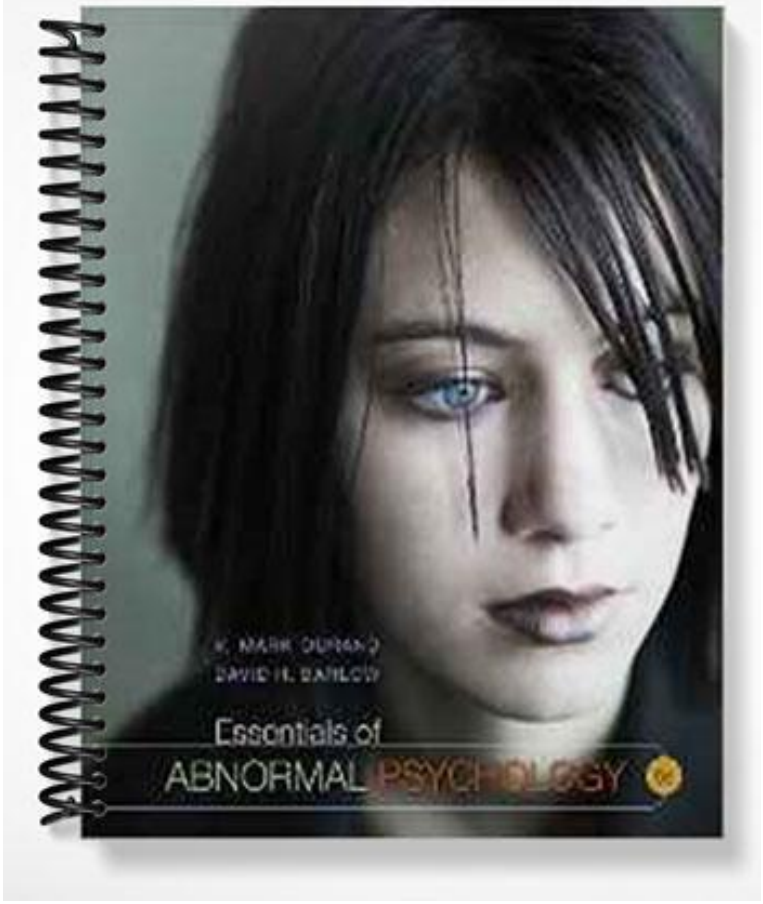
SOLUTIONS MANUAL



CHAPTER TWO

AN INTEGRATIVE APPROACH TO PSYCHOPATHOLOGY

OVERALL SUMMARY

This chapter outlines the primary components of a multidimensional model of psychopathology. The multidimensional model considers genetic contributions, the role of the nervous system, behavioral and cognitive processes, emotional influences, social and interpersonal influences, and developmental factors in explaining the causes, and even the factors that maintain psychological disorders. This chapter describes these areas of influence as well as their interaction in producing a mental disorder.

LEARNING OBJECTIVES

1. Distinguish between multidimensional vs. unidimensional models of causality.
2. Identify the main influences comprising the multidimensional model.
3. Define and describe how genes interact with environmental factors to influence behavior.
4. Identify the different models proposed to describe how genes interact with environmental factors to effect behavior.
5. Explain the role of neurotransmitters and their involvement in abnormal behavior.
6. Identify the functions of different brain regions and their role in psychopathology.
7. Compare and contrast the behavioral and cognitive theories and how they are used to explain the origins of mental illness.
8. Explain the nature and role of emotions in psychopathology.
9. Describe cultural, social, and developmental influences on abnormal behavior.

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DETAILED LECTURE OUTLINE

One-Dimensional vs. Multidimensional Models

How does a multidimensional model of causality differ from a unidimensional model?

The causes of abnormal behavior are complex. You can say that psychological disorders are caused by nature (biology) and by nurture (psychosocial factors), and you would be right on both counts—but also wrong on both counts.

What key influences comprise the multidimensional model of abnormal behavior?

To identify the causes of various psychological disorders, we must consider the interaction of all relevant dimensions: genetic contributions, the role of the nervous system, behavioral and cognitive processes, emotional influences, social and interpersonal influences, and developmental factors. Thus, we have arrived at a multidimensional approach to the causes of psychological disorders.

Genetic Contributions to Psychopathology

How do genes interact with environmental factors to affect behavior?

The genetic influence on much of our development and most of our behavior, personality, and even IQ score is polygenic—that is, influenced by many genes. This is assumed to be the case in abnormal behavior as well, although research has identified specific small groups of genes that relate to some psychological disorders.

What kinds of models have been proposed to describe this interaction?

In studying casual relationships in psychopathology, researchers look at the interactions of genetic and environmental effects. In the diathesis–stress model, individuals are assumed to inherit certain vulnerabilities that make them susceptible to a disorder when the right kind of stressor comes along. In the reciprocal gene–environment, or gene–environment correlation, model, genetic vulnerability toward a certain disorder may make it more likely that the person will experience the stressor that, in time, triggers the vulnerability and thus the disorder. In epigenetics, the immediate effects of the environment (such as early stressful experiences) influence cells that turn certain genes on or off. This effect may be passed down through several generations.

Neuroscience and Its Contributions to Psychopathology

What are neurotransmitters, and how are they involved in abnormal behavior?

Within the nervous system, levels of neurotransmitter and neuroendocrine activity interact in complex ways to regulate emotions and behavior and contribute to psychological disorders.

What are the functions of different brain regions, and what are their roles in psychopathology?

Critical to our understanding of psychopathology are the neurotransmitter currents called brain circuits. Of the neurotransmitters that may play a key role, we investigated five: serotonin, gamma-aminobutyric acid (GABA), glutamate, norepinephrine, and dopamine.

Behavioral and Cognitive Science

What are the key differences between behavioral and cognitive explanations of the origins of mental illness?

The field of cognitive science provides a valuable perspective on how behavioral and cognitive influences affect the learning and adaptation each of us experience throughout life. Clearly, such influences not only contribute to psychological disorders but also may directly modify brain functioning, brain structure, and even genetic expression. We examined some research in this field by looking at learned helplessness, modeling, prepared learning, and implicit memory.

Emotions

What role do emotions play in psychopathology?

Emotions have a direct and dramatic impact on our functioning and play a central role in many disorders. Mood, a persistent period of emotionality, is often evident in psychological disorders.

Cultural, Social, and Interpersonal Factors

How do cultural, social, and interpersonal factors influence abnormal behavior?

Social and interpersonal influences profoundly affect both psychological disorders and biology.

Life-Span Development

Why should psychological disorders be considered from a life-span developmental perspective?

The principle of equifinality reminds us that we must consider the various paths to a particular outcome, not just the result.

KEY TERMS

multidimensional approach
genes
diathesis–stress model
vulnerability
reciprocal gene–environment model
neuroscience
neuron
synaptic cleft
neurotransmitters
hormone
brain circuits
agonist
antagonist
inverse agonist
reuptake
epigenetics
glutamate
gamma-aminobutyric acid (GABA)
serotonin
norepinephrine (also noradrenaline)
dopamine
cognitive science
learned helplessness
modeling (also observational learning)
prepared learning
implicit memory
flight or fight response
emotion
mood
affect
equifinality

CLASSROOM ACTIVITIES, DEMONSTRATIONS, AND LECTURE TOPICS

1. **Activity: Brain Areas & Their Function.** To teach your students neuroanatomy and the contributions of neuroscience to psychopathology, prepare two sets of index cards. On one set, you should write the brain structures discussed in the text. The On the second set of cards, should list the functions of these structures. For example, your cards would include:

STRUCTURE	**FUNCTION**
Central nervous system	Consists of the brain and spinal cord
Medulla and pons	Breathing, pumping of heart, digestion
Cerebellum	Motor coordination
Midbrain	Coordinate movement with sensory input
Reticular activating system	Processes of arousal and tension
Limbic system	Emotional experiences/basic drives of sex, aggression, hunger, and thirst
Caudate nucleus	Controls motor behavior
Cerebral cortex	Contains over 80% of neurons in the central nervous system
Left hemisphere	Verbal and other cognitive processes
Right hemisphere	Perceiving surrounding events and creating images
Temporal lobe	Recognizing various sights and sounds
Parietal lobe	Recognizing various sensations of touch
Occipital lobe	Integrates various visual input
Frontal lobe	Thinking and reasoning abilities

Peripheral nervous system	Coordination with brain stem to ensure body is working properly
Somatic nervous system	Controls our muscles
Autonomic nervous system	Regulates the cardiovascular system and endocrine system
Endocrine system	Releases hormones into the bloodstream
Sympathetic nervous system	Mobilizes body during times of stress
Parasympathetic nervous system	Renormalizes body after arousal states
Pituitary gland	Master or coordinator of endocrine system

The goal of this quick activity is to have students match various structures of the brain with their respective functions. Divide the class in half and distribute one set of index cards to each group of students. Each student should receive one card. Instruct students to find the match for their structure/function, and tell them to do the activity without talking.

