Implicit and Explicit Memory

Lesson V: Long-Term Memory
module 24

Testing human memory

- Explicit memory tests
  - Procedures during which a participant has is instructed to remember material previously learned
  - Conscious and focused recollection
  - "regular" memory tests (free recall / recognition)

- Implicit memory tests
  - Procedures which test a participant’s memory of previously studied material unobtrusively
  - No conscious recollection necessary
  - Participants are often unaware of memory test

- Relevance of distinction
  - Different types of memory are distinguishable

Traditional explicit memory tests

- Free recall
  - Study phase: Learn a set of objects (e.g., words)
  - Test phase: Retrieve as much learned material as possible (in order or out of order)

- Recognition memory
  - Study phase: Learn a set of objects (e.g., words)
  - Test phase: Identify the previously studied items out of a set of items

- Forced choice recognition paradigm
  - Study phase: Learn a set of objects (e.g., words)
  - Test phase: Pick the previously studied item out of a pair of items - guess if unsure
Example of free recall test

- Listen to the words in the list
- Try to remember all of the words
- When finished, write down all the words that you remember

An example of priming

- Listen to the words again and check them with your list
  - How many did you get right?
  - Did you write down the word ________?
- How priming works
  - Example of unconscious, automatic processing
  - One word activates related words (conceptually related, phonologically related, etc.)
  - Sets of related words activate especially words common (or associated) with a lot of these words
- The high resulting activation makes it difficult for a person to decide whether it is due to previously studying the word or through indirect activation

Implicit memory tests

- General principle - perceptual fluency
  - Most implicit memory tests are built around the idea that previous exposure facilitates processing
  - Bottom-up processing view
- Word stem completion
  - "study phase": participant is exposed to a set of objects (e.g., words), but without an instruction to remember the material
- Later, the participant is asked to complete words: ins_________ p r________
- Result
  - The likelihood of completing the word is increased for the previously seen ones
Other implicit memory tests

- Word fragment completion
  - Complete this word: i_ p_ _ _ t
  - Previous exposure to the word will facilitate the completion time and bias the chosen word

- Picture naming
  - Remember the study by Biederman et al.? Seeing an image before increases the speed at which fragments of this image are identified

- Procedural memory
  - Memory for motor sequences (e.g., riding a bike)
  - Memory for problem solutions (e.g., tower of hanoi)

Solving anagrams - implicit memory

The next letter combinations are anagrams (jumbled up versions) of real words - try to solve them

- P H I M C
- S I K E B
- D R E A B
- R H A I C
- O E M P T

Result
- If confronted with an anagram of a similar structure (even a week later), you will be able to solve it much more quickly after doing this than before

Perceptual fluency and implicit memory

- Many implicit memory tasks rely on perceptual fluency - data driven performance
  - In word-stem completion tasks, performance deteriorates if word was studied through auditory presentation and testing is visual
  - Conceptual memory is unaffected

- Non-perceptual implicit memory tasks
  - Exposure to a set of items (e.g., words) without the instruction to memorize them
  - Test: Conceptual questions, for some of which the studied words can be used as answers, e.g.: CABINET ... piece of furniture used to store things?
The False Fame effect

- Perceptual fluency indicates previous exposure
  - If an item can be perceived without effort, chances are that one has seen it before

The false fame effect (Jacoby et al., 1989)
- Participants study list of non-famous names
- One group focuses all attention on learning the list, while a second group has to divide their attention between the list and a secondary task
- Later, participants are asked to judge a second set of names on how famous they seem
- Participants in the divided attention group rate the previously seen names as more famous because they often cannot attribute the increased perceptual fluency to the previous exposure