Frontal Lesion Patients & Memory

Prospective vs Retrospective Memory
Remembering to carry out **intended actions.**

This can be: **time-based or event-based.**

Anatomically: Burgess et al. (2000, 2001)
Different brain regions involved in retrospective and prospective memory. Frontal lobe lesion patients typically have impairment in prospective memory (e.g. planning, maintaining intentions: multiple errands task).

Memory Syndromes linked to Frontal Lobes

Reduplicative Amnesia: Belief that certain places are reproduced or relocated.

Capgras Syndrome: Belief that familiar person has been duplicated.

Confabulation: Erroneous, grandiose, delusional memories.

Frontal Lobes: Located at the anterior part of the brain. Involved in many cognitive operations. Memory processes linked to working memory and strategic aspects of LTM (lateral) and prospective memory (frontal)

Metacognition
Ability to reflect on own memories and knowledge.

Frontal lobe patients typically have difficulty realising that they are doing things differently or that they are doing things wrong (Hirst et al. 1988)

Working Memory A on-line control of short term memory. Used for storage and manipulation of information.

Three Component Model proposed by **Baddeley, 2001** Comprised of the visuospatial sketchpad, the phonological loop which is mediated by the central executive and the episodic buffer (which holds and intergrates info from LTM)

Anatomically: Verbal and Nonverbal storage linked to **Posterior (back) brain regions** whereas central executive is linked to **frontal lobes.** Which is why Baddeley (1986) refers to frontal lobe impairment as **dysexecutive syndrom**e (typically fail on Wisconsin card sorting (changing rule halfway through task without telling them rule has changed, they realise) or N-back task or multiple errands task) This is called **perseverative behaviour.**

Long-Term Memory

Memory storage is related to the **medial temporal lobes.**

Strategic encoding and retrieval involves **frontal lobes.**

Frontal Lesion Patients (Hirst et al. 1998): Find no benefit in recall between related and unrelated words, which suggests that frontal lobes are involved with strategic (e.g. categorising) encoding & retrieval. Normal controls find related words easier to recall.

Interference: (Shimamura et al. 1995) Patients suffer proactive interference, which suggests that they have difficulty focusing on relevant info.

Recognition vs. Retrieval: (Wheeler et al. 1995) Patients with frontal lobe lesions have recognition memory less affected than **retrieval**. Recognition depends on type of task however (e.g. increased errors if distractors are semantically related to targets).

Remote Memory

Last lecture, we discussed temporally graded amnesia.

Frontal lesion patients **do not typically suffer from a similar temporal gradient** (better remote recall than recent recall). Their recall of remote and recent memories are equally impaired.

Their recognition is fine, which suggests that again, retrieval is the problem.