2. **Activity: Eliminating Test Anxiety through Behavior Therapy**. Eison (1987) has developed a way for students to eliminate their test anxiety with the use of popular behavioral techniques. To eliminate test anxiety through the use of systematic desensitization, allow students to first become familiar with relaxation training; then, while relaxed, ask students to imagine an anxiety-provoking situation involving tests. To demonstrate the effectiveness of rational emotive therapy, ask students to comprise two lists (rational versus irrational) regarding common beliefs about tests (things they say to themselves during exams). Try to encourage students to examine each belief critically; soon they should be able to realize why many fears regarding tests are irrational.

   Source Information. Eison, J.A. (1987) Using systematic desensitization and rational emotive therapy to treat test anxiety. Activities Handbook for the Teaching of Psychology, vol. 2. Washington, DC: American Psychological Association.

3. **Activity: Mental Illness in Social Context: Being Sane in Insane Places**. In 1973, sociologist David Rosenhan sought to examine how difficult it would be for people to shed the "mentally ill" label. He was particularly interested in how psychiatric hospital staff process information about patients. Rosenhan and seven associates had themselves committed to different mental hospitals by complaining that they were hearing voices (a symptom commonly believed to be characteristic of schizophrenia). The staff did not know the "pseudopatients" were actually part of an experiment. Beyond the alleged symptoms and falsification of names and occupations, the important events of the pseudopatients' life histories were factually presented to hospital staff as they had occurred. The pseudopatients were instructed to act completely normal upon admission into the hospital. In fact, Rosenhan told them that acting normal was the only way they could get out. Despite the fact that they did nothing out of the ordinary, the pseudopatients remained hospitalized for an average of 19 days (range 9 to 52 days). Ironically, their sanity was not detected by hospital staff, but it was detected by the actual patients in the hospitals. All of Rosenhan's associates retained the deviant label even after being discharged. Their schizophrenia was said to be "in remission," implying that it was

dormant and could possibly resurface. At no time during their stay in the hospital was the legitimacy of their schizophrenic label questioned. It was simply assumed that they were schizophrenic, and everything the pseudopatients did and said while in the mental institutions was understood from this premise. Normal behaviors were overlooked entirely or were profoundly misinterpreted. Minor disagreements became deep-seated indicators of emotional instability. Boredom was interpreted as nervousness or anxiety. Even the act of writing on a notepad was seen by the staff as a sign of some deeper psychological disturbance. Furthermore, even though there was nothing "pathological" about the pseudopatients' past histories, these records were reinterpreted to be consistent with the schizophrenic label. Rosenhan concluded that the staff members were doing their jobs as designed and made no conscious effort to misconstrue the evidence. The moral is that psychiatric labels are so powerful that they can profoundly affect the way information is processed and perceived. Had the same behaviors been observed in a different context, they no doubt would have been interpreted in an entirely different fashion. You may use this study and others like it to discuss the role of context in influencing our interpretations of abnormal behavior. Alternatively, this is a great springboard for discussion about the stigma of mental illness, and even the dangers of one-dimensional models. You may also ask students if they can come up with other behaviors that would have been misinterpreted in this situation.

Source Information. Rosenhan, D. (1973). On being sane in insane places. Science, 179, 250-258.

4. **Activity: The Ubiquity of Emotion & Conditioning.** Conditioning is so ubiquitous in everyday experience that it is often hard to see. Have students come up with examples of classically conditioned emotional/evaluative responses and use such examples to illustrate that most conditioning is quite adaptive. If students have trouble coming up with examples, you may start with conditioned taste aversions, objects or events that students fear, or words/images that elicit an emotional response (e.g., fear, anger, disgust; seeing flashing blue lights in your rearview mirror and getting caught for speeding while driving on the highway). Have students talk about the dimensions that are involved in the conditioned responses in keeping with the text description of emotion as involving cognition, behavior, and physiology. As a trick, you may ask students whether they have ever felt that an exam they had taken was unfair. Don't ask for a show of hands. Most students will raise their hands. You can then ask, "Why did you all raise your hands?" Use this example to illustrate the role of experience and socialization in learning and behavior (in this case, automatically raising one's hand in response to a question in the classroom without being asked to do so).

5. **Activity: Susan Mineka's Work on Vicarious Learning of Fear in Primates.** Susan Mineka and her colleagues have performed some interesting experiments demonstrating vicarious learning of fear in lab-reared monkeys. Her work to date represents the most compelling evidence for observational learning of fear. Many students find the description of her classic studies interesting in itself.

6. **Hollywood Film Activity: Awakenings** (1990 Drama; Robert De Niro, Robin Williams; 2 hrs). A pioneering neurologist takes a risk by giving catatonic patients a drug used for Parkinson's disease. What at first seems to be a miracle cure proves fleeting. The questions below are derived from this film. They may be used as a starting point for class discussion or as the basis for a take home assignment.

   - Explain why L-DOPA caused the "awakening" of Leonard Lowe (Robert De Niro) and other patients on the ward. Describe the negative side effects of L-DOPA.

   - In the book upon which this film was based, Dr. Oliver Sacks wrote that some of the post-encephalitic patients that he treated were hopeless, some were outraged, and some were courageous. Discuss how this film portrayed the patients' psychological responses to their physical condition. Also discuss how the people in their lives were affected.

7. **The Effects of Alcohol on Students in Social Situations**. Ask the students to form small groups. Ask the groups to develop an explanation for alcohol abuse and dependence using behavioral and cognitive theory. Have the groups write a summary of the group discussion to be shared with the entire class. This is a serious subject in colleges and universities, every year there are many alcohol related deaths often due to of binge drinking.

SUPPLEMENTARY READING MATERIAL FOR CHAPTER TWO

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Beck, A. T., & Clark, D. A. (1988). Anxiety and depression: An information processing perspective. Anxiety Research, 1, 23–36.

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Mineka, S., Davidson, M., Cook, M., & Keir, R. (1984). Observational conditioning of snake fear in rhesus monkeys. Journal of Abnormal Psychology, 93, 355-372.

Ramachandran, V. S., & Blakeslee, S. (1998). Phantoms in the brain: Probing the histories of the human mind. New York: William Morrow & Company.

Rosenhan, D. (1973). On being sane in insane places. Science, 179, 250-258. p. 253

Sacks, O. (1985). The man who mistook his wife for a hat and other clinical tales. New York: Summit Books.

