Forgetting from Long Term Memory

There are three stages by which long term memories can not be retrieved: initial storage problems (Ebbinghaus), loss of info between storage and retrieval (McGeoch) and retrieval failures.

Accessibility vs. Availability (Tulving et al. 1966)

In a kind of extension of the encoding specificity principle, Tulving argued that memories can be temporarily inaccessible rather than forgotten.

Tulving et al. (1966) asked participants to learn a series of categorised words followed by 2 consecutive tests – a free recall and a cued recall. Some items that were not retrieved on the first test were on the second. They argued that some memories were not accessible on the first test, but were still available.

Interference Theory (McGeoch, 1932) Memory traces to not decay with passage of time. Other material interferes with these traces. Memories compete and are subject to **contextual** influences and influence of **part-set cueing** (e.g. recognise professor in uni but not on bus)

Underwood (1959, 1957) documented two types of interference: **retroactive** (learning one list and then second list impairs ability to recall first list) **and proactive interference** (learning one list and then second list impairs ability to recall second list).

Consolidation
This suggests that learning is not complete at the end of encoding. If memory trace is interrupted, consolidation is less likely to occur.

First Stage: Molecular Consolidation: The processes by which long-term conductivity of synapses is affected (protein synthesis). This converts a short-lasting plasticity of a couple to 6 hours.

Second Stage: Network Consolidation: Episodic memories are initially stored in the hippocampus and are slowly moved (or 'consolidated') into the neocortex.

Inactivity better than activity: Ebbinghaus (1885) found that sleeping between study and test improves recall (compared to waking activities).

Is this why earlier memories are so salient?

Multiple Trace Theory (Nadel et al 1997) suggests that each time an episodic memory is recalled, a new trace is formed, leading to **multiple traces** for the original event and thus stronger links. This competes with consolidation theory to explain early memories. (This is the same Nadel that worked with John O'Keefe)