Encoding specificity

PSY 200
Greg Francis
Lecture 17

What to do if you are drunk while studying for an exam.

Context

- The context within which you learn and recall can have a profound impact on your memory
  - e.g., part-set cueing
  - given part of a set that has been learned, subjects recall fewer of the remaining items than with normal free recall
  - Interference of recall
    - Have to keep checking if an item you recall is already on the list
- Demonstration

Context

- The effect of part-set cueing suggests that to measure memory you must consider the conditions at test
  - Memory is more often about discrimination of memory traces and not about the strength of memory traces
  - Similar to visual search experiments

Context

- But memory is not exactly the same as visual search
  - Information must be encoded in memory as well as recalled
    - Such encoding can alter what features are stored as part of the memory
    - Which changes the discrimination of subsequent recall
  - It turns out, that to maximize recallability
    - the effort and conditions at the time of learning must be consistent with the properties and conditions of the test
- Encoding specificity principle

Representative study

- Subjects in two groups
  - see the same words, but have different tasks
  - This changes the encoding of information in memory

Semantic judgement

Cheese

Rhyme judgement

Cheese

The man threw the ball to the _____.

Test

- Each group is then split into two subgroups that vary in the recall of information
  - 1) Normal recognition task
  - 2) Shown a word and asked if any of the target words rhymed with this word

Number of words recognized

0 1 2 3 4 5 6 7 8

Standard  Rhyme

Study

Semantic  Rhyme

Recognition task
Significance

- It is not that one learning strategy is better than the other
  * or that one testing strategy is better than the other
- Encoding (learning) of information and recall of information need to match
- This means it is very difficult to test for absolute memory
  * subject’s performance depends on many factors

Encoding specificity

- Memory is better when the cues available during recall match the cues available during encoding
  * Tulving & Osler (1968)

Encoding specificity

- Each group split into two groups for testing recall
  * cue is always related to target word

Cue

- soar
- nurse
- auto
- paper
- ...

No cue

Test display

- Words recalled

Results

- cue does not always help

Surrounding context

- Deep-sea divers learn words (Godden & Baddeley, 1975), either
  * on land (dry)
  * under water (wet)
Significance

- Decompression tables for divers
  - want to remember when under water
  - generally study while on land
- Researchers working under water have difficulty recalling their details on land
  - E.g., counts of species
- How do you know if something is forgotten?
  - changing context may allow subject to recall seemingly forgotten information
- Forgetting = retrieval problem?

Forgetting

- Forgetting is not always a characteristic of a memory system, or your brain
  - although it could be in some cases, it is not always
- Forgetting must be defined operationally
  - specify the task and context of retrieval
  - You can never be certain that if you are placed in a different context you will still show forgetting

Internal context

- Goodwin et al. (1969)
- Subjects drink 10 oz. 80 proof vodka, mixed in sugar-free lemon-lime drink
  - or a similar tasting drink (bit of vodka on top of drink)
- Test memory 24 hours later
- Subjects are either:
  - Sober at study, sober at test
  - Drunk at study, sober at test
  - Sober at study, drunk at test
  - Drunk at study, drunk at test

Best recall if study and test states are the same
- Similar effects for marijuana cigarettes (Eich et al., 1975)

Testing

- So, if you are intoxicated while studying for an exam
  - and you didn’t study before
- You should be intoxicated while taking the exam

Mood

- Mood has a similar effect (Eich et al, 1994)
  - Mood induced by music and directed thoughts
Classrooms
- Is memory better when you are tested in the same room as lectured?
  - significant for final exams!
- Smith et al. (1978)
  - Subject studied words in one of two contexts (on separate days)
  - Varied classroom and dress of experimenter

Study context

Subjects recall all words either in the context of Day 1 or Day 2
(different contexts for different subjects)
Recall was best for words that were studied in the test context

Conclusions
- Context
- Encoding specificity
  - memory best if study and test are similar
- Cues
- Environment
- State
- Mood
- Classrooms

Next time
- Discrimination in memory
- Proactive interference (PI)
- Release from PI
  - CogLab on False memory due!
- How to take a test.