SUPPLEMENTARY VIDEO RESOURCES FOR CHAPTER TWO

Deficits of Mind and Brain. (McDonnell Summer Institute of Cognitive Neuroscience, Eugene, Oregon; *available through your International Cengage Learning representative*). Part One of this videotape provides an overview of neuroimaging techniques and the neuropsychology of cognitive impairments (particularly neglect syndrome) that result from strokes. Part Two provides a neuropsychological view of schizophrenia. (60 min)

Discovering Psychology: The responsive brain. (Annenburg/CPB Collection). Examines the interaction of the brain, behavior, and the environment. Also shows how brain structure and function are influenced by behavioral and environmental factors. (30 min)
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Episode One: Reality Check. (*This American Life*, Showtime; available online at http://www.thisamericanlife.org/TV_Episode.aspx?episode=1). This first episode of the *This American Life* television show features the story of "Second Chance," a cloned bull version of a beloved pet. It demonstrates that despite identical genetics to its predecessor, behavioral differences exist. (29 min)

Inside Information: The brain and how it works. (Films for the Humanities and Sciences: P.O. Box 2053, Princeton, NJ 08543-2053/ (800)-257-5126). This videotape describes how the many areas of the brain function and includes interviews with researchers in the field of neuroscience. (58 min)

The Brain, Mind, and Behavior. (PBS Video Catalog, 1-800-344-3337). This series focuses on the nature and function of the human brain, consciousness, and the effects of the brain and hormones on behavior. (8 parts, 60 min each)

The Enchanted Loom: Processing sensory information. (Films for the Humanities and Sciences: P.O. Box 2053, Princeton, NJ 08543-2053/ (800)-257-5126). Discusses how the brain is capable of sorting through vast sensory information and interpreting it on the basis of past experience and expectations. (60 min)

The Human Brain. (Insight Media: 2162 Broadway, New York, NY 10024/ (800)-233-9910). Investigators discuss how the brain's abilities can be enhanced through the proper environment. Also presents the case of a man who improves his condition after a serious brain injury. (25 min)

The Mind. (PBS Video Catalog, 1-800-344-3337). This PBS series focuses on mental development in the context of normal and abnormal development.

The Nervous System. (Insight Media: 2162 Broadway, New York, NY 10024/ (800)-233-9910). Explores the function of neurons as well as the central, peripheral, and autonomic nervous systems. (25 min)

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ABC NEWS VIDEO – ABNORMAL PSYCHOLOGY

Inside Addiction Explores the role of the brain in addictive behaviors. (4:57 min)

INTERNET RESOURCES FOR CHAPTER TWO

Albert Bandura
http://www.ship.edu/~cgboeree/bandura.html
A web page devoted to the man who discovered observational learning and modeling therapy.

Biochemistry of Neurotransmitters
http://themedicalbiochemistrypage.org/
Describes the nature and function of several neurotransmitters.

History of Neuroscience
http://faculty.washington.edu/chudler/hist.html
Lists some of the most important events that occurred in neuroscience and psychology in chronological order, dating back to 4000 B.C.

Neuropsychology Central
http://www.neuropsychologycentral.com/index.html
Links to online sources on neuropsychological assessment, treatments, software, and newsgroups just to name a few.

The Whole Brain Atlas
http://www.med.harvard.edu/AANLIB/home.html
An excellent site reviewing the structure and function of the human brain.

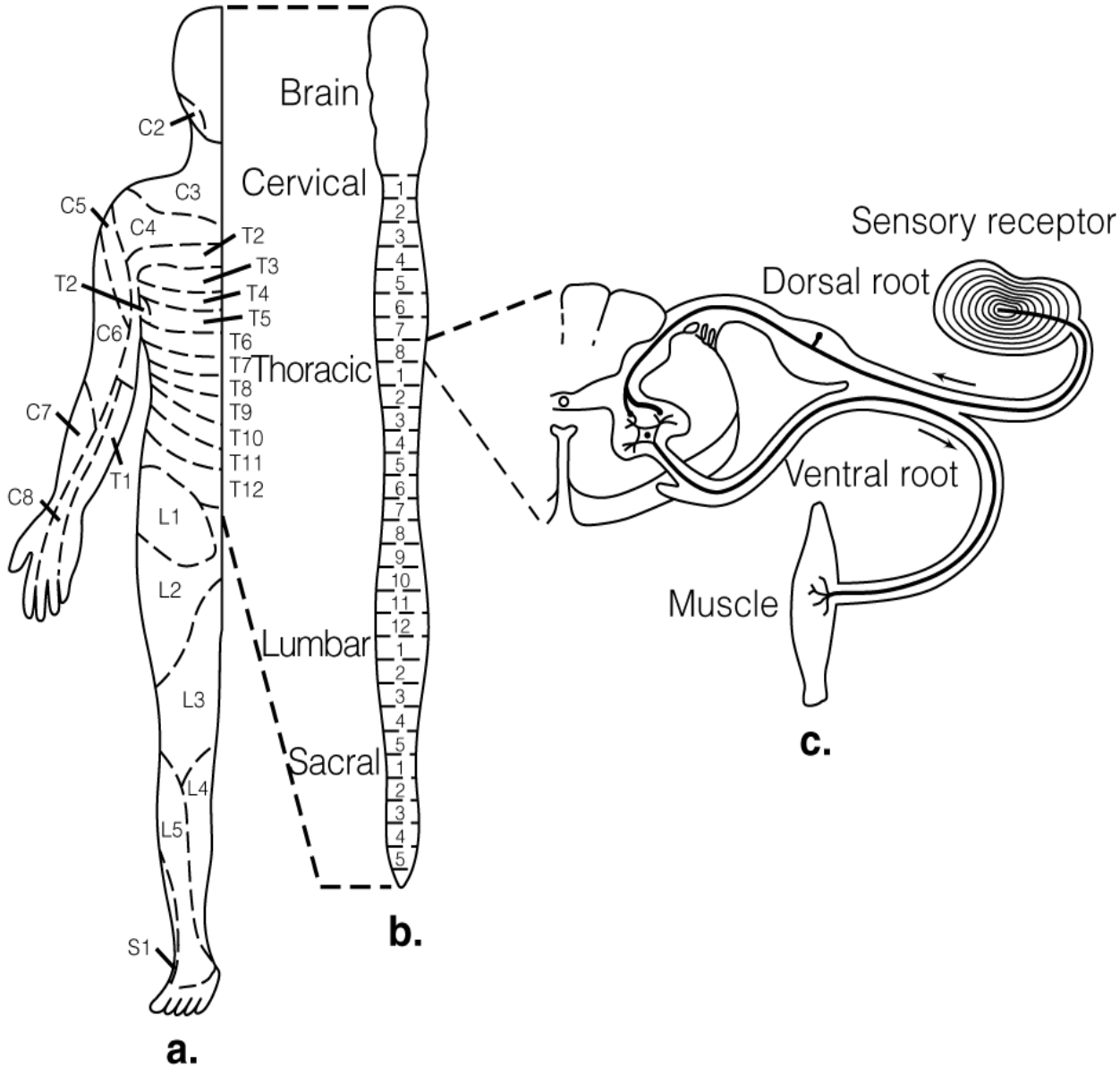
APA
http://www.apa.org
The site for The American Psychological Association.

RET
http://www.rebt.org/
The site for Rational Emotive Therapy, where you can find additional information on Ellis's rational-emotive therapy.

American Psychoanalytic Association
http://www.apsa.org
The American Psychoanalytic Association's Web page .

