

MULTIPLE DETERMINANTS OF RECALL:

DOES THE INFLUENCE OF TEMPORAL CONTIGUITY ON RECALL DIMINISH WITH TIME?

Ayanfe Adebayo and Deborah Talmi
Department of Psychology, University of Cambridge

INTRODUCTION

In free recall tasks, it has been observed that after a participant recalls a stimulus, the next stimulus they are likely to recall is one they encoded immediately before or after. This effect, termed the temporal contiguity effect, is a signature of the influence of the temporal context of a stimulus on memory.

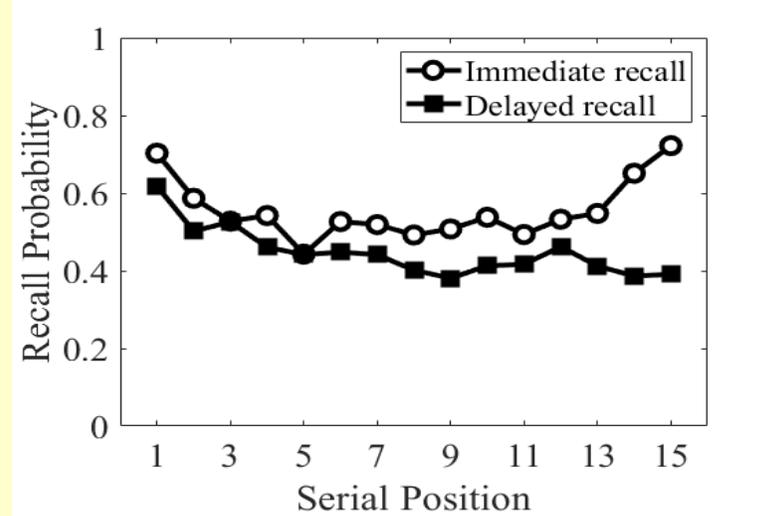
Previous experiments have observed the temporal congruity effect across a range of time scales. However, it is not known whether it remains constant across time. Indeed, there are suggestions that with the passage of time, the influence of temporal organisation on recall dwindles, while that of semantic organisation increases.

AIM

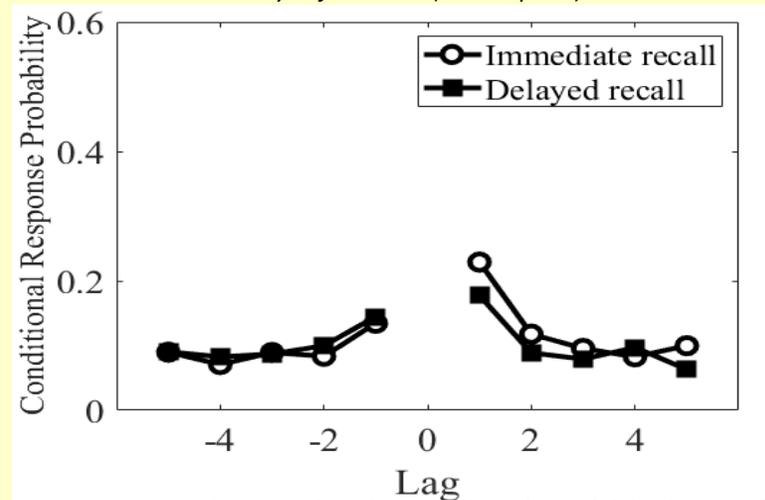
To test the possibility of the importance of temporal organisation reducing over time by comparing the temporal and semantic organisation of free recall in tests taken immediately after study, and those taken a few minutes later.

METHODOLOGY

25 participants (Ages 18-61) were verbally presented with 16 lists containing 15 semantically related words from a free word association database (Deyne et al., 2018). Half of the lists were recalled immediately while the other half were recalled at the end of the session. The participant's reliance on the temporal context during recall, was quantified by calculating the temporal congruity score in each condition and analysed using the Episodic Memory Behavioral Analysis in MATLAB (EMBAM) (Polyn et al., 2018).



Serial position curves for immediate free recall (circle) and delayed free recall (black square).



Lag-CRP curve for immediate free recall (circle) and delay free recall (black square).

RESULTS

Temporal congruity scores for immediate (0.5791) and delayed recall (0.5622) were calculated to be >chance. To test the study's main hypothesis, a paired-sample t-test was performed and found no significant difference between the scores; $t(25) = 1.275$, $p = 0.215$. The manipulation of time delay between word list presentation and recall was shown to have a weak effect on the temporal congruity score, Cohen's $d = 0.255$. A notable observation, during the experiment, was increased intrusion errors in delayed recall, which could suggest increased use of semantic context to aid delayed recall.

A semantic congruity effect was observed between both conditions: Immediate score (>chance) = 0.5861, Delayed score (>chance) = 0.5997. But they were not significantly different: $t(24) = 0.9$, $p = 0.3625$.

FUTURE DIRECTIONS

To further investigate, similar experiments should be performed with longer retention intervals.

CONCLUSION

We obtained evidence for temporal and semantic organisation effects of equal magnitude across conditions.

This study provides further evidence for the robustness of temporal contiguity effects across time scales and suggests that a short retention interval, between a few minutes to an hour, does not affect the memory's reliance on temporal context.

