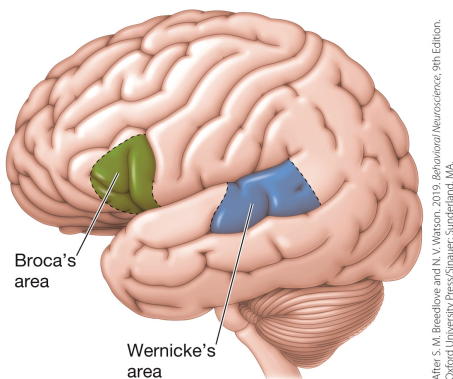






Functional Specialization

- Research in the field of cognitive neuroscience is based largely on the assumption that specific areas of the brain serve specialized functions
- **Functional specialization:** the principle that different brain areas serve different perceptual and cognitive skills



COGNITION 1e, Figure 2.4
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After S. M. Breedlove and N. V. Watson, 2019. Behavioral Neuroscience, 9th Edition.
Oxford University Press/Sinauer, Sunderland, MA.

*Although Broca and Wernicke made lasting contributions to the study of localization of function, discoveries such as theirs cannot be interpreted in a straightforward way. The aphasias are not well-defined, and it is difficult to see how such ill-defined phenomena could be regulated by a precise location in the brain.
(Marshall & Fink, 2003)*
