THE BRAIN

Hindbrain	Midbrain	Forebrain	
		Subcortical structures	Cortical structures

• Medulla
• Pons
• Cerebellum
• Reticular formation
	• Substantia nigra	• Thalamus
		• Hypothalamus
		• Hippocampus
		• Amygdala
			• Corpus callosum
			• Occipital lobe
			  • Primary visual cortex
			• Parietal lobe
			  • Somatosensory cortex
			• Temporal lobe
			  • Primary auditory cortex
			  • Wernicke's Area
			• Frontal lobe
			  • Prefrontal cortex
			  • Broca's Area
			  • Primary motor cortex

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).

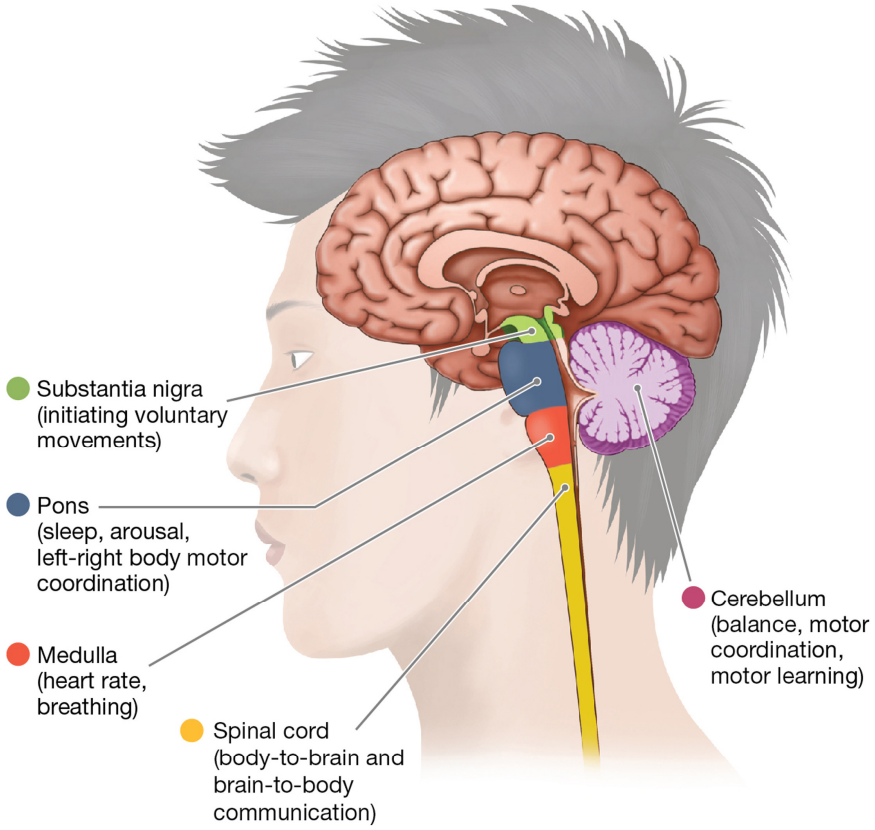

FIGURE 2.15

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- Medulla: A hindbrain structure at the top of the spinal cord; it controls survival functions such as heart rate and breathing.
- Pons: A hindbrain structure above the medulla; it regulates sleep, arousal and coordinates movements of the left and right sides of the body.
- Cerebellum: A hindbrain structure behind the medulla and pons; it is essential for motor learning, coordination, and balance.
- Reticular formation: A network of nerve fibers located in the center of the medulla that helps regulate attention, arousal, and sleep; also called the reticular activating system.

Connecting Brain Areas with Stories: Medulla / Medusa

(image source: unknown)

Medulla
Medusa

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.