Transparency 4

Anatomic Features of the Human Spinal Cord

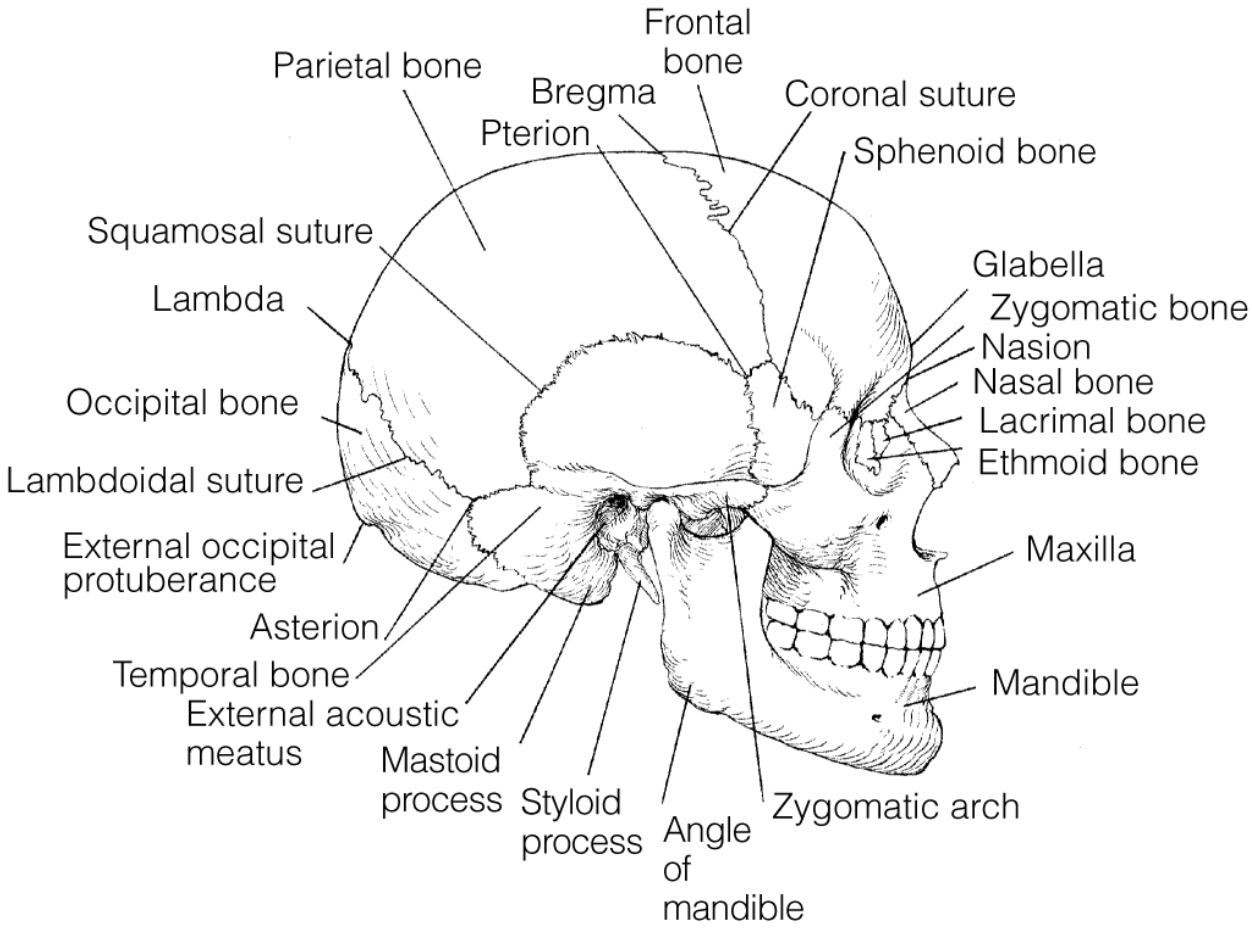


Anatomic Features: Spinal nerves and internal organization of the spinal cord (gray and white matter)

Function: Relays information to and from the brain; responsible for simple reflexive behavior

