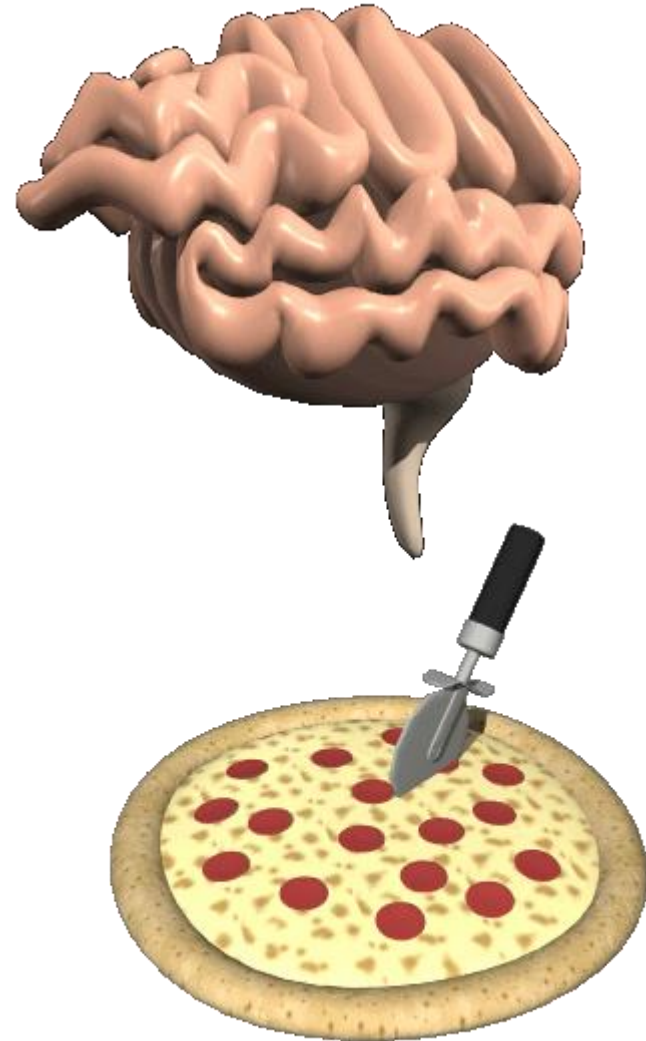
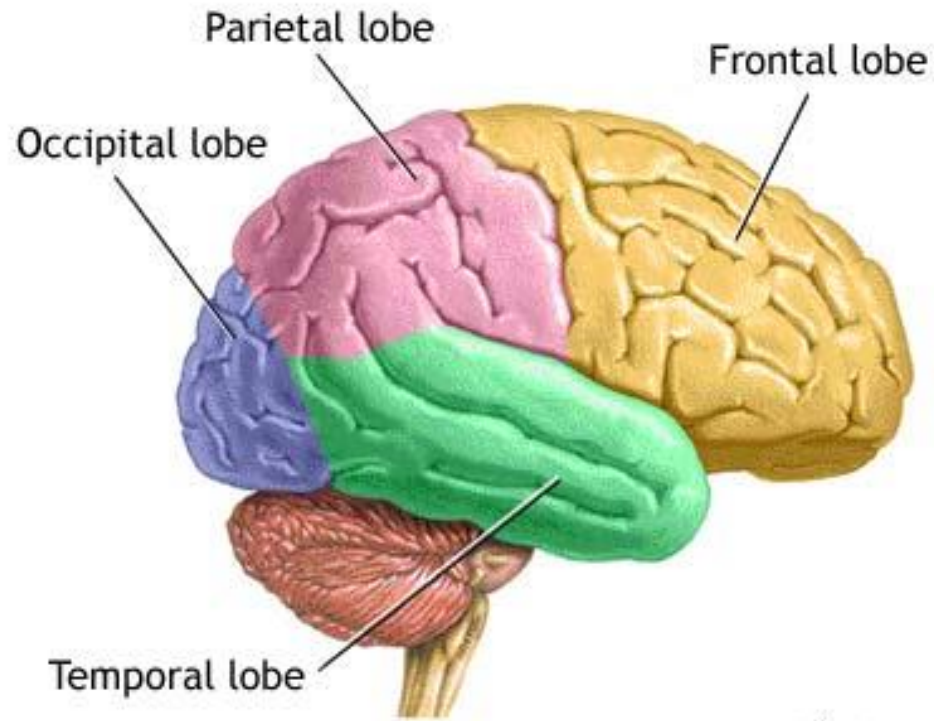


