What can we do about the capacity of STM?

- We can get around the limited capacity of STM.
- One way is to learn information well enough to transfer it to LTM, which has an unlimited storage capacity.
- Another way is to put more information into each of the 7 + 2 units that can be stored in STM.

Chunking Information

- Read the sequence of letters below:

  D N V R C E W V D C S V

  Now close your eyes and try to repeat the letters aloud in the same order.

- Now try this sequence of letters:

  NSW VCR VCE DVD

- People are usually able to recall more the second sequence, even though it is made up of exactly the same letters.

  **Chunking** is the grouping or ‘packing’, of separate bits of info into a larger single unit or ‘chunk’ of info.
Chunking

EG: The first sequence of 12 letters exceeded the capacity of STM, whereas the second letter sequence can be perceived as four ‘chunks’, which is within the capacity of STM.

- Chunks can take many forms; numbers, images, words, sentences, phrases or abbreviations (such as BHP, RACV or CSIRO).
- We particularly find it easy to remember telephone numbers in chunks, and so that is how they are often written. Eg. 5382 0499, 0407 240 576, etc.

Rehearsal

- The capacity of STM is about seven bits, or chunks, of information, but this amount can be increased by chunking.
- However, no matter how good a job we do of chunking and rehearsing, info must be transferred to LTM for more permanent storage.

- Once info reaches STM, a number of things can occur:
  1. The info can be discarded,
  2. It can be changed through further encoding, or
  3. It can be retained in STM while it is ‘worked on’ or rehearsed.

Rehearsal

- Rehearsal maintains info in STM by preventing it from being lost or displaced by other material.
- The longer the info is in STM the greater the probability that it will be transferred into storage within LTM.

- The more frequent info is rehearsed, the better it is retained over time.
**Maintenance Rehearsal**

- Relies on the conscious recitation of information in a rote fashion, so that it can be kept in short-term memory for longer than the usual maximum duration of approx twenty secs.
- EG: Repeating info over and over in one’s head.

**Maintenance Rehearsal**

- It can be *verbal*, which involves the use of words. It can also be *non-verbal*, involving visual or spatial info.
- Research shows that most people tend to favour verbal, either sub-vocal (‘in their head’) or vocal (‘aloud’) rehearsal.

**Maintenance Rehearsal**

- Maintenance rehearsal is easily affected by distraction from our STM.
- Another drawback is that when info is continually renewed in STM through rehearsal process, the amount of new info that can enter is restricted because of the limited storage capacity of STM.

**Elaborative Rehearsal**

- In contrast, *elaborative rehearsal* involves the process of expanding upon new info by adding to it or linking it to what one knows, thereby making it more meaningful (for encoding and retrieval).
- This may involve the analysis of semantic, sensory or physical attributes of the item to be remembered.

**Elaborative Rehearsal**

- More specifically, elaborative rehearsal is the process of linking new info in a meaningful way with info already stored in memory or with other new info, to aid in its storage and retrieval from LTM.
- ER strategies are more likely to result in the info being stored permanently in LTM.
- EG: As you prepare for the Nov Exam, you might start by teasing out the key info about its meaning and expressing this info in words that you understand. The more you elaborate, or ‘flesh out’, the various features of the concepts and link it to your own experience, the more likely you are to remember it.
Elaborative Rehearsal

- It is a more active process than maintenance rehearsal.
- It is also more effective than maintenance rehearsal for remembering info because it helps to ensure that info is encoded well.
- Research shows that the deeper the level of encoding at which info is encoded, the better it will be remembered (Rhodes & Anastai, 2000)

Self-reference effect

- Self-reference effect = When we relate new info to personal experiences and our personal situation, encoding is enhanced and therefore we are more likely to remember it.

Consolidation Theory

- Just as concrete takes a period of time to set, harden and become permanent, so does the ‘setting’ of info into long-term memory.
- Consolidation theory proposes that in order for new info to be transferred effectively from STM to LTM, there needs to be a time period in which these memories are able to fortify or stabilise without being disrupted.

Consolidation theory

HINT: Consolidation is when memories become solid (firm and fixed).

- If this consolidation period is disrupted, either by an accident or interference, the memory may be altered or completely lost.
Consolidation theory

• Consolidation takes at least 30 minutes on average. Like concrete, once the memory is consolidated, it is relatively permanent.

Consolidation theory & jelly???

• The process of consolidation can be likened to making jelly. Initially if you knock the bowl, then material can be split (displaced and lost as a result). Whereas, given time under the right conditions, it will set and become firm.

READ

• Evidence in support of consolidation theory – brain trauma patients (pg.355).

NEXT: Long-Term Memory

Pg’s 357 – 374