Your notes

GCSE Psychology: revision notes

The nervous system and neurons

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Structure of the nervous system

- The **central nervous system** (CNS) is the brain and spinal cord.
- The peripheral nervous system (PNS) is all the nerves outside the CNS. It includes the somatic nervous system (voluntary movement and senses) and the **autonomic nervous system** (automatic functions).
- The autonomic system has two parts: the **sympathetic nervous system** triggers the "fight or flight" response (faster heart rate, more adrenaline); the parasympathetic nervous system returns the body to rest ("rest and digest").
- The James-Lange theory of emotion says we feel emotion after our body reacts: we see a bear, our heart races, and then we feel afraid.

Neurons

- Sensory **neurons** carry messages from the senses to the CNS. Relay **neurons** pass messages within the CNS. Motor **neurons** carry messages from the CNS to muscles.
- Structure: dendrites receive signals; the cell body; the axon carries the electrical impulse, often covered in a **myelin sheath** that speeds it up; axon terminals pass the signal on.

Synaptic transmission and learning

- At a **synapse**, an electrical impulse causes **neurotransmitters** to be released into the gap, where they bind to receptors on the next **neuron**.
- Excitation makes the next **neuron** more likely to fire; inhibition makes it less likely.
- Hebb's theory of learning: when **neurons** fire together repeatedly, the connections between them strengthen, forming cell assemblies ("**neurons** that fire together wire together"). This is linked to **neuroplasticity**.

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Key terms

Central nervous system	The brain and spinal cord.
Autonomic nervous system	The part of the nervous system controlling automatic functions.
Sympathetic nervous system	The part that triggers the fight or flight response.
Neuron	A nerve cell that carries messages.
Synapse	The gap between two neurons.
Neurotransmitter	A chemical that carries a signal across a synapse.
Myelin sheath	A fatty coating that speeds up nerve impulses.
Neuroplasticity	The brain's ability to change and form new connections.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What makes up the central nervous system?
2. What does the sympathetic nervous system trigger?
3. What does the parasympathetic nervous system do?
4. What does the James-Lange theory of emotion say?
5. Which neurons carry messages from the CNS to muscles?
6. What does the myelin sheath do?
7. What happens at a synapse?
8. What is Hebb's theory about?

Answers

1. The brain and spinal cord
2. The fight or flight response
3. Returns the body to rest
4. We feel emotion after our body reacts
5. Motor neurons
6. Speeds up nerve impulses
7. Neurotransmitters carry the signal across the gap
8. Connections strengthen when neurons fire together repeatedly

What to do next

Practise 10 questions on this topic

Try 4 exam questions, with mark schemes

Read the lesson, one step at a time

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