# Cerebral Cortex

- Top layer of our brain.
- Contains wrinkles called fissures.
- The fissures increase surface area of our brain.
- Laid out it would be about the size of a large pizza.



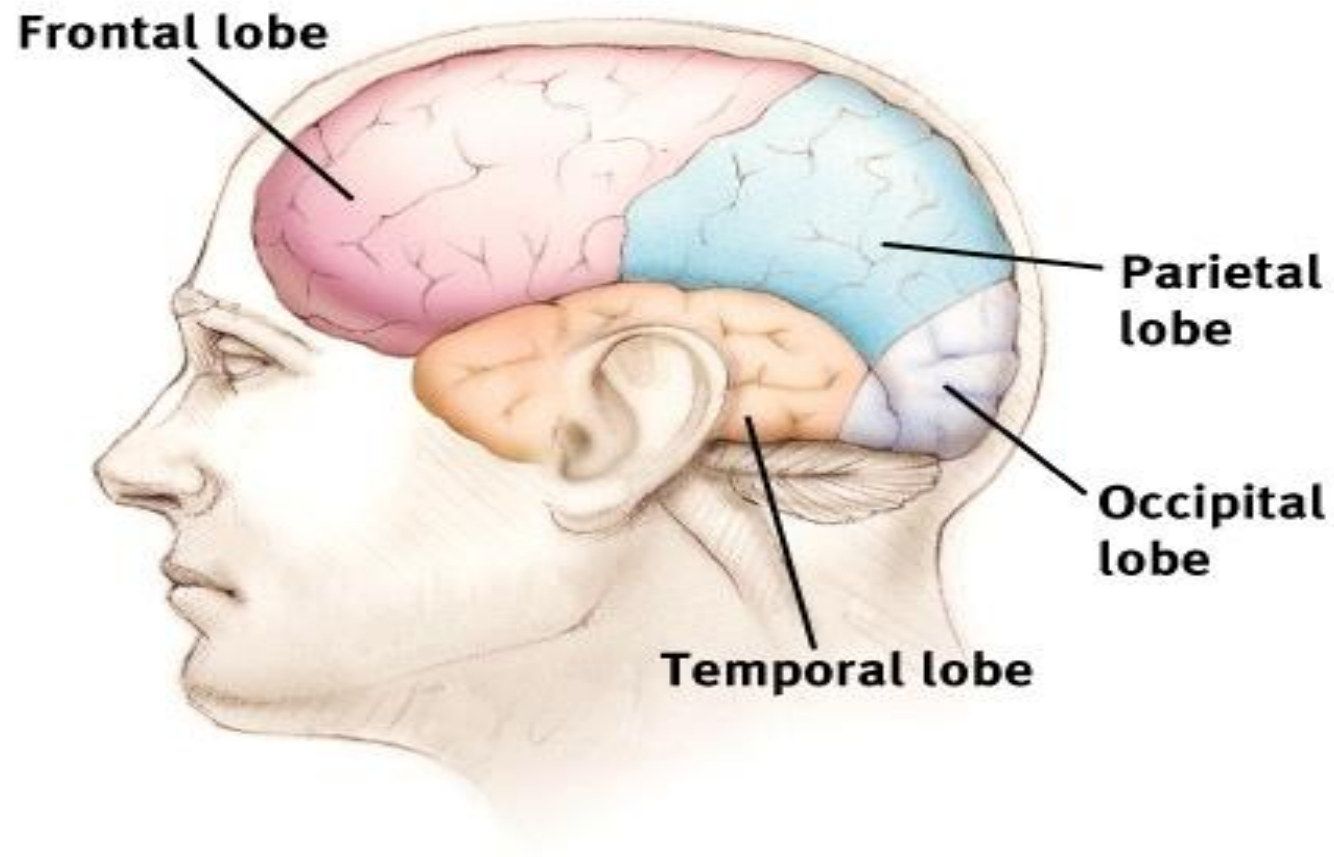
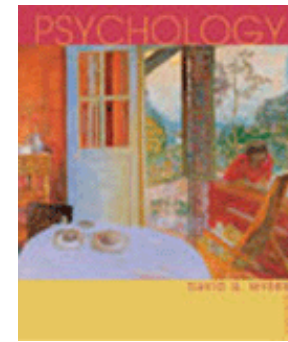
# Areas of the Cerebral Cortex



