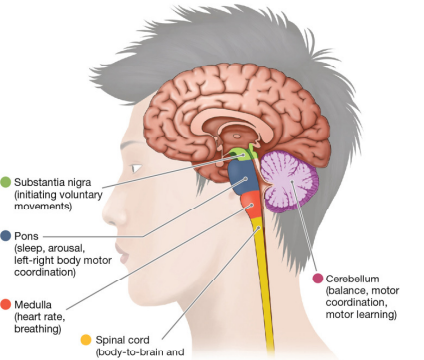
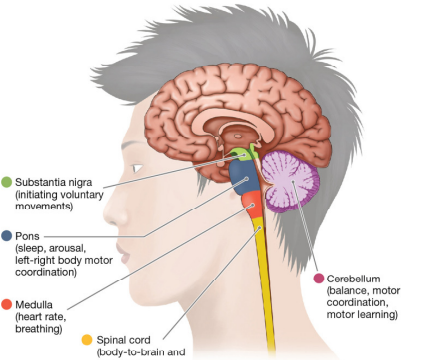
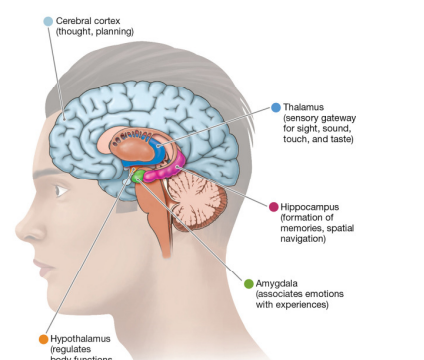
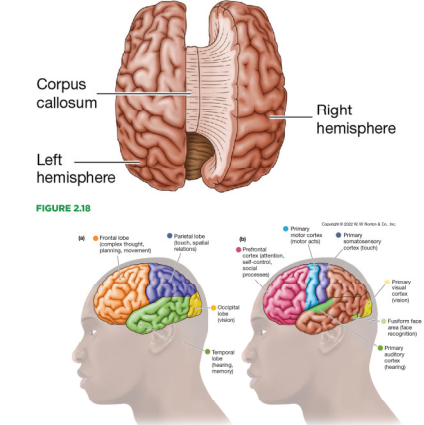
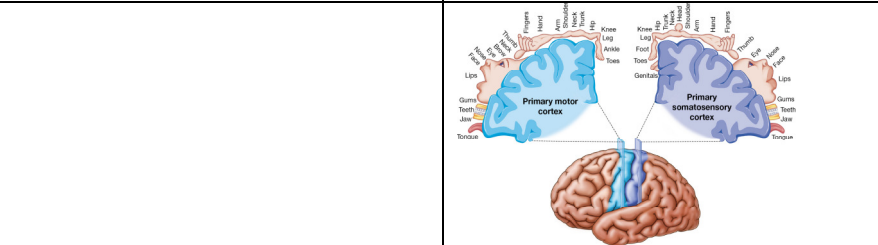


THE BRAIN

| Hindbrain | | Midbrain | Forebrain | |
|--|--|---|--|---------------------|
| | | | Subcortical structures | Cortical structures |
| <ul style="list-style-type: none"> • Medulla • Pons • Cerebellum • Reticular formation | <ul style="list-style-type: none"> • Substantia nigra | <ul style="list-style-type: none"> • Thalamus • Hypothalamus • Hippocampus • Amygdala | <ul style="list-style-type: none"> • Occipital lobe <ul style="list-style-type: none"> • Primary visual cortex • Parietal lobe <ul style="list-style-type: none"> • Somatosensory cortex • Temporal lobe <ul style="list-style-type: none"> • Primary auditory cortex • Wernicke's Area • Frontal lobe <ul style="list-style-type: none"> • Prefrontal cortex • Broca's Area • Primary motor cortex • Corpus callosum* | |