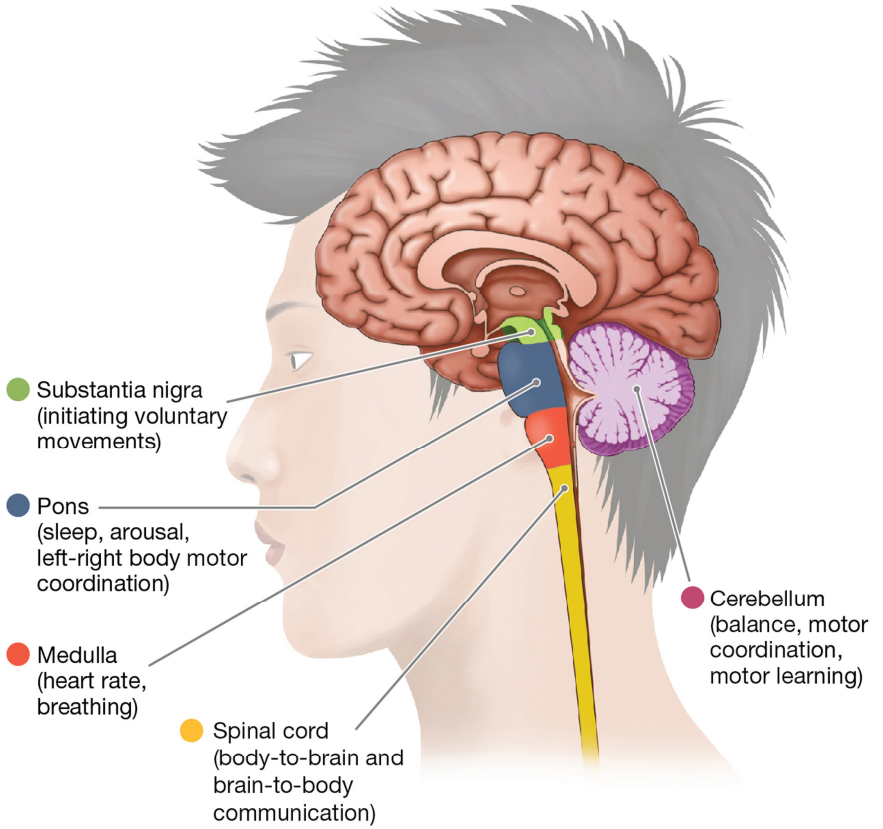

FIGURE 2.15

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Forebrain Subcortical Structures

Figure 2.16, page 65

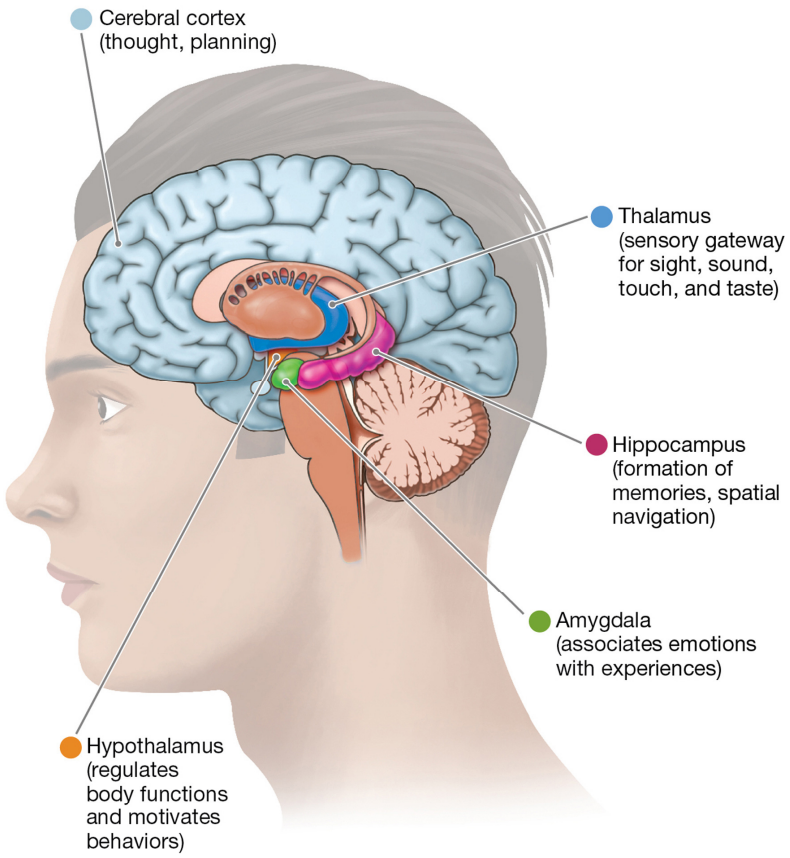

FIGURE 2.16

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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 Forebrain: Key Structures of the Forebrain and the Limbic System