ADAM.

- Divided into eight lobes, four in each hemisphere (frontal, parietal, occipital and temporal).
- Any area not dealing with our senses or muscle movements are called **association areas**.

# The Cerebral Cortex



# Frontal Lobe

- Deals with planning, maintaining emotional control and abstract thought.



# Parietal Lobes



- Located at the top of our head.
- Contains the sensory cortex.



# Temporal Lobes

- Process sound sensed by ears.



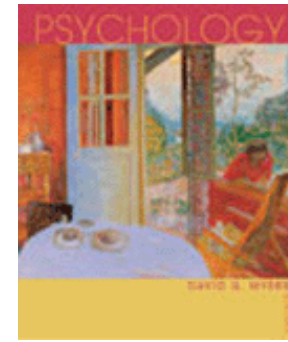


# Occipital Lobes



- In the back of our head.
- Handles visual input from eyes.
- Right half of each retina goes to left occipital lobe and vice versa.

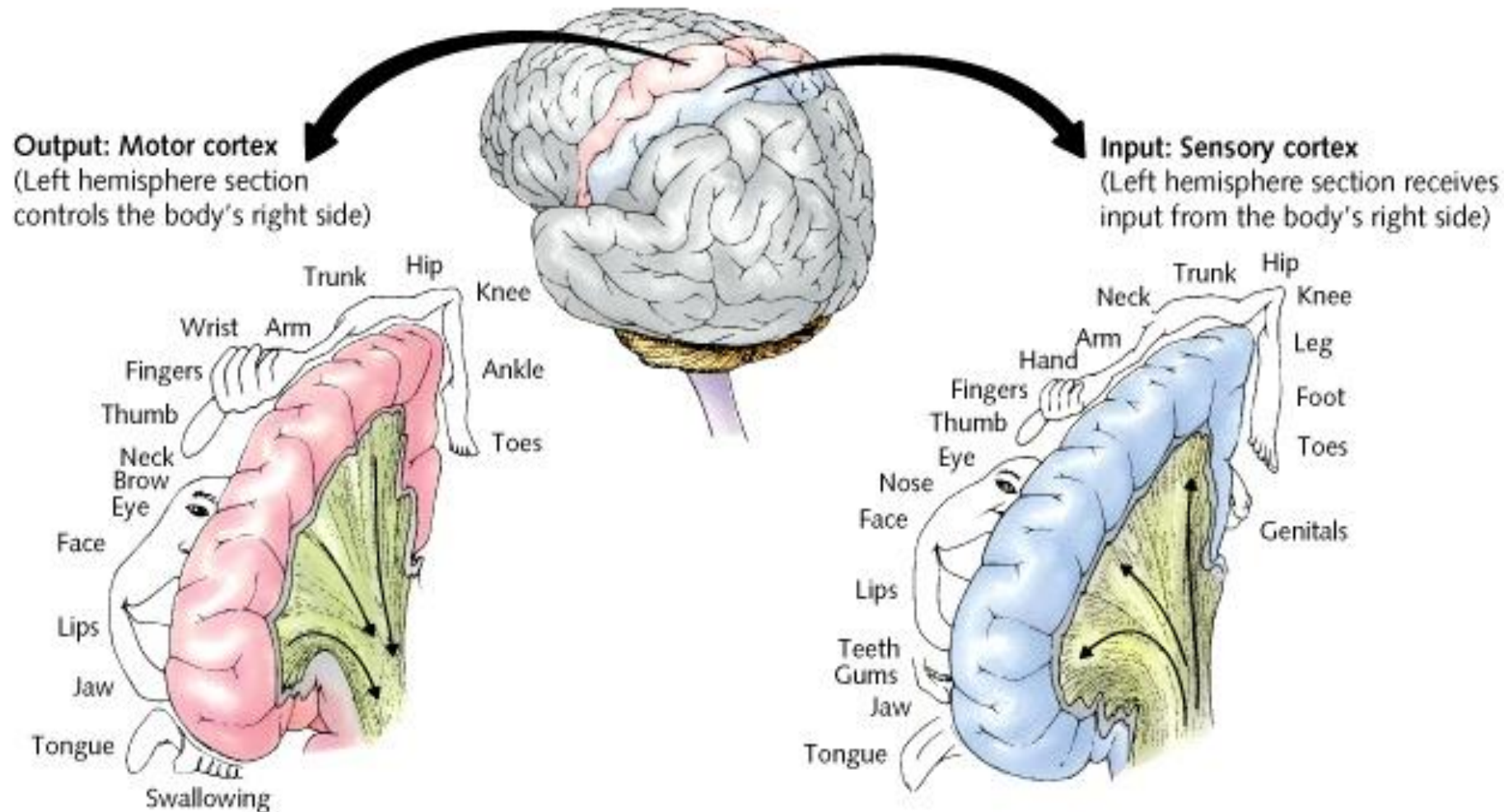
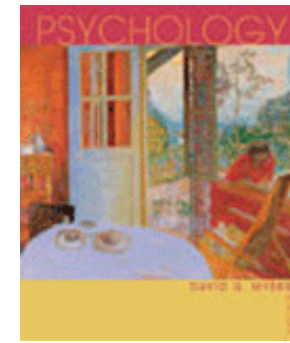
# The Cerebral Cortex



