



Overview of the Nervous System The Brain and Behavior

Psychology 372

Physiological Psychology

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First

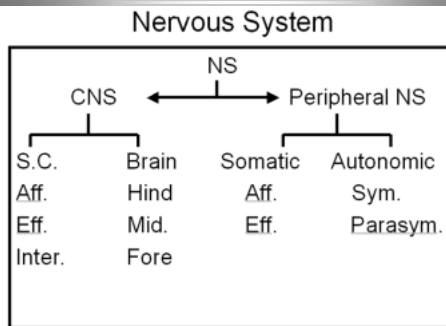
- All parts are interrelated.
- Thus, you need all parts to function normally.

- Neurons = Nerve cells

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Nervous System



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The Nervous System is Composed of Two Parts

- Central Nervous System
 - Consists of all neurons (nerve cells) located in the brain and spinal cord
- Peripheral Nervous System
 - Consists of all neurons (nerve cells) located outside the brain and spinal cord.

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Peripheral Nervous System

- Two divisions
 - Somatic
 - Autonomic

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Somatic System

- Contains Three major sets of neurons in Two groups.
- Afferent neurons
- Efferent neurons
- Internuncial neurons

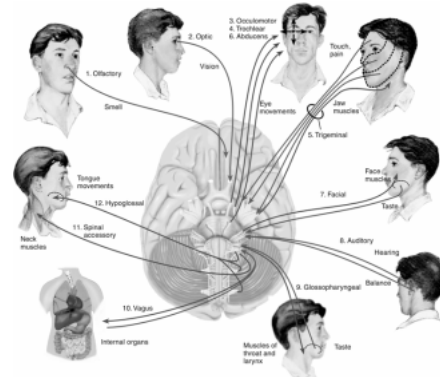
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Cranial Nerves

- Innervate the head, neck, and some internal organs.
- 12 Sets (See Next Page)
- Motor only (red), sensory only (blue), mixed function.

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Cranial Nerves



Spinal Nerves (31 pair)

- 8 Cervical
- 12 Thoracic
- 5 Lumbar
- 5 Sacral
- 1 Coccygeal

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Afferent neurons

- Are sensory in nature.
- Receive information from sensory receptors (structures) and sends that information toward the central nervous system

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Efferent neurons

- Are motor in nature
- Gets information from the central nervous system and sends it to the muscles of the body.

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Internuncial Neurons

- Are located in the Spinal Cord
- Connect afferent pathways to efferent pathways.
- Also, send information to the brain
- Are involved in reflex arcs.
- Are typically T shaped cells.

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Autonomic System

- Consists of neurons that go to and from various internal organs.
- Regulates heart rate, blood pressure, digestion, etc.
- Has two parts
- Sympathetic nervous system
- Parasympathetic nervous system

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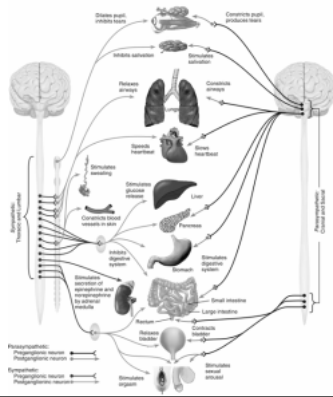
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Think of What Happens When a Lion Chases You

- | | |
|-------------------------|-------------------------|
| • Sympathetic | • Parasympathetic |
| • Increases Heart Rate | • Decreases Heart Rate |
| • Increases Respiration | • Decreases Respiration |
| • Decreases Digestion | • Increases Digestion |

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Overview of the ANS



Central Nervous System

- Consists of
- Brain
- Spinal Cord

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Brain

- Has 100 billion neurons or nerve cells
- Neurons are the functional element of the brain.
- Also has approximately 120 billion Glial cells.
- Also has several membranes (meninges)
- Is surrounded by fluid (CSF)

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Glial

- Has many functions
- Acts as a glue
- Provides nutrients
- Helps Regulate Brain Activity
- Eliminates Wastes
- Breaks down Neurotransmitters
- Makes Myelin

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Meninges

- Is a series of membranes that protect the brain and spinal cord.
- Three layers
 - Dura Mater - Outer layer (is very thick)
 - Arachnoid - Middle layer
Overlies the arachnoid space (CSF)
 - Pia mater - Inner layer
Covers the entire brain

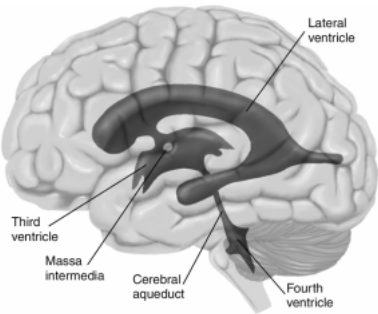
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Ventricles

- Are major spaces in the brain
- Are also covered by the meninges
- Contains choroid plexus cells

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Ventricles



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Cerebrospinal Fluid (CSF)

- Is a fluid that surrounds the brain
- Makes the brain lighter
- Is made from choroid plexus cells found with the ventricles of the brain.

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