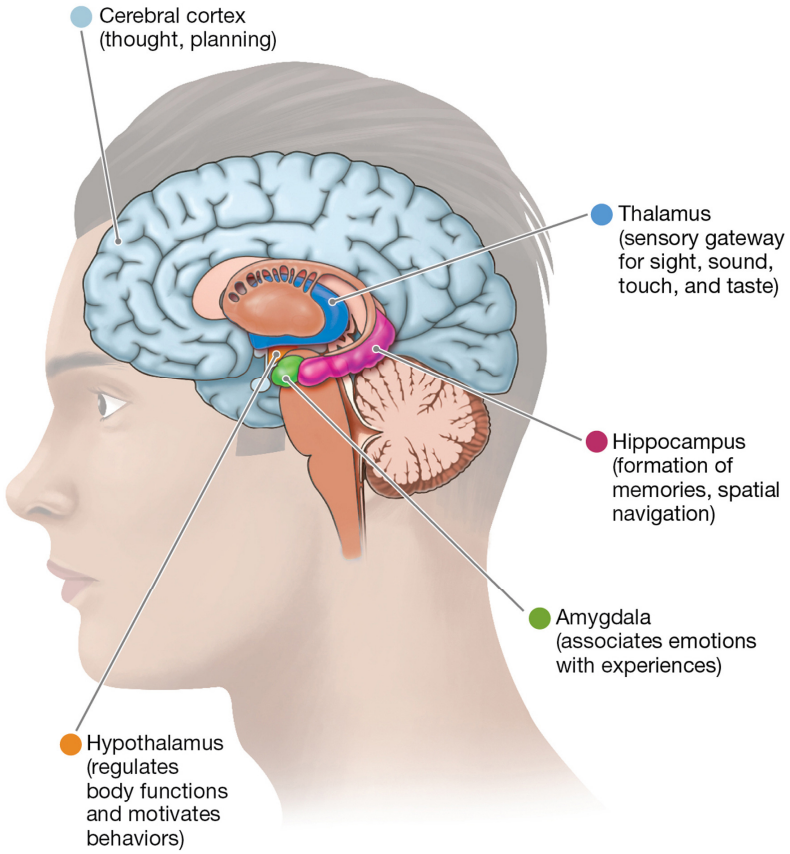

FIGURE 2.16

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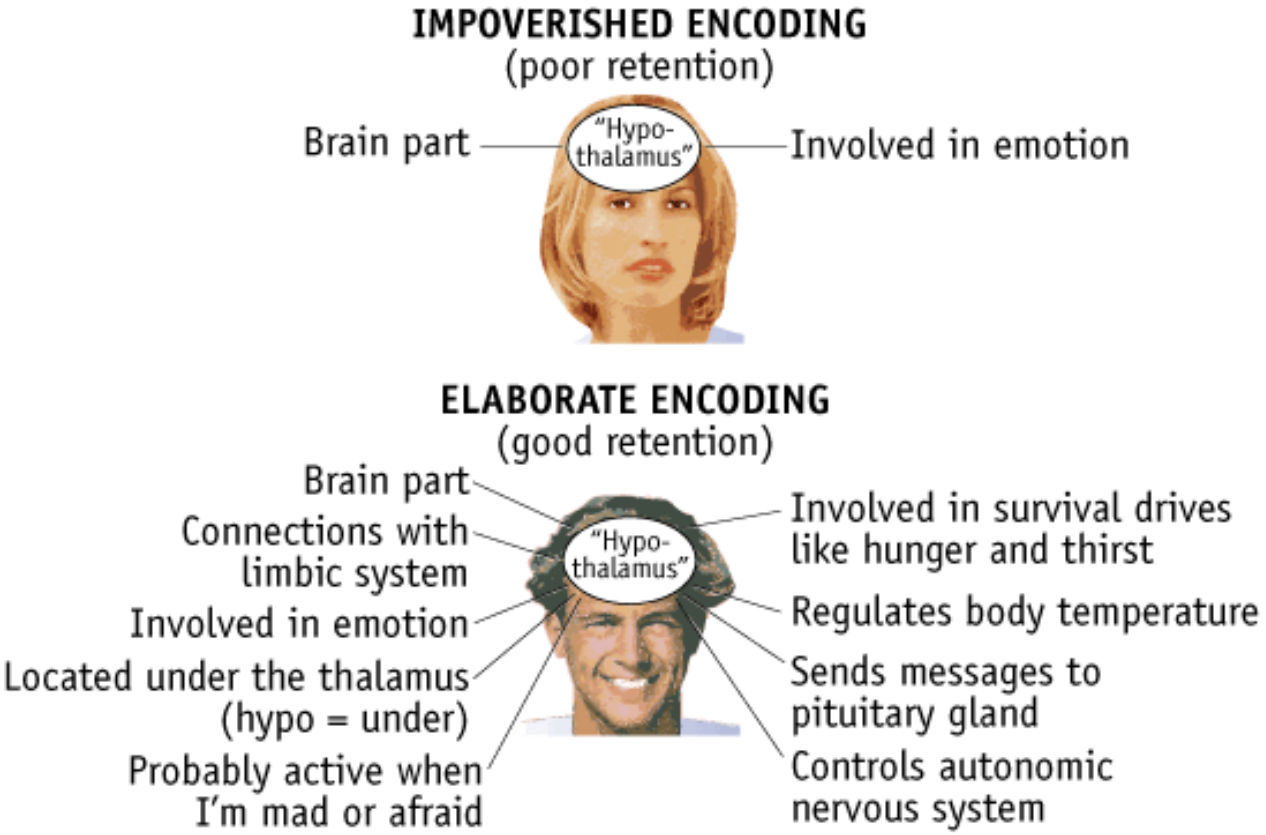
- Thalamus: A subcortical forebrain structure; the gateway to the brain for sight, sound, touch, and taste sensory information before that information reaches the cortex.
- Hypothalamus: A subcortical forebrain structure involved in regulating bodily functions. The hypothalamus also influences basic motivated behaviors such as sleep, body temperature, sex, eating and thirst.
  - Hypothalamus vs. medulla
- Hippocampus: A subcortical forebrain structure; it is associated with the formation of new memories and with spatial navigation.
  - Momento
  - Fifty First Dates
- 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.
  - A-amygdala, A-anger
  - Amygdala activates the fear response for those who are afraid of snakes and spiders.

