INTRODUCTION

There are many contexts in which people are allowed multiple opportunities to study new information prior to a test. It is important to understand how people allocate restudy efforts to enhance learning efficiency. Prior research used homogeneous sets of word pairs (of similar difficulty), but the current research used a mixture of easy, medium, and hard-to-remember pairs to determine the degree to which possible memory confidence cues (below) are reactive to stimulus difficulty. Participants will study a set of word pairs (i.e., DOG-SPONGE), take a memory test, and repeat this process a second time.

Additionally, metacognitive cues, or sources of information about one's learning, can influence one's perception of their learning and therefore influence study time allocation. The amount of time an individual devotes to study (in seconds) depends on how well they perceive themselves to be learning.

We expect to find relationships between item-specific restudy time and (1) a person's memory of their past test performance (a recollection of getting an answer correct or incorrect previously); (2) participants' impressions of item difficulty following an initial study attempt; (3) objective memory accuracy during an initial test (prior to restudy); (4) subjective memory test confidence; (5) objective response times to test stimuli; and (6) subjective response time estimates (i.e., how fast they think they responded to test questions). The relative weighting of cues is expected to differ based upon the ease of learning each word pair. A preliminary study done last year indicated that weightings differed between easy and hard-to-learn stimuli, but the current study added a medium-difficulty condition to examine the possible role of floor and ceiling effects on learning (i.e., weightings could have differed partially due to the extreme nature of the stimuli in the previous study).

METHOD

Participants were UWEC students who signed up via the SONA online research pool and received extra credit for their participation.

Our two study-test phases. In each phase, participants studied 60 procedure features word pairs and were then tested on their memory for each pair. Conditions were dispersed equally among participants and included sets of 60 word pairs that were classified as easy, medium, or hard-to-learn.

Phase 1: Word Pair Study

- 60 word pairs of unrelated nouns were presented in a randomized order. Study for each word pair was self-paced.
- After studying each pair, participants made a judgment of learning (JOL) on a scale of 0-100% confidence that they would remember a word pair during test.

Phase 1: Recognition Test

- 120 word pairs (60 intact, 60 rearranged) were presented in a randomized order. Study for each word pair was self-paced.
- For each item, participants estimated (1) a confidence judgment on a scale of 0-100% (i.e., how confident they were in the accuracy of their prior recognition response), and (2) a response time estimate (on a scale of 0-10s, for the prior recognition response).

RESULTS

Regression Equation Predicting Item Level Study Time at Phase 2:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Easy</th>
<th>Medium</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1766.26</td>
<td>1391.04</td>
<td>916.32</td>
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<tr>
<td>SE</td>
<td>0.19</td>
<td>0.19</td>
<td>0.27</td>
</tr>
<tr>
<td>p</td>
<td>0.003</td>
<td>0.003</td>
<td>0.003</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Condition</th>
<th>Easy</th>
<th>Medium</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
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<td>1484.78</td>
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<tr>
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<tr>
<td>p</td>
<td>0.003</td>
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</tbody>
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Note:
- Center: Item-by-item variation within an individual
- Centergrand: the grand mean for a person or individual variation

DISCUSSION

The goal of this pilot study was to determine the effects of an intermediate level of word pairs to build off of previous research done with easy and hard word pair sets. One effect was that average study time differed minimally between conditions, with the easy condition being studied faster than the medium condition. This result could be due to our small population of participants since we saw the lowest average study time to be seen in the easy word pair set; however, further research must be done to ensure that stimuli were constructed appropriately.

Additionally, across conditions, we saw a consistent decrease in study time in Phase 2 for each percent increase in JOL in Phase 1, meaning that increased confidence lead to quicker response times. However, in condition two in item-by-item variation, we saw an increase in study time in Phase 2 for each percent increase in JOL in Phase 1; this could be due to an individual’s motivation during study and their desire to remember the word pairs correctly. Comparatively, condition two also produced a significant result for test response time which means that there was a reduction in study time from Phase 1 to Phase 2. The third condition experienced a small reduction in study time from Phase 1 to Phase 2, indicating that longer initial study related to shorter subsequent study.

Overall, we saw a large difference between Phase 1 and Phase 2 throughout all metacognitive cues.

FUTURE DIRECTIONS

In the future, we intend to investigate the possibility of remote data collection. This will enable future studies to collect data faster and yield more reliable data from a much larger group of participants. Additionally, we will re-examine the parameters used to separate the easy, medium, and hard word pairs so that the intended difficulty level is achieved.

REFERENCES


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