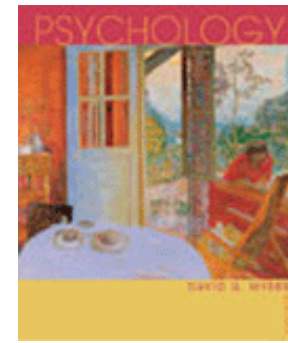
- **Motor Cortex**
  - area at the rear of the frontal lobes that controls voluntary movements
- **Sensory Cortex**
  - area at the front of the parietal lobes that registers and processes body sensations



# The Cerebral Cortex

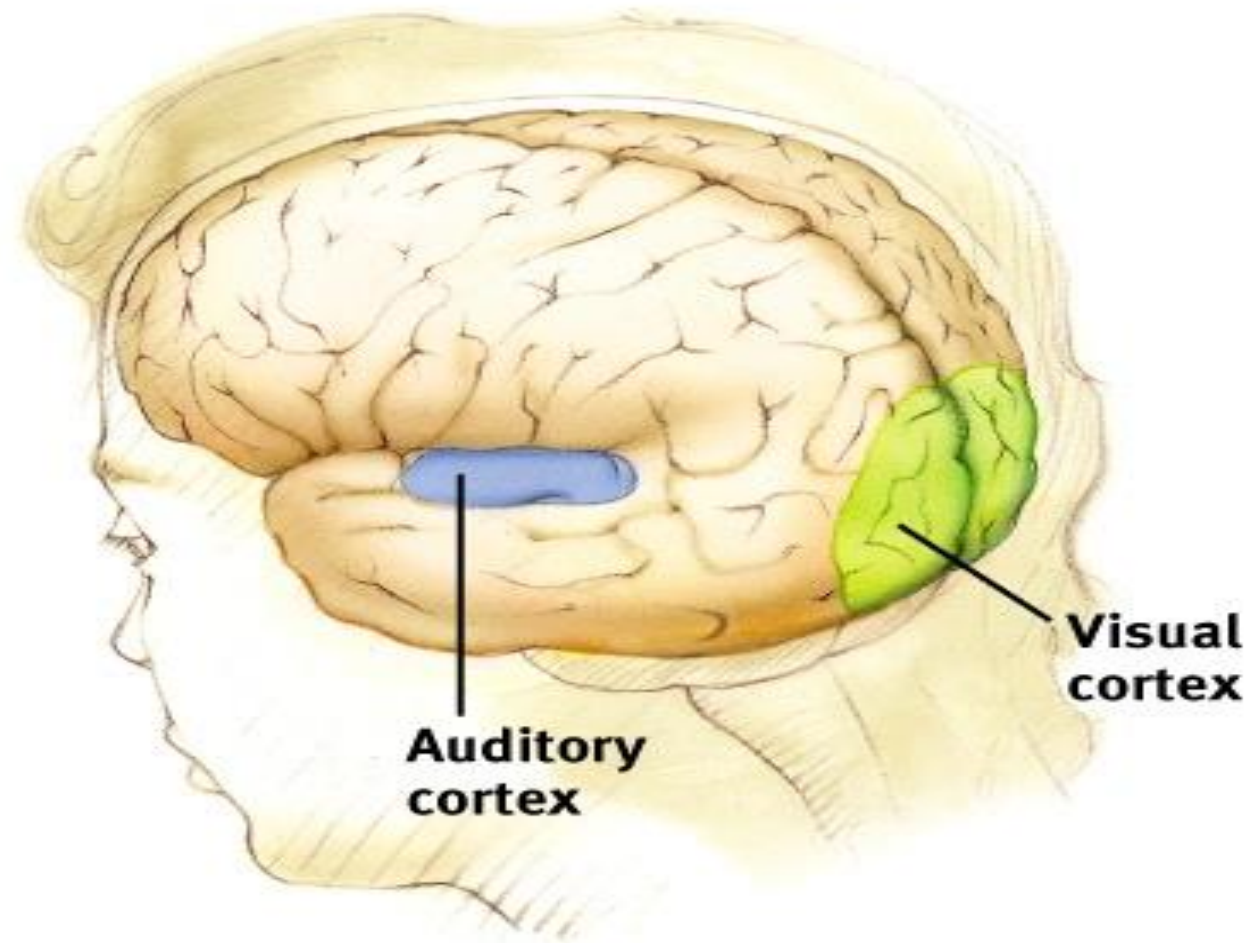
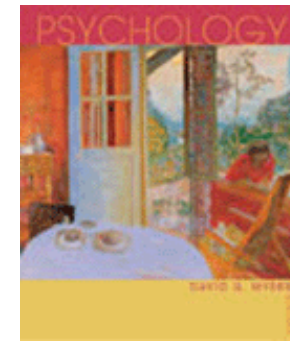


# The Cerebral Cortex

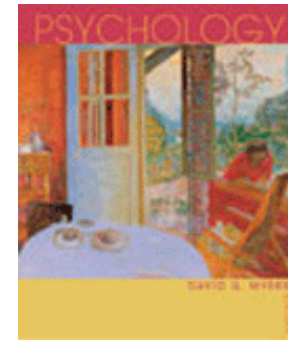


- Functional MRI scan shows the visual cortex activated as the subject looks at faces

# Visual and Auditory Cortex



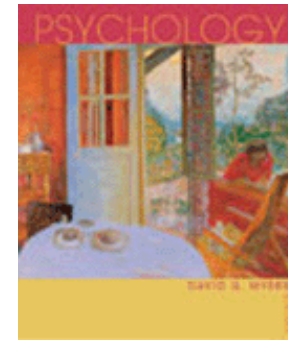
# The Cerebral Cortex



- **Aphasia**
  - impairment of language, usually caused by left hemisphere damage either to Broca's area (impairing speaking) or to Wernicke's area (impairing understanding)
- Broca's Area
  - an area of the left frontal lobe that directs the muscle movements involved in speech
- Wernicke's Area
  - an area of the left temporal lobe involved in language comprehension and expression