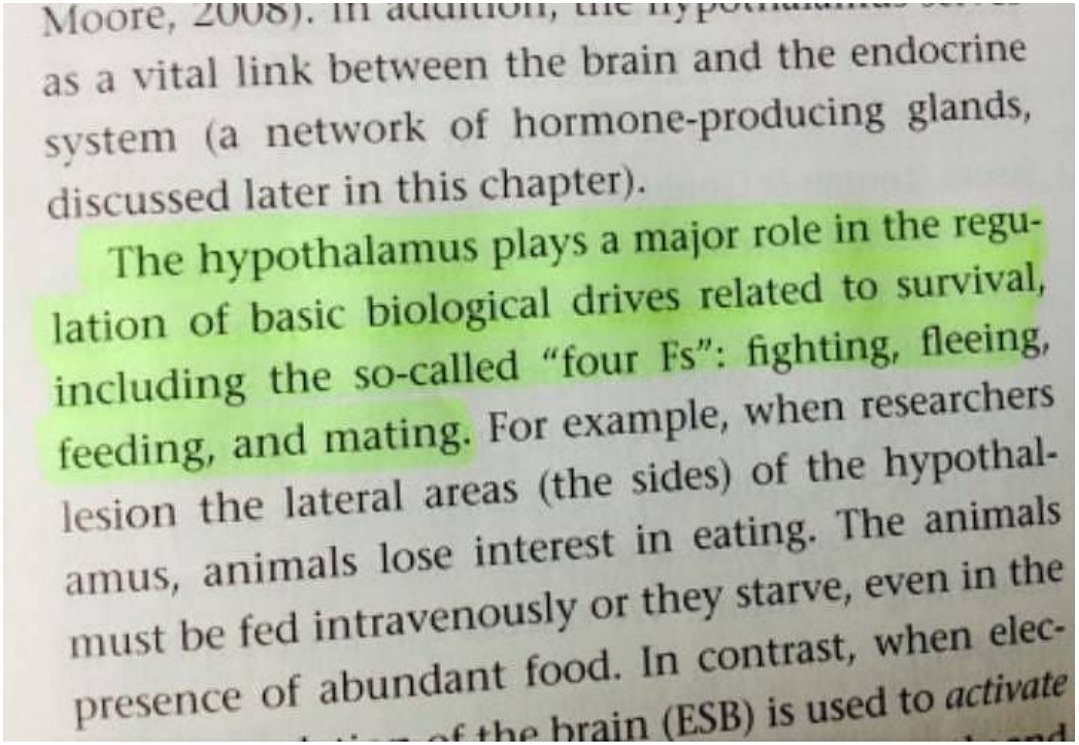
Chapter 6: Memory

Using elaborative rehearsal to remember information (page [redacted]):

But if you elaborated on the information in some meaningful way, you would be more likely to recall it. For example, you could think about the limbic system's involvement in emotions, memory, and motivation by constructing a simple story.

- "I knew it was lunchtime because my hypothalamus told me I was hungry, thirsty and cold.
- My hippocampus helped me remember a new restaurant that opened on campus,
- but when I got there, I had to wait in line and my amygdala reacted with anger.


IMPOVERISHED ENCODING
(poor retention)
Brain part
"Hypo-thalamus"
Involved in emotion
ELABORATE ENCODING
(good retention)
Brain part
Connections with limbic system
Involved in emotion
Located under the thalamus (hypo = under)
Probably active when I'm mad or afraid
"Hypo-thalamus"
Involved in survival drives like hunger and thirst
Regulates body temperature
Sends messages to pituitary gland
Controls autonomic nervous system



Moore, 2008). In addition, the hypothalamus serves as a vital link between the brain and the endocrine system (a network of hormone-producing glands, discussed later in this chapter).

The hypothalamus plays a major role in the regulation of basic biological drives related to survival, including the so-called "four Fs": fighting, fleeing, feeding, and mating. For example, when researchers lesion the lateral areas (the sides) of the hypothalamus, animals lose interest in eating. The animals must be fed intravenously or they starve, even in the presence of abundant food. In contrast, when electrical stimulation of the brain (ESB) is used to *activate*

scandalousadventures

This line in my textbook makes it almost worth the $160 I spent on it

Source: scandalousadventures

247,534 notes

The Cerebral Cortex and Corpus Callosum

Figure 2.18, page 67 (right)