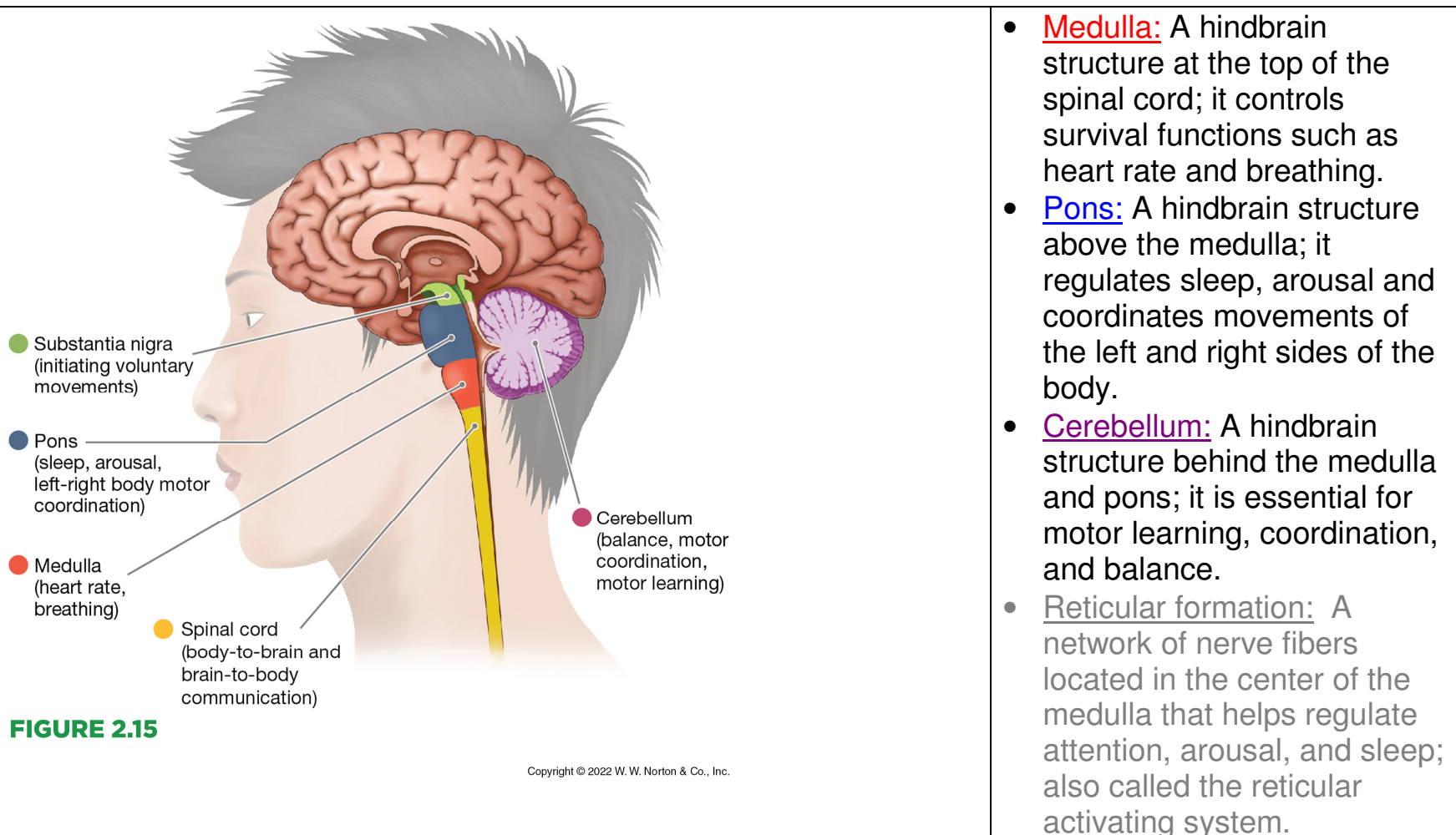
THE BRAIN



| Hindbrain | Midbrain | Forebrain | |
|---|---|--|--|
| | | Subcortical structures | Cortical structures |
|  <ul style="list-style-type: none"> ● Substantia nigra (initiating voluntary movements) ● Pons (sleep, arousal, left-right body motor coordination) ● Medulla (heart rate, breathing) ● Spinal cord (body-to-brain and brain-to-body communication) ● Cerebellum (balance, motor coordination, motor learning) <p>FIGURE 2.15</p> <p><small>Copyright © 2022 W.W. Norton & Co., Inc.</small></p> |  <ul style="list-style-type: none"> ● Substantia nigra (initiating voluntary movements) ● Pons (sleep, arousal, left-right body motor coordination) ● Medulla (heart rate, breathing) ● Spinal cord (body-to-brain and brain-to-body communication) ● Cerebellum (balance, motor coordination, motor learning) <p>FIGURE 2.15</p> <p><small>Copyright © 2022 W.W. Norton & Co., Inc.</small></p> |  <ul style="list-style-type: none"> ● Cerebral cortex (thought, planning) ● Thalamus (sensory gateway for sight, sound, touch, and taste) ● Hippocampus (formation of memories, spatial navigation) ● Amygdala (associates emotions with experiences) ● Hypothalamus (regulates body functions and motivates behaviors) <p>FIGURE 2.16</p> <p><small>Copyright © 2022 W.W. Norton & Co., Inc.</small></p> |  <p>Corpus callosum</p> <p>Right hemisphere</p> <p>Left hemisphere</p> <p>FIGURE 2.18</p> <p><small>Copyright © 2022 W.W. Norton & Co., Inc.</small></p> <p>FIGURE 2.17</p> <p><small>Copyright © 2022 W.W. Norton & Co., Inc.</small></p> |
| | |  <p>Primary motor cortex</p> <p>Primary somatosensory cortex</p> <p>FIGURE 2.19</p> <p><small>Copyright © 2022 W.W. Norton & Co., Inc.</small></p> | |

Hindbrain

The Hindbrain: A region at the base of the brain that contains several structures that control body functions that are essential for survival (page 63).



Midbrain

- The Midbrain: Located above the pons, it consists of several structures that are involved in the reflexive movement of the eyes and body.
- Substantia nigra: A brain structure important for initiating voluntary movements.