# Association Areas



- More intelligent animals have increased “uncommitted” or association areas of the cortex

■ Motor areas  
■ Sensory areas  
■ Association areas



Rat



Cat

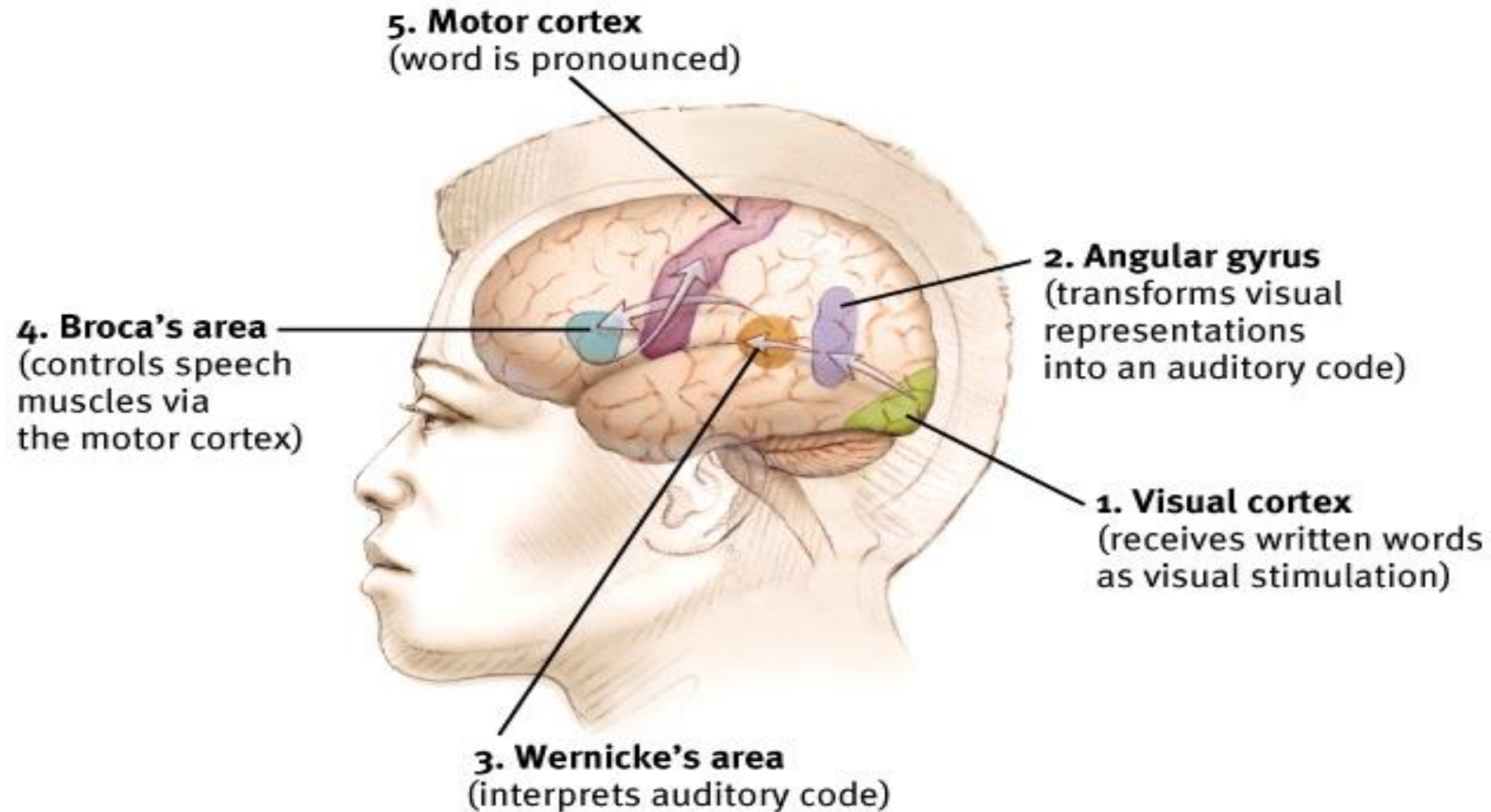
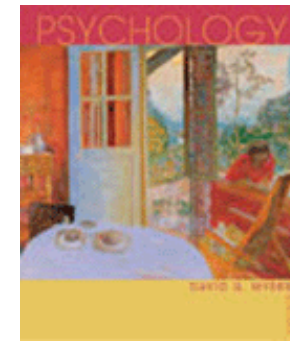


