Memory 3

Transience (Forgetting)

- Ebbinghaus
- For "Flashbulb Memories"
- Spacing Effect During Learning
- Aging

Transience of Memory

- Transience = forgetting that occurs with the passage of time
- Scientific understanding of transience can be traced to a book by Hermann Ebbinghaus in 1885
  - Consonant/Vowel/Consonant nonsense syllables
  - Not: D-O-T or B-O-L

After learning a list of 30 nonsense syllables you are tested after either 9 hours or 1 month. Do you think you would forget more of the list in the first 9 hours or during the interval between 9 hours and 1 month?

A. More forgotten in 9 hours than between 9 hours and 1 month.
B. About the same amount forgotten in 9 hours than between 9 hours and 1 month.
C. Less forgotten in 9 hours than between 9 hours and 1 month.

Ebbinghaus’s Other Contributions

- Memorization time increases sharply with the number of syllables
- Distributing learning over time is more effective than learning in a single session
- A small amount of initial practice leads to savings for later learning
- Continuing to practice material after it is "learned" enhances retention
- Primacy and recency effects
- Meaningful versus nonsense material

For the last slide I used decisions you might make while studying to illustrate some of Ebbinghaus’s findings. Is that reasonable? How do we know that what he found generalizes to your study situation? After all he studied only himself over a century ago, using nonsense stimuli, in an artificial setting. Given what you know, would you consider altering your study habits based on Ebbinghaus’s results?

A. Yes, definitely
B. Possibly
C. Probably not
D. Definitely not
Internal and External Validity

External validity question
How reasonable is it to generalize results from an experiment to other persons, places, times?
- Replication
- Proximal similarity

Internal validity question
How reasonable is it to infer that the manipulation in an experiment caused an observed change?

Talarico & Rubin, 2003

Description
- Interviewed 54 Duke students on September 12, 2001 and recorded
  - How they had learned of the attacks the previous morning
  - Details of some other memorable incident in their personal lives occurring in the last 3 days
- 3 randomly chosen subsets of these 18 participants were asked for the same information after one of 3 delays
  - 7 days
  - 42 days
  - 244 days

Talarico & Rubin, 2003

Results

Summary: Transience

- Ebbinghaus first described the time course of transience.
- Our confidence in the generality of his results is increased by the many times they have been replicated using different materials, procedures, and participants.
- Transience occurs at the same rate for different materials
- Data about transience do not always match our intuitions

You have need to learn a list of 30 facts that you will be using for at least the next year. How would you allocate your time to study them?
A. Study in the list in a single session until you know all the items.
B. Study the list one day until you know the facts fairly well. Wait a day and then study the list again until you know all the items.
C. Study the list one day until you know the facts fairly well. Wait a week and then study the list again until you know all the items.
D. Study the list one day until you know the facts fairly well. Wait a month and then study the list again until you know all the items.
Spacing Effects in Learning
Psychological Science, 11, 1095 - 1102

- Gaps (days): 0, 1, 2, 4, 7, 21, 105
- Retention Intervals: 7, 35, 70, 350
- Initial study session: 32 facts learned
- Example: What European nation consumes the most spicy Mexican food?
- Restudy: entire list of questions was run through twice
- Final Test: Tested once on each question

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Proportion Correct
Optimal Gap (in Days)
Retention Interval (in Days)

5.0
7
13.1
35
17.1
70
23.6
350
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Compared with that of your parents, would you say that your memory for past events is
A. Much better
B. A little better
C. About the same
D. A little worse
E. Much worse

Age-Related Cognitive Decline Begins Early

Transience and Aging
Data from Huppert & Kopelman, 1989
Summary Question
Which of the statements A-D below is false?
A. Transience is the loss, over time, of information that had been stored in memory.
B. Ebbinghaus studied transience under carefully controlled conditions but it has been replicated with more natural stimuli and conditions.
C. Degree of transience depends on the content of a memory trace.
D. Transience is influenced by aging.
E. All of statements A – D are correct.

Looking Ahead
- Next Wednesday
  Memory Chapter Test
- For Friday
  - Gleitman: Ch. 8, pp. 327-337
  - Zap #9: False Memory Task
  - Coffee at Phoenix Grill?