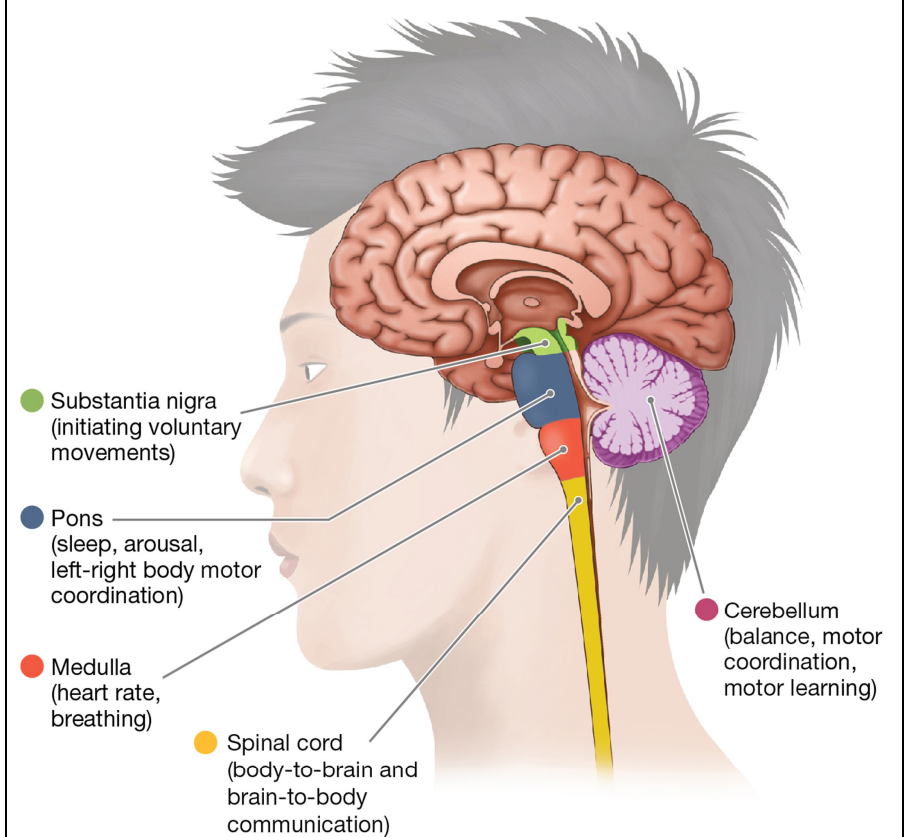
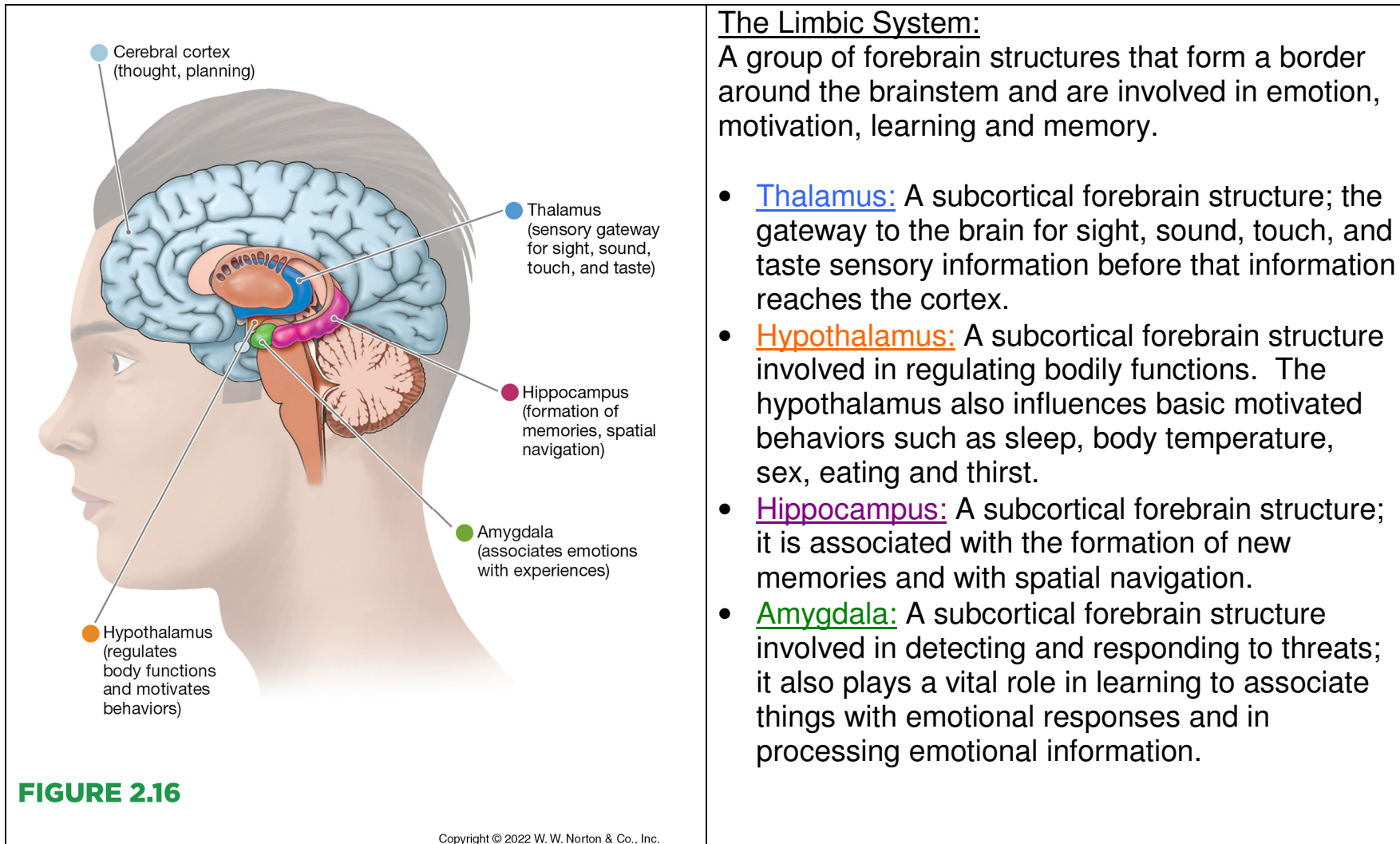


FIGURE 2.15

Forebrain Subcortical Structures

Figure 2.16, page 65



The Limbic System:

A group of forebrain structures that form a border around the brainstem and are involved in emotion, motivation, learning and memory.