Transparency 5

Anatomic Features of the Human skull

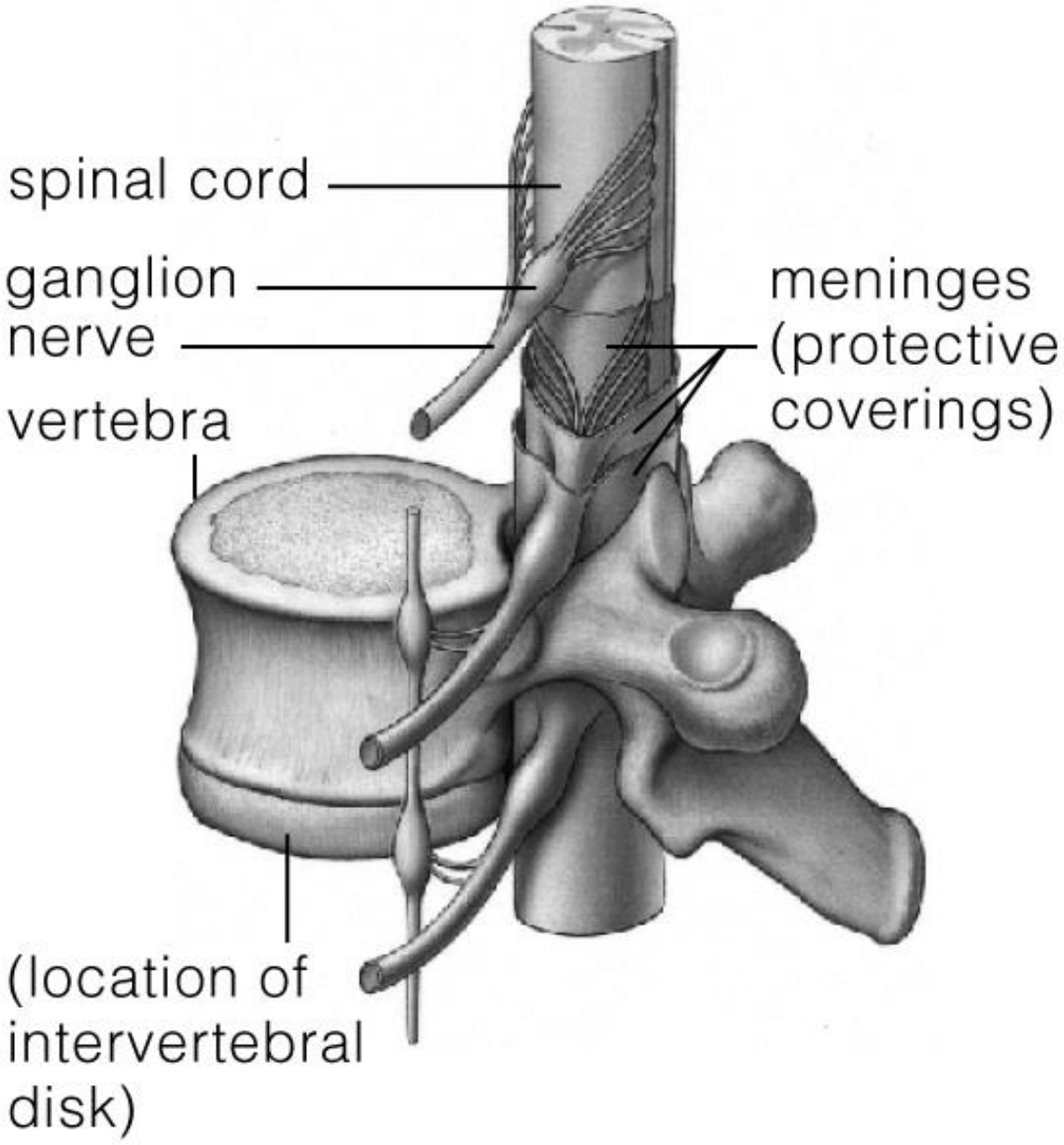


Anatomic Features: A fused connection of bony plates covering the brain

Function: Protection of the brain

Transparency 6

Anatomic Features Protective Meninges of the CNS

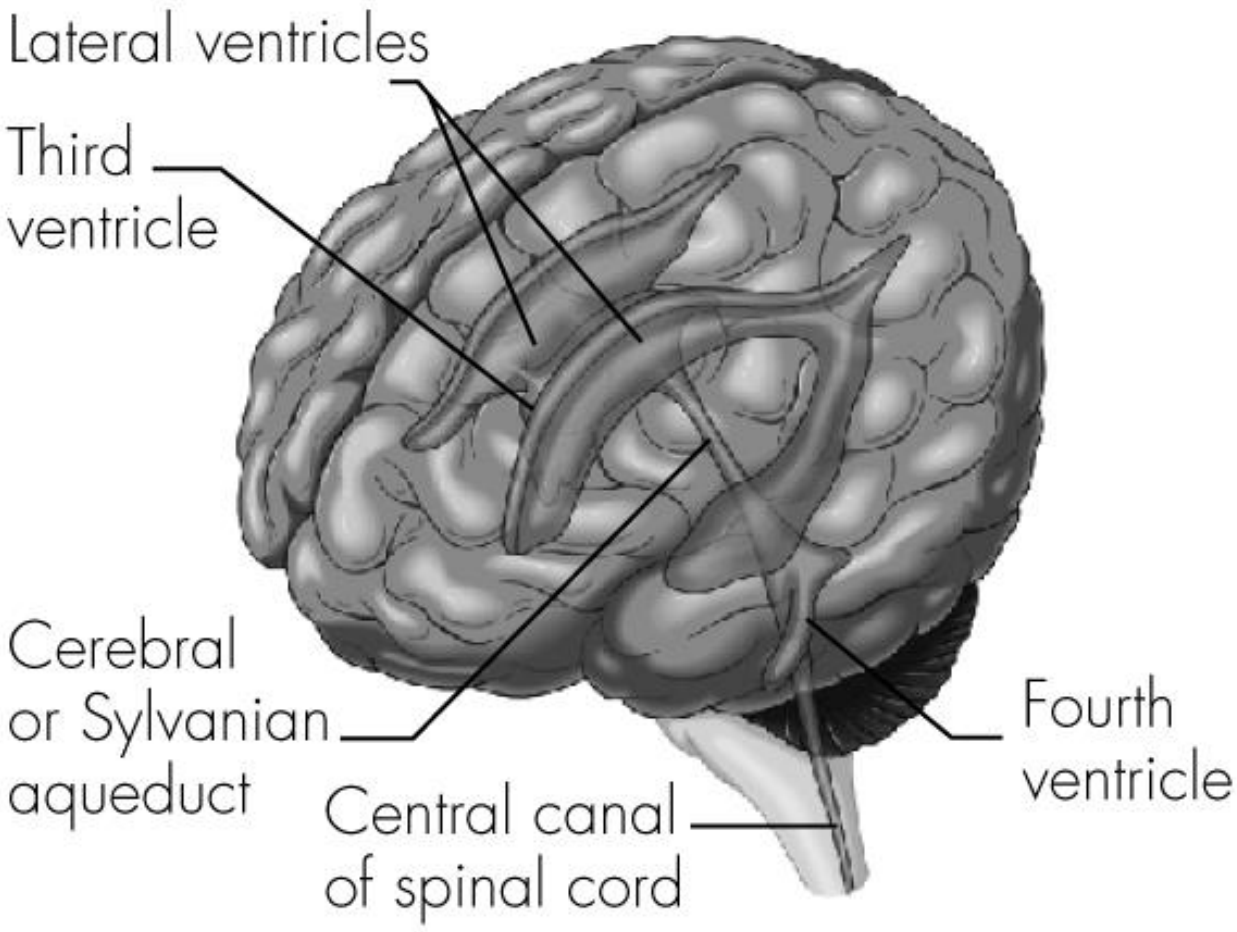


Anatomic Features: Dura mater, arachnoid membrane, and pia mater

Function: Protective covering of the central nervous system (CNS), location of venous drainage, and cerebrospinal fluid absorption

Transparency 7

Anatomic Features of the Ventricular System

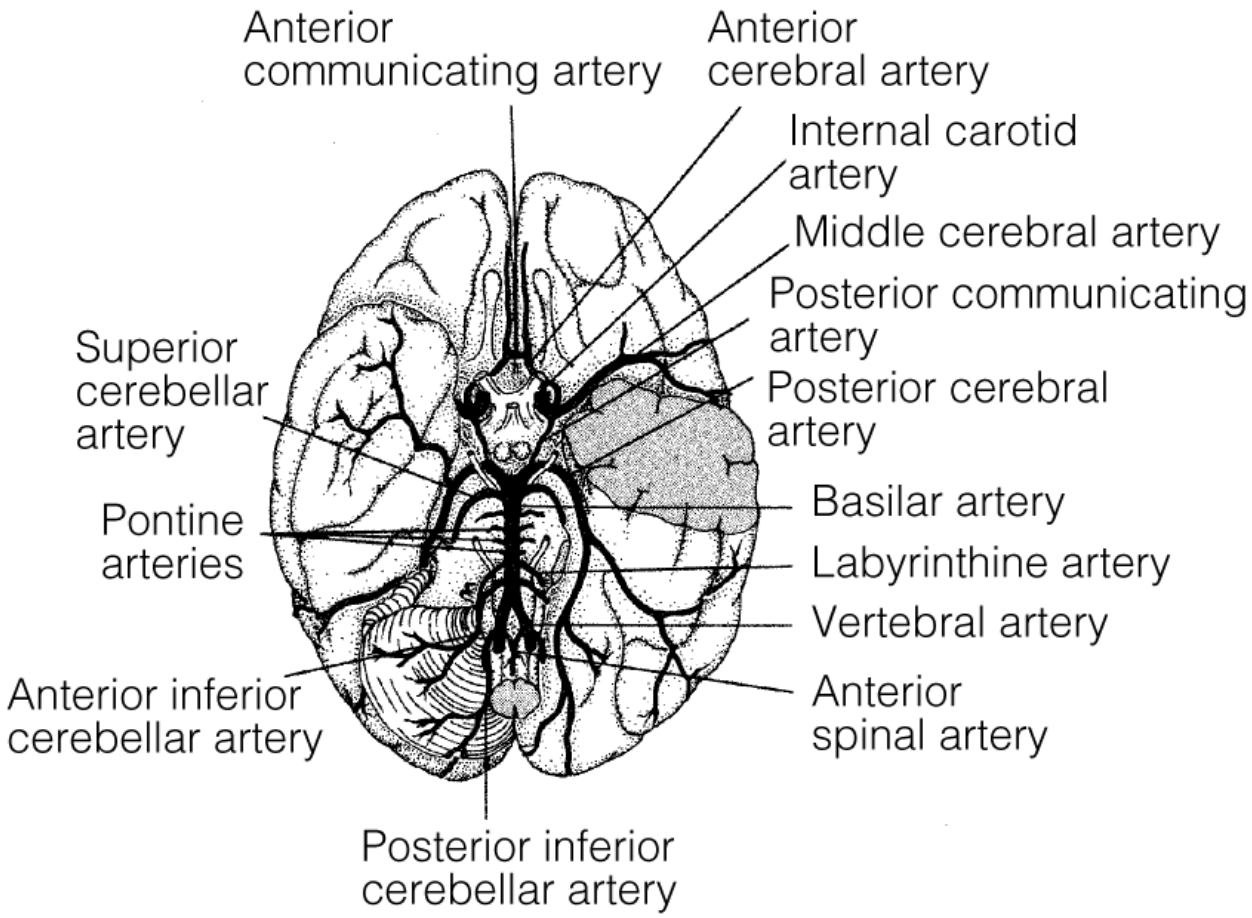


Anatomic Features: Lateral (1st and 2nd), 3rd, and 4th ventricles, choroids plexus, cerebral aqueduct, and arachnoid granulations

Function: Balancing intracranial pressure, cerebrospinal fluid production, and circulation

