The Role of Confidence in Source Memory Judgments Under Divided Attention

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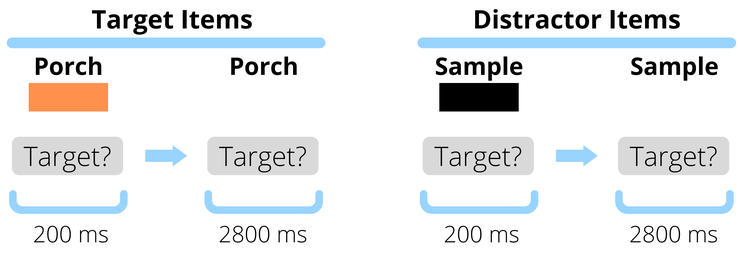
Background

Source memory refers to memory for how some piece of information was obtained, such as who told you or where you were. Source memory has been shown to benefit from the **Attentional Boost Effect** (ABE), which is the improvement in memory for items paired with Target stimuli in a divided attention task. The source memory benefit is seen when participants are later asked to classify those items as being Targets or Distractors; participants are significantly better at recognizing that they have seen the word before, as well as classifying it as having been a Target. One proposed explanation for this benefit is that we use a strength heuristic when evaluating condition; Target words are assumed to be remembered better, so having a strong memory for a word means you are more likely to classify it as a Target. The goal of our study was to explore this theory by measuring participants' confidence in their memory; if confidence does influence your classification, then you should be more likely to say that a word you have a strong memory for is a Target.

Methodology

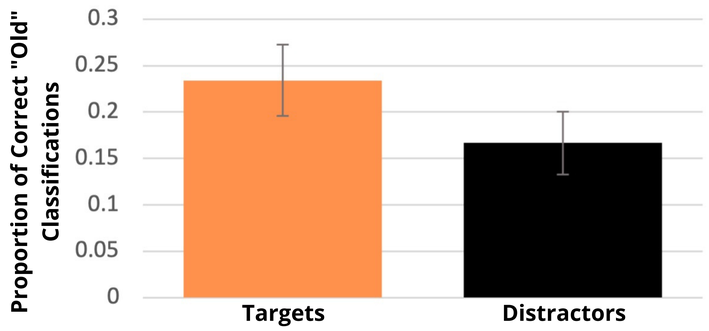
We used a standard divided attention task in which participants tried to remember a list of words while also responding to colored blocks. Orange blocks indicated Target items, which participants were asked to respond to by clicking a "Target?" button on their screen, while black blocks indicated Distractor items. Each word was presented for a total of 3 seconds (3000 milliseconds), while the blocks were only presented for 200 milliseconds before disappearing.



After completing the study phase, participants completed a distractor task and then took a final test consisting of 100 words (all words from the study phase plus 50 new words). On the test, participants had to indicate whether they thought each word was new or old and report their confidence in that judgment. Participants were also asked whether they thought old words were presented with an orange or a black block.

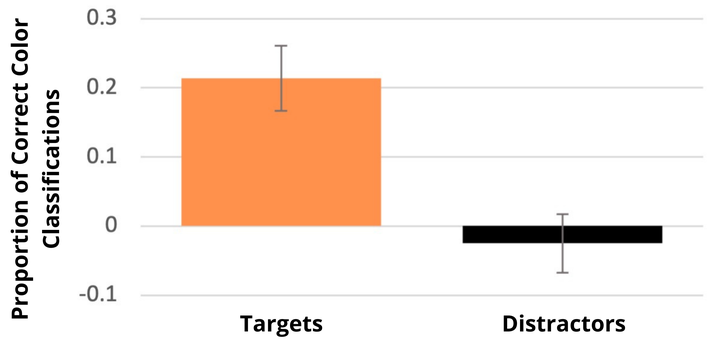
Results

Corrected Accuracy in Old/New Classification



According to the Attentional Boost Effect, participants should be more accurate at classifying Targets as old than Distractors. To test this idea, we compared the Corrected Hit Rate of Targets and Distractors, which accounted for participants' false alarm rates (how likely they were to classify a new item as old). The results replicated the Attentional Boost Effect, as Targets were more likely to be correctly classified as old items than Distractors, $t(47) = 3.93$, $p < .001$.

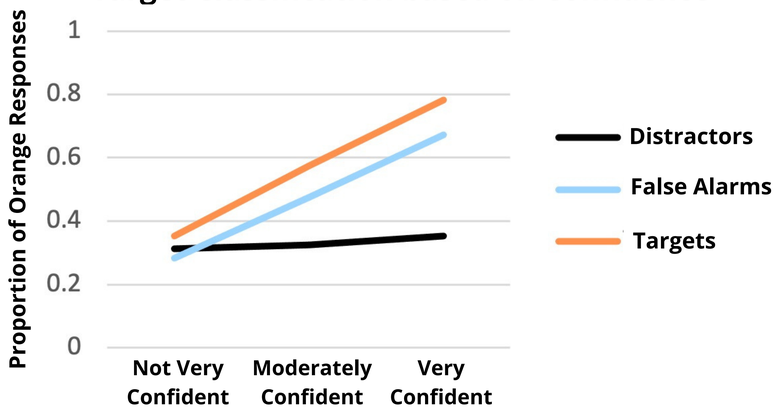
Corrected Source Memory Accuracy



To determine how the ABE impacted source memory, we looked at how the accuracy of color classifications differed for Targets and Distractors. When participants inaccurately identified new items as old, they were significantly more likely to say the word came with a black block, indicating a bias towards selecting black, $t(46) = 4.35$, $p < .001$. The corrected accuracy score takes into account that bias in order to isolate the actual differences in memory based on condition. We found that source memory for Targets was significantly better than that of distractors, $t(47) = 3.36$, $p < .001$. This means that, in addition to the ABE seen in Old/New classifications, source memory for Targets also benefited from the divided attention.

Results

Target Classification based on Confidence



To examine the effect of confidence on source memory decisions, we looked at the proportion of orange (Target) responses based on confidence in the Old/New judgment for the three item types (Distractors, Targets, and False alarms, which are new words incorrectly identified as old). Participants were mostly accurate in classifying Distractors as having been paired with a black block regardless of confidence, X^2 (2, N = 614) = 0.678, p = .713. However, both Targets and False Alarms show an upward trend; the more confident a participant was in their old classification, the more likely they were to report that item having been paired with an orange block. This was confirmed by significant Chi-Square Tests for both Targets and False Alarms, X^2 (2, N = 694) = 79.32, $p < .001$; X^2 (2, N = 813) = 49.26, $p < .001$. These results confirm our belief that the strength of a memory informs source memory decisions: the stronger your memory, the more likely you are to say the word had been paired with an orange block, while less confident memories lead to more black responses.

Future Studies

In order to understand how confidence impacts memory in other paradigms, we will repeat this experiment using a generation manipulation in place of divided attention. Having to generate a word (i.e., by having to unscramble the first two letters to identify the word) has been shown to provide a robust memory benefit, which will allow us to explore the role of confidence in stronger encoding mechanisms.

References

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