- **Thalamus:** A subcortical forebrain structure; the gateway to the brain for sight, sound, touch, and taste sensory information before that information reaches the cortex.
- **Hypothalamus:** A subcortical forebrain structure involved in regulating bodily functions. The hypothalamus also influences basic motivated behaviors such as sleep, body temperature, sex, eating and thirst.
- **Hippocampus:** A subcortical forebrain structure; it is associated with the formation of new memories and with spatial navigation.
- **Amygdala:** A subcortical forebrain structure involved in detecting and responding to threats; it also plays a vital role in learning to associate things with emotional responses and in processing emotional information.

The Cerebral Cortex and Corpus Callosum

Figure 2.18, page 67 (right)

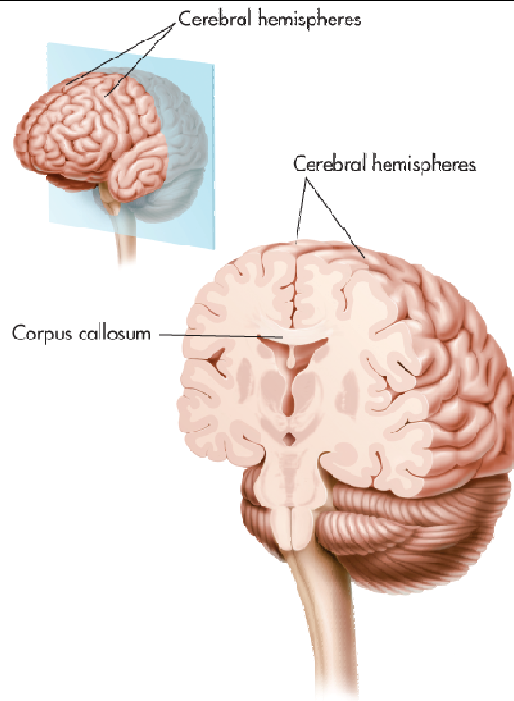


Figure 2.15
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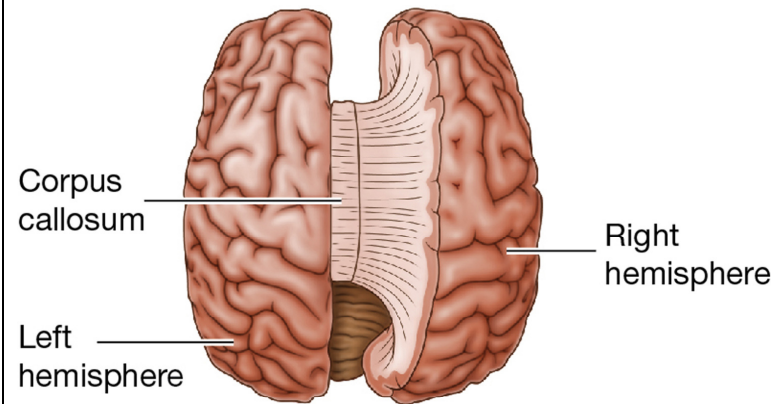


FIGURE 2.18

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Cerebral Cortex: The wrinkled outer portion of the forebrain, which contains the most sophisticated brain centers.

Cerebral Hemispheres: The nearly symmetrical left and right halves of the cerebral cortex.

Corpus Callosum: A thick band of axons that connects the two cerebral hemispheres and acts as a communication link between them.