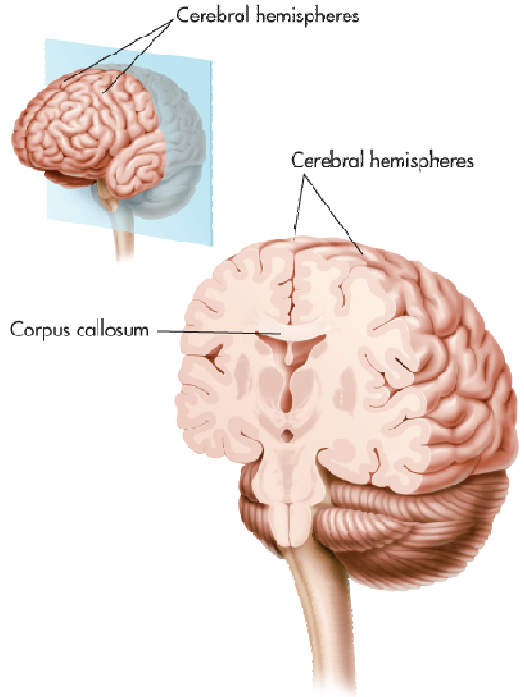


Figure 2.15
Hockenbury/Nolan, *Psychology*, 8e, © 2018 Worth Publishers

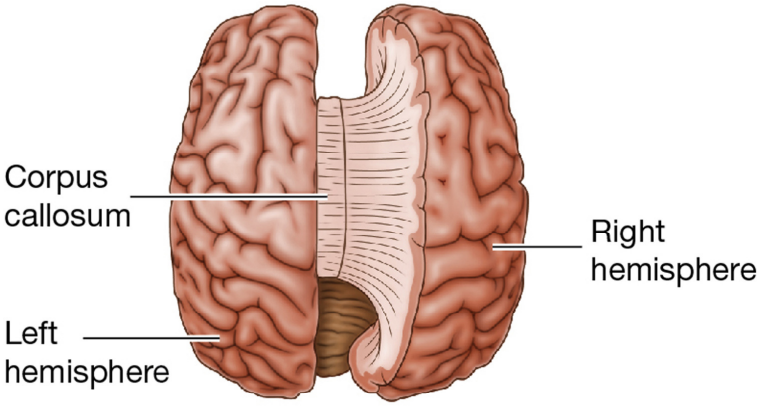


FIGURE 2.18

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Cerebral Cortex: The wrinkled outer potion 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

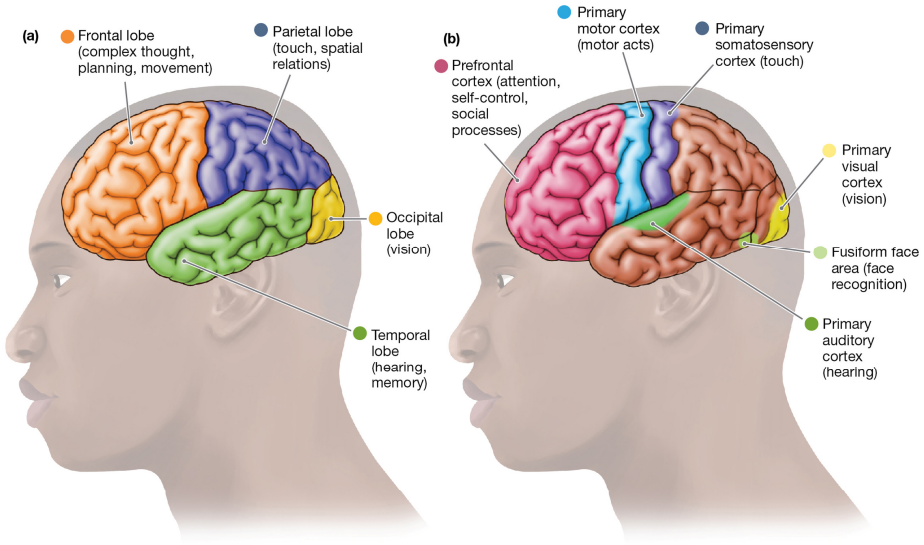

FIGURE 2.17

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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