Transparency 8

Anatomic Features of the Brain's Vascular System

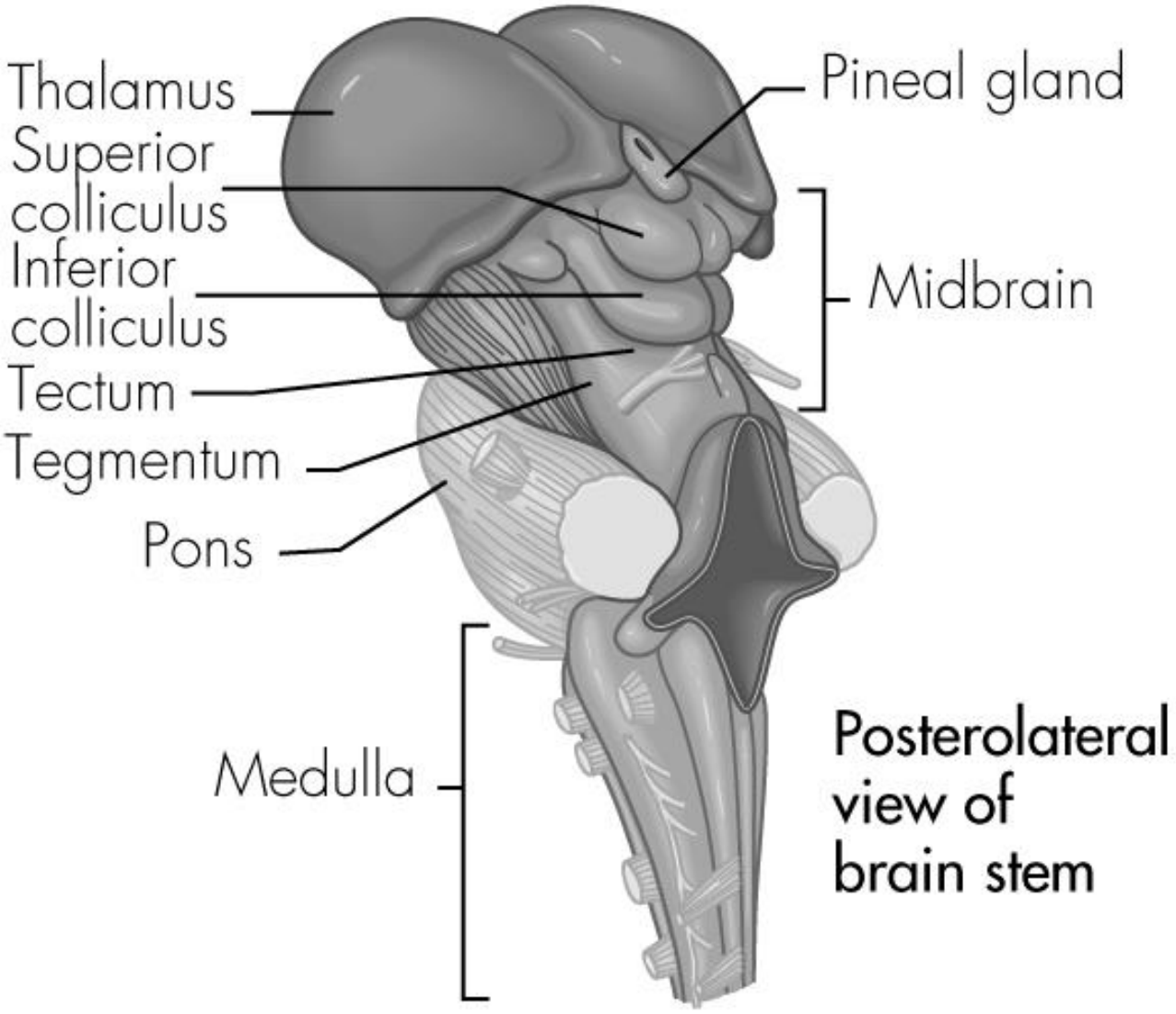


Anatomic Features: Arteries, veins, circle of Willis

Function: Arteries provide nourishment, oxygen, and other nutrients to the brain; the veins carry away waste products

Transparency 9

Anatomic Features of the Lower Brain Stem

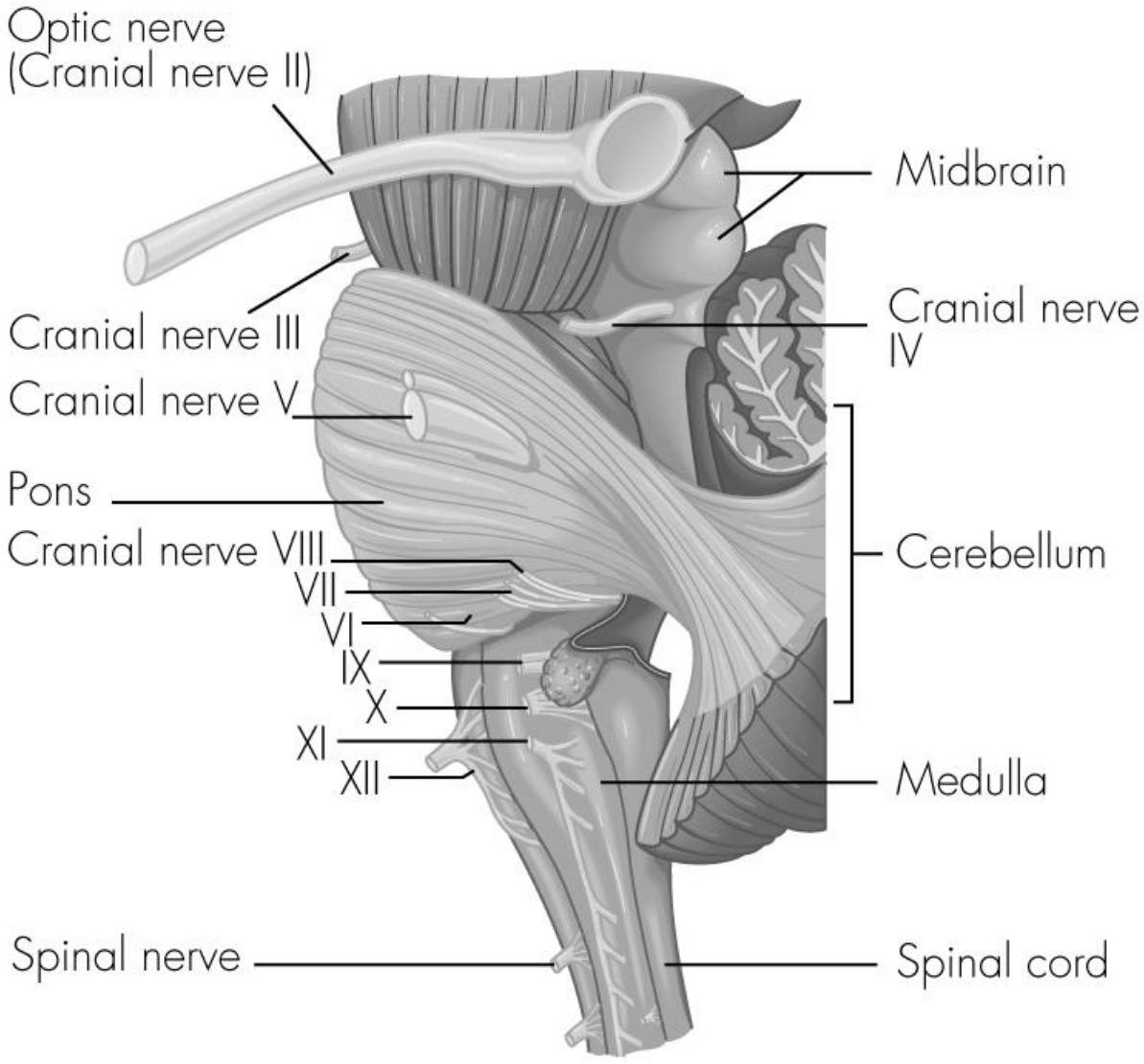


Anatomic Features: Hindbrain contains the medulla oblongata (myelencephalon), and pons (metencephalon); Midbrain contains the tectum and tegmentum, cranial nerves, reticular activating system

Function: Relays information to and from the brain; responsible for simple reflexive behavior