Forebrain and Cortical Structures

Lobes of the Cerebral Cortex

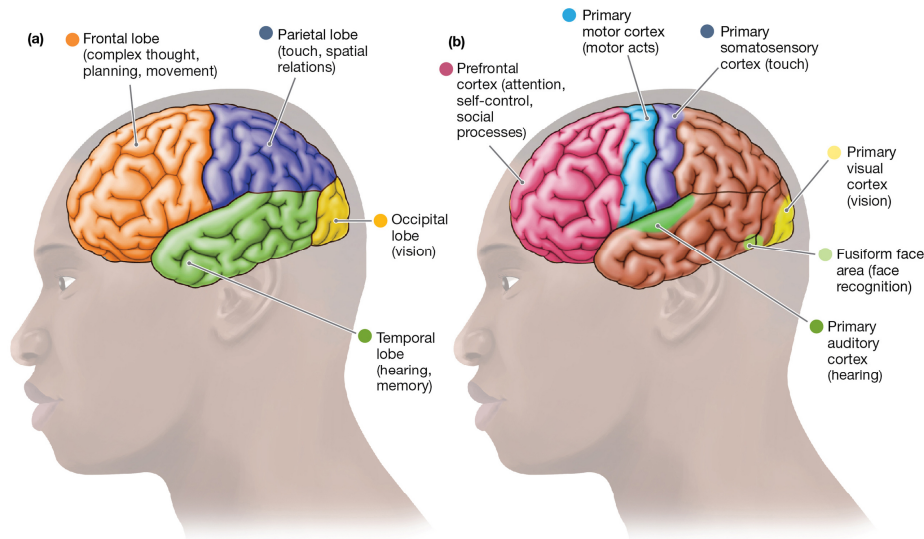


FIGURE 2.17

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- **Occipital lobe:** Regions of the cerebral cortex at the back of the brain important for vision.
 - Primary visual cortex
- **Parietal lobe:** Regions of the cerebral cortex in front of the occipital lobes and behind the frontal lobes important for the sense of touch and for picturing the layout of spaces in an environment.
 - Primary somatosensory cortex
- **Temporal Lobe:** Regions of the cerebral cortex below the parietal lobes and in front of the occipital lobes important for hearing and for recognizing objects, such as faces.
 - Primary auditory cortex
 - Fusiform face area
 - Wernicke's Area
- **Frontal lobe:** Regions of the cerebral cortex at the front of the brain; important for movement, planning, and complex processes (rational thought, attention, self-control, social processes, and so on).
 - Prefrontal Cortex
 - Primary Motor Cortex
 - Broca's Area