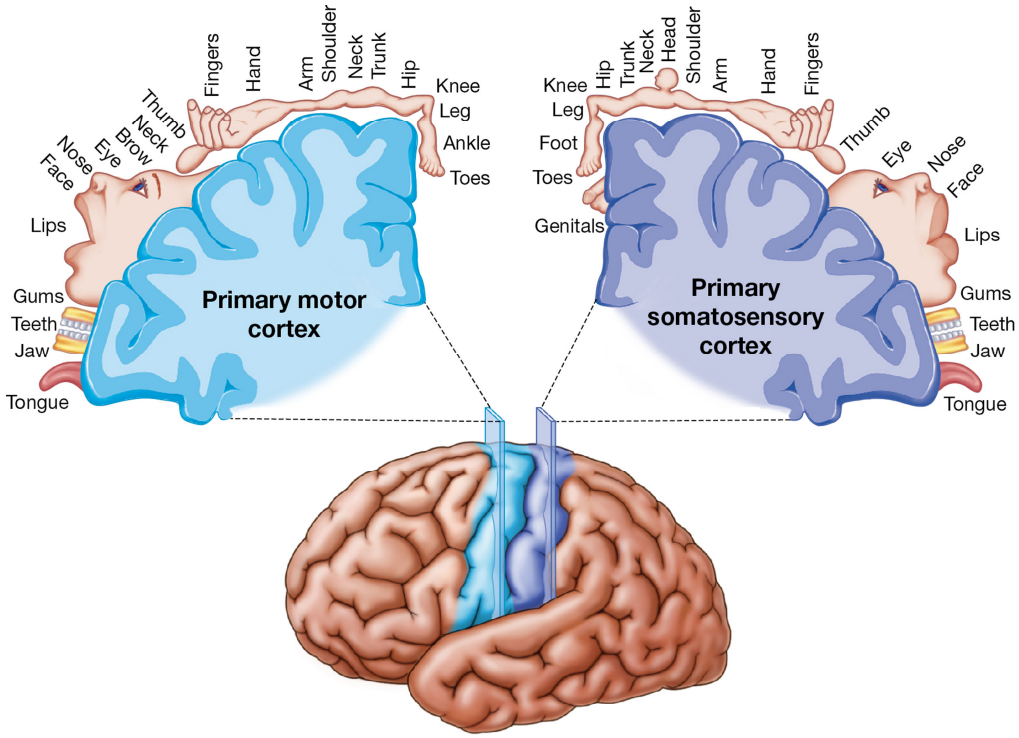

FIGURE 2.19

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

Broca's Area and Wernicke's Area*

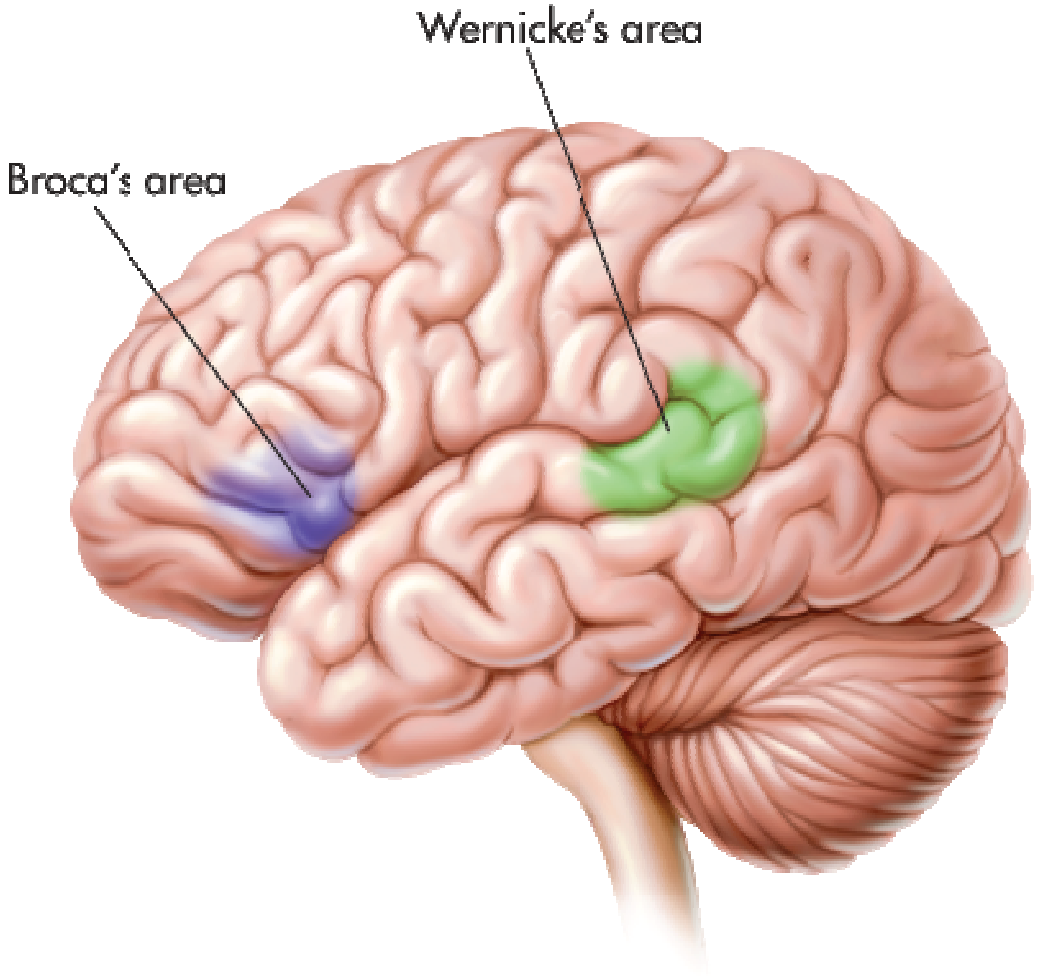

Figure 2.20
Hockenbury/Nolan, *Psychology*, 8e, © 2018 Worth Publishers

- 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.