Chimpanzee

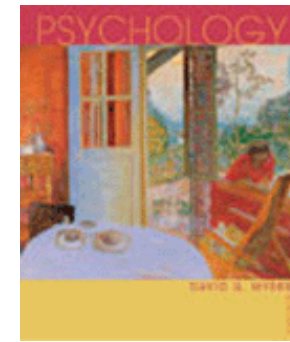


Human

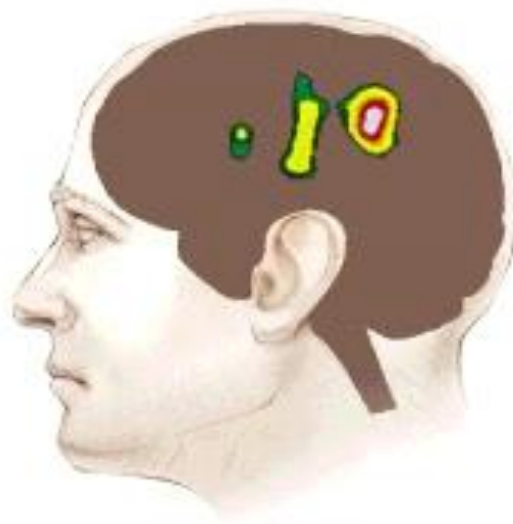
# Specialization and Integration



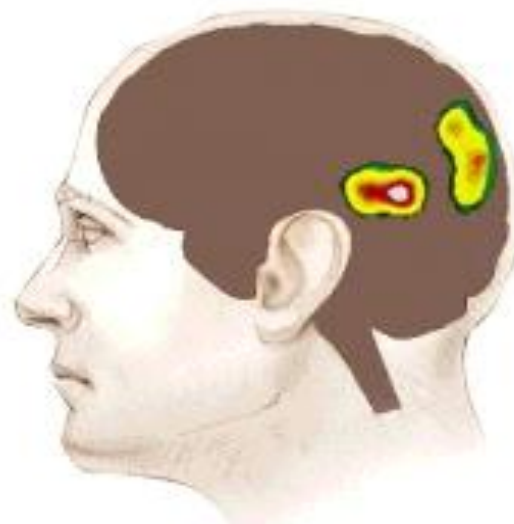
# Specialization and Integration



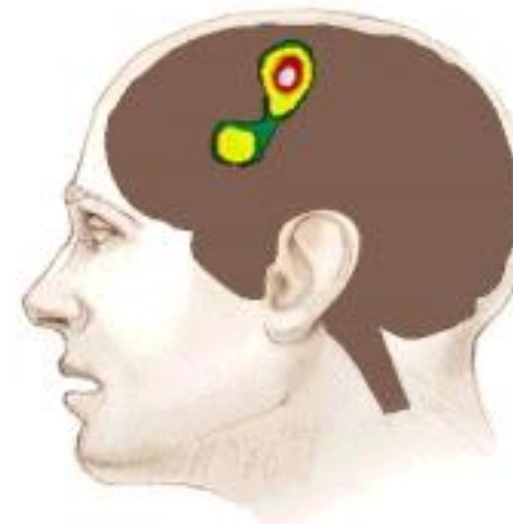
- Brain activity when hearing, seeing, and speaking words



(a)  
Hearing



(b)  
Seeing



(c)  
Speaking