Transparency 10

Anatomic Features of the Cranial Nerves

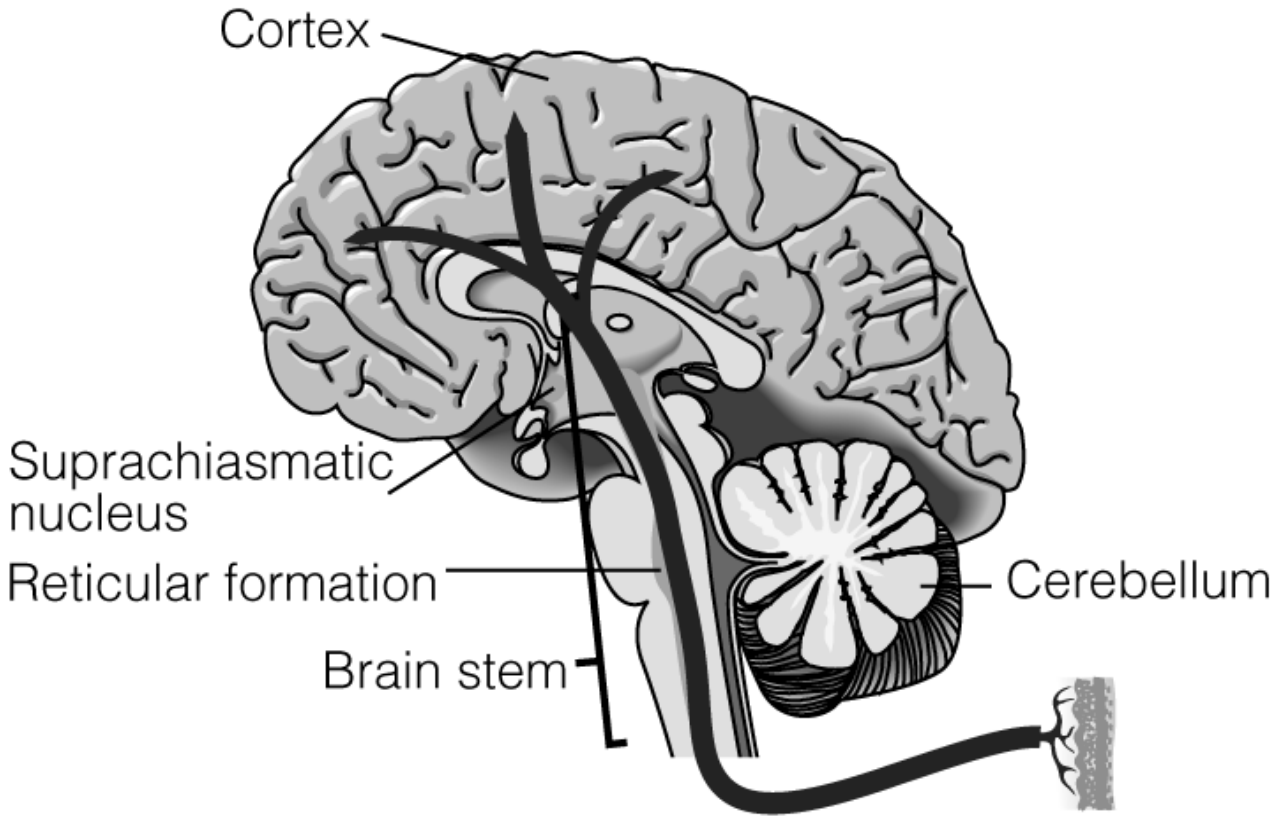


Anatomic Features: Located within the brain stem

Function: Conducting specific motor and sensory information

Transparency 11

Anatomic Features of the Reticular Formation

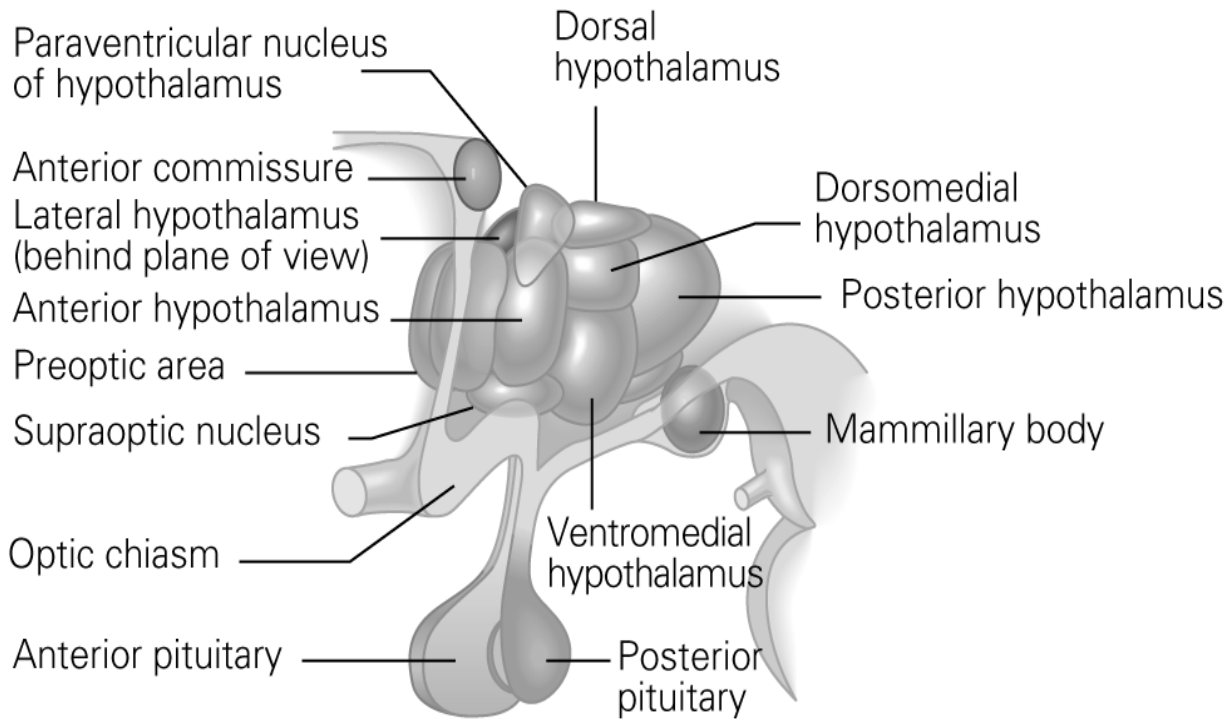


Anatomic Features: Neural network within the lower brain stem connecting the medulla and the midbrain

Function: Nonspecific arousal and activation, sleep and wakefulness

Transparency 12

Anatomic Features of the Hypothalamus

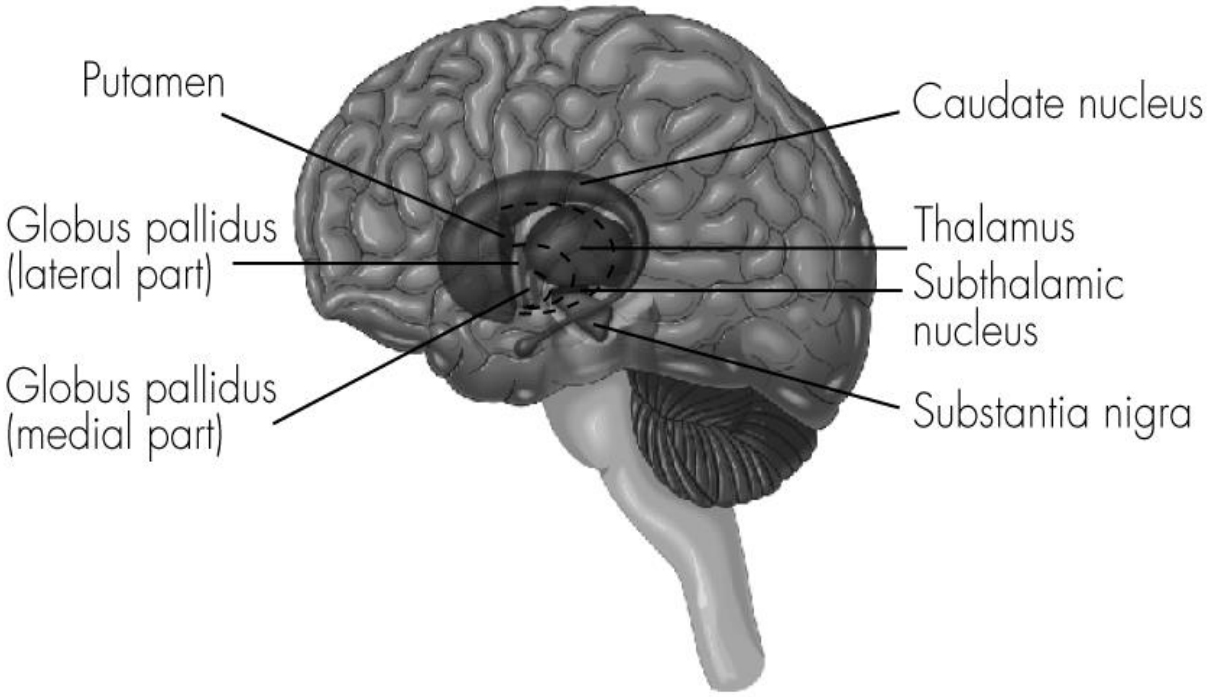


Anatomic Features: Hypothalamic nuclei, major fiber systems, and third ventricle

Function: Activates, controls, and integrates the peripheral autonomic mechanisms, endocrine activity, and somatic functions, including body temperature, food intake, and the development of secondary sexual characteristics