Primary Motor Cortex and Somatosensory Cortex

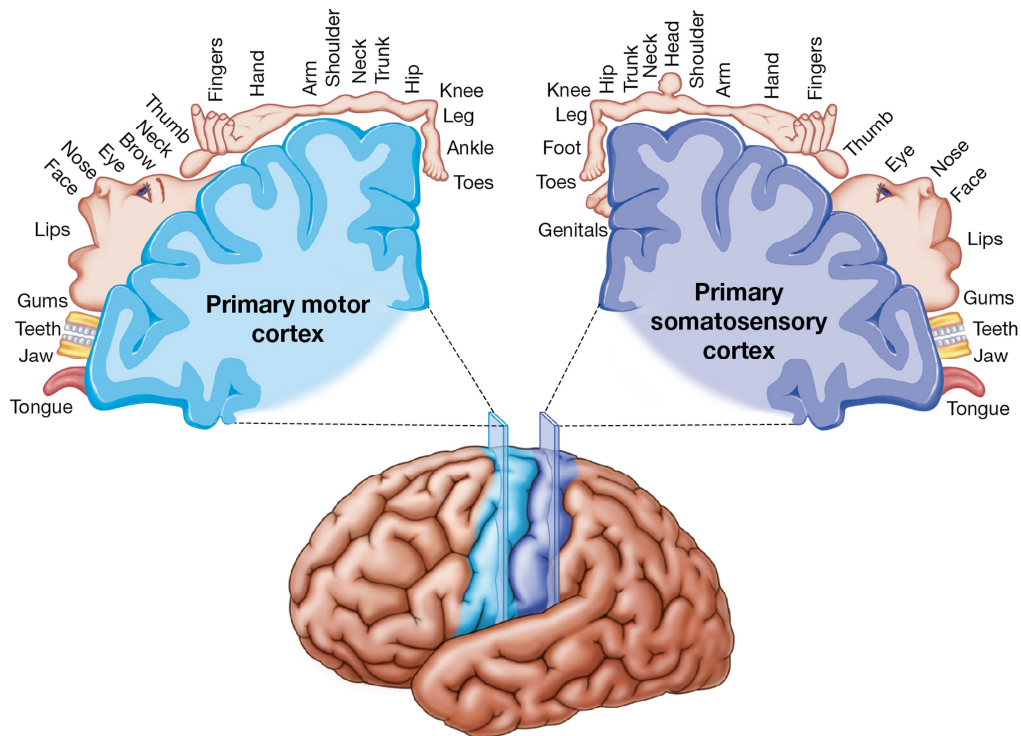
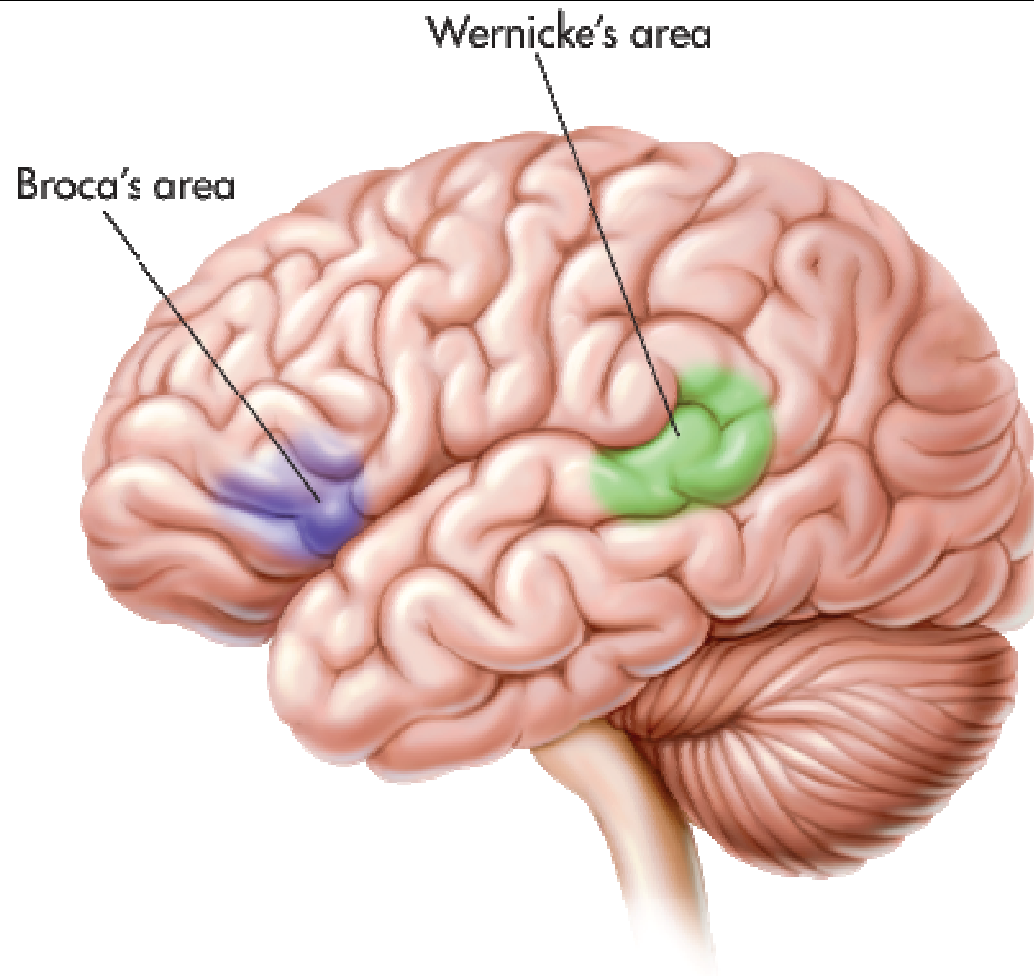


FIGURE 2.19

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(image source: Schacter, Gilbert and Wegner, (2011), Psychology 2nd edition)

Broca's Area and Wernicke's Area*



- **Broca's Area:** A structure on the frontal lobe involved with language production
- **Wernicke's Area:** A structure on the temporal lobe involved with language comprehension

*Please note that this image comes from a different textbook.

Figure 2.20

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