Your notes

GCSE Psychology: revision notes

The brain and cognitive neuroscience

Contents

1. The lobes of the brain
2. Localisation of function and Penfield
3. Cognitive neuroscience
4. Key terms
5. Quick questions
6. What to do next

The lobes of the brain

- Frontal lobe: planning, decision-making and personality; it contains the **motor area** (voluntary movement) and **Broca's area** (speech production).
- Parietal lobe: contains the **somatosensory area**, which processes touch, temperature and pain.
- Temporal lobe: contains the auditory area (hearing) and **Wernicke's area** (understanding language).
- Occipital lobe: contains the visual area.
- The cerebellum coordinates balance and movement.

Localisation of function and Penfield

- **Localisation of function** is the idea that particular areas of the brain have particular jobs.
- Penfield stimulated areas of the brains of patients during surgery for epilepsy. Stimulating the temporal lobe (the interpretive cortex) sometimes caused patients to experience vivid memories or feelings, supporting localisation.

Cognitive neuroscience

- **Cognitive neuroscience** studies how brain structures link to thinking, using scans such as CT, PET and **fMRI**.
- Tulving used PET scans while participants thought about episodic and semantic memories: different areas were active, with episodic memories linked more to the front of the brain and semantic memories to the back.
- Brain damage, such as a stroke or head injury, can affect movement (if the **motor area** is damaged) or behaviour and personality (if the frontal lobe is damaged).

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Key terms

Localisation of function	The idea that brain areas have specific jobs.
Motor area	The part of the frontal lobe that controls voluntary movement.
Broca's area	The area of the frontal lobe involved in speech production.
Wernicke's area	The area of the temporal lobe involved in understanding language.
Somatosensory area	The part of the parietal lobe that processes touch.
Cognitive neuroscience	The study of how brain structures link to thinking.
fMRI	A brain scan showing activity through changes in blood flow.

Quick questions

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

1. Which lobe contains the visual area?
2. Which lobe contains the motor area?
3. What does Broca's area do?
4. What does Wernicke's area do?
5. What does the somatosensory area process?
6. What is localisation of function?
7. What did Penfield do?
8. What did Tulving's PET scan study find?

Answers

1. The occipital lobe
2. The frontal lobe
3. Speech production
4. Understanding language
5. Touch, temperature and pain
6. The idea that brain areas have specific jobs
7. Stimulated patients' brains during surgery
8. Episodic and semantic memories involved different brain areas

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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