Memory and studying

Generation effect
(Mantyla, 1986)

- Questions:
  - What’s the effect of associating new material to things you already know?
  - What retrieval cues work best: Your own, or someone else’s?

Participants saw 168 nouns, 20 sec/noun
- Generated associates for each noun
  - 1-associate condition: car → drive
  - 3-associate condition: car → drive, fast, crash
- Memory test given after the session
  - Incidental: People didn’t know it was coming
  - People were given retrieval cues: Either their own associates, or someone else’s

% recalled
Number of associates generated

Interpretation

- Questions:
  - What’s the effect of associating new material to things you already know?
    - Large, in terms of recall words
  - What retrieval cues work best: Your own, or someone else’s?
    - Also large: Your own work better

External validity

- The degree to which a study reflects the real world
  - What real-world situations does it apply to?
    - How well does it apply?
  - What’s the external validity of Mantyla (1986)?
Testing effect
(Karpicke & Roediger, 2008, Science)

• Questions:
  – What helps more in preparing for a test: studying ... or testing yourself?
  – How accurately can we predict our own test performance?
  – Does it make sense to drop learned items from later studying?

Method

• Items were Swahili-English word pairs
  – Study: mashua → boat
  – Test: mashua → ?
  – 40 different items

• Procedure:
  – Learning phase
    • Studied items and were tested on them
  – Final test, one week later

Learning phase

• One cycle:
  – Studied items, 5 sec/item
  – 30 sec of verifying math problems
  – Tested on items, 8 sec/item
    • Typed the English word, no feedback
• Each participant did 4 cycles:
  – S1 T1 S2 T2 S3 T3 S4 T4

Independent variables

• Items studied:
  – aS: All 40 items, every cycle
  – dS: Drop items recalled on previous test
• Items tested:
  – aT: All 40 items, every cycle
  – dT: Drop items recalled on previous test

• 4 conditions:
  – aSaT, aSdT, dSaT, dSdT

Dependent variables

• Judgments of learning
  – Each participant predicted their accuracy on the final test
    • Right after the learning phase
• Accuracy on the final test
  – Proportion of items correctly recalled

Final test

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<th>Final test</th>
<th>Predicted accuracy</th>
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<tr>
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<table>
<thead>
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<th>Predicted accuracy</th>
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<td>dSdT</td>
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Interpretation

• Questions:
  – What helps more in preparing for a test: Studying, or testing?
  – How accurately can we predict our own test performance?
  – Does it make sense to drop learned items from later studying?
• External validity?