Transparency 13

Anatomic Features of the Basal Ganglia

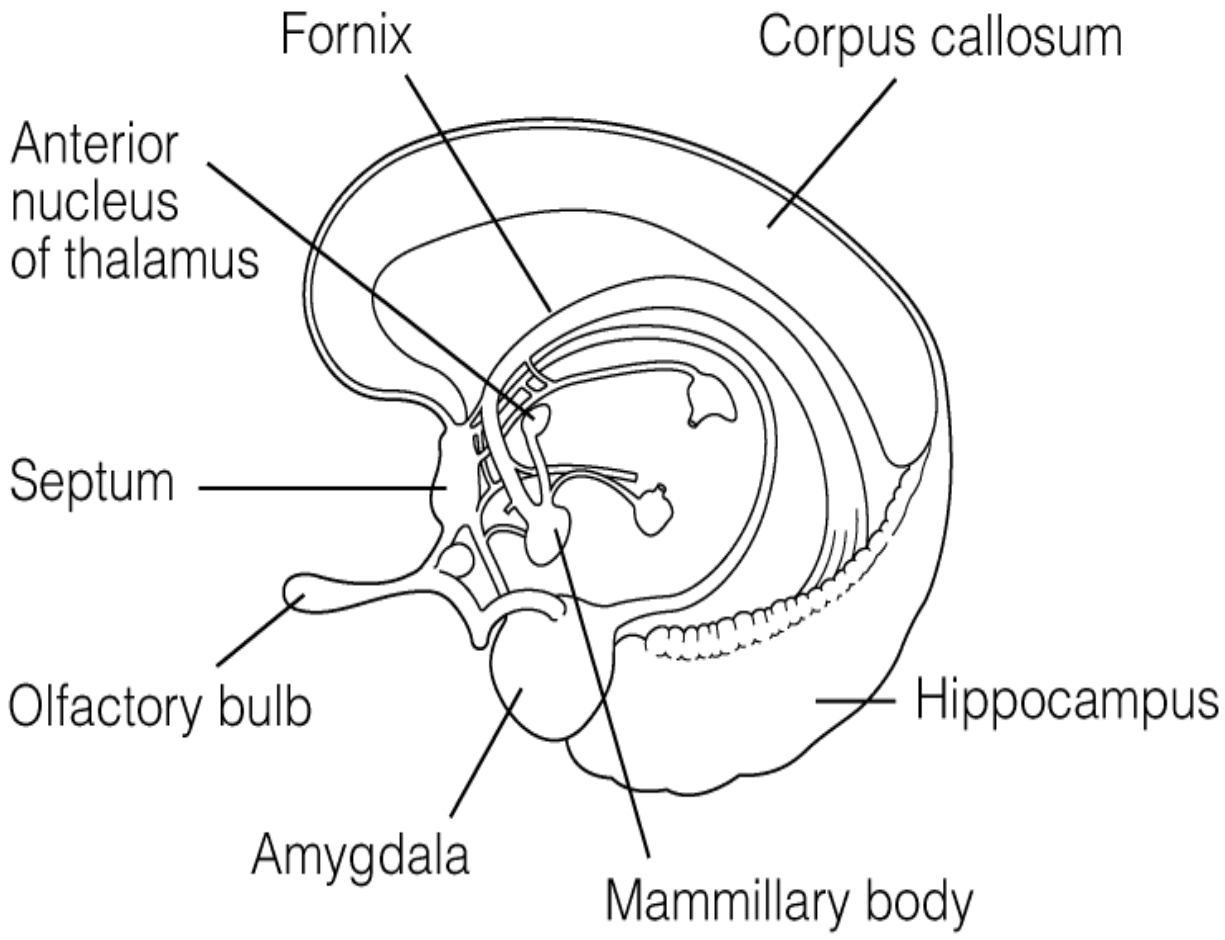


Anatomic Features: Structures of the caudate nucleus, putamen, globus pallidus, substantia nigra, and subthalamic nuclei

Function: Important relay stations in motor behavior (such as the striato-pallido-thalamic loop); connections from part of the extrapyramidal motor system (including cerebral cortex, basal nuclei, thalamus, and midbrain) and coordinate stereotyped postural and reflexive motor activity

Transparency 14

Anatomic Features of the Limbic System

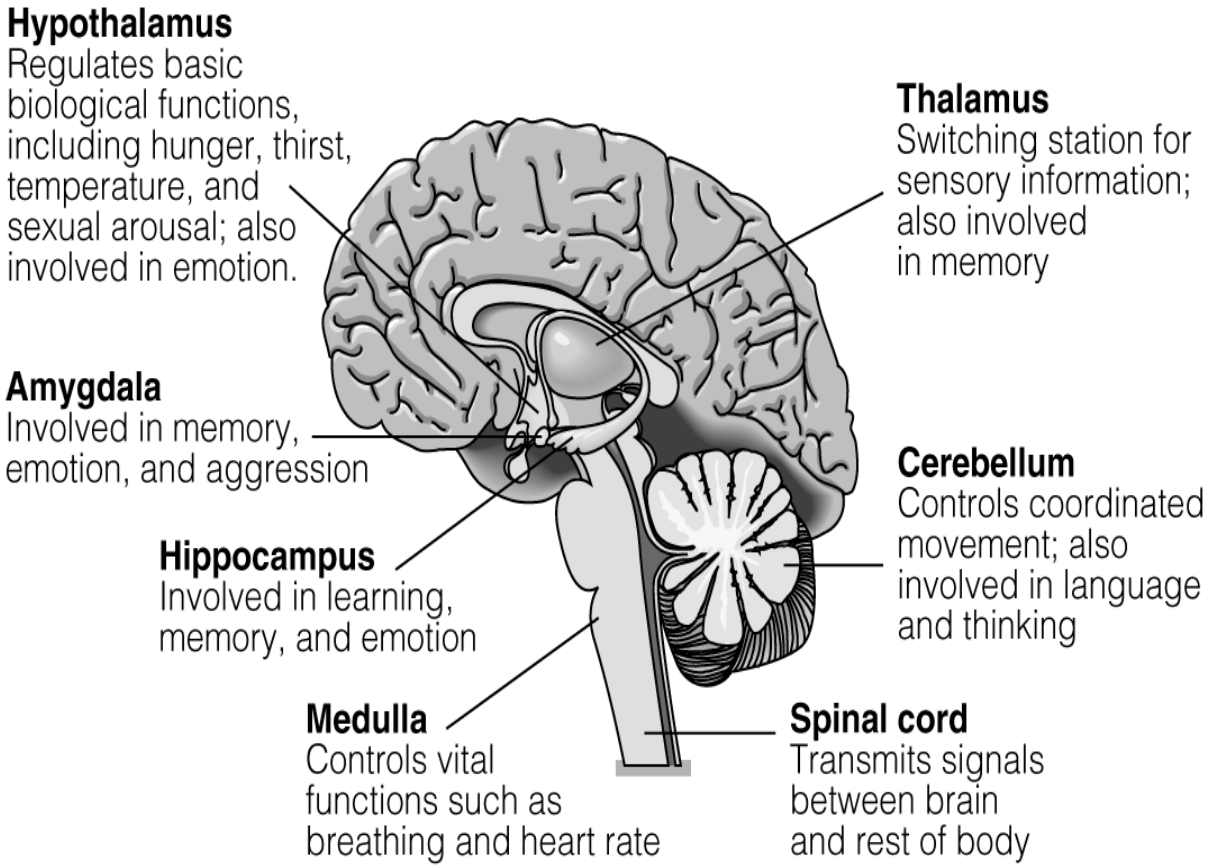


Anatomic Features: Structures of the amygdala, hippocampus, parahippocampal gyrus, cingulate gyrus, fornix, septum, and olfactory bulbs

Function: Closely involved in the expression of emotional behavior and the integration of olfactory information with visceral and somatic information

Transparency 15

Anatomic features of the cerebral hemispheres



Anatomic Features: Structures of the frontal, parietal, occipital, and temporal lobes

Function: Higher cognitive functioning, cerebral specialization, and cortical localizations