

FORGETTING IN VISUOSPATIAL WORKING MEMORY INCREASES WITH MEMORY LOAD, RETENTION INTERVAL AND BINDING OF INFORMATION

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Introduction

The integration (binding) of basic visual and spatial characteristics of environmental objects and their storage in visuospatial working memory (VSWM) are fundamental to our interaction with the environment. However, VSWM has limitations on its capacity and information declines over time.

Objective

The aim of this study was to analyze the effect of memory load and retention time interval in the storage and maintenance of visual and spatial information, presented in isolation and in an integrated manner, in a visuospatial working memory task.

Procedure

We conducted an experiment where groups of participants ($n = 54$) memorized visual stimuli, spatial stimuli or visuo-spatial binding. Beside manipulating the type of memorized information, we also manipulated the memory load (2, 4 or 6 items) and the duration of the retention interval (2, 4 or 8 seconds) (figure 1). The independent variable collected was proportion of correct responses.

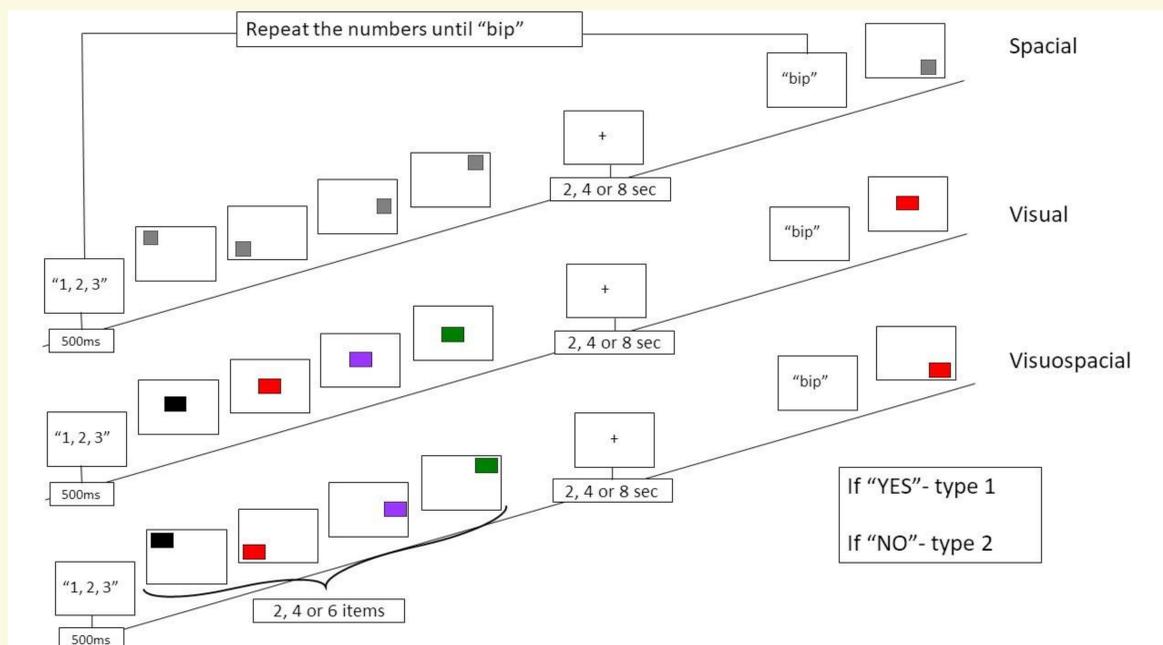


Figure 1: Sequence of events of a task by group of stimuli type. Each participant performed the tasks just in a group.

Results and Discussion

The results (figure 2) showed that the performance decreases as the retention interval increases, the number of elements increases or when information is integrated in VSWM. The VSWM is considering an adaptive value in humans and other primate species. For example, binding is an important process to combine different kinds of information about an event in a process (Schwartz & Evans, 2001). This process has a functional utility that are to an animal knows the food location. The integrated memory is present in some primates like African apes (Schwartz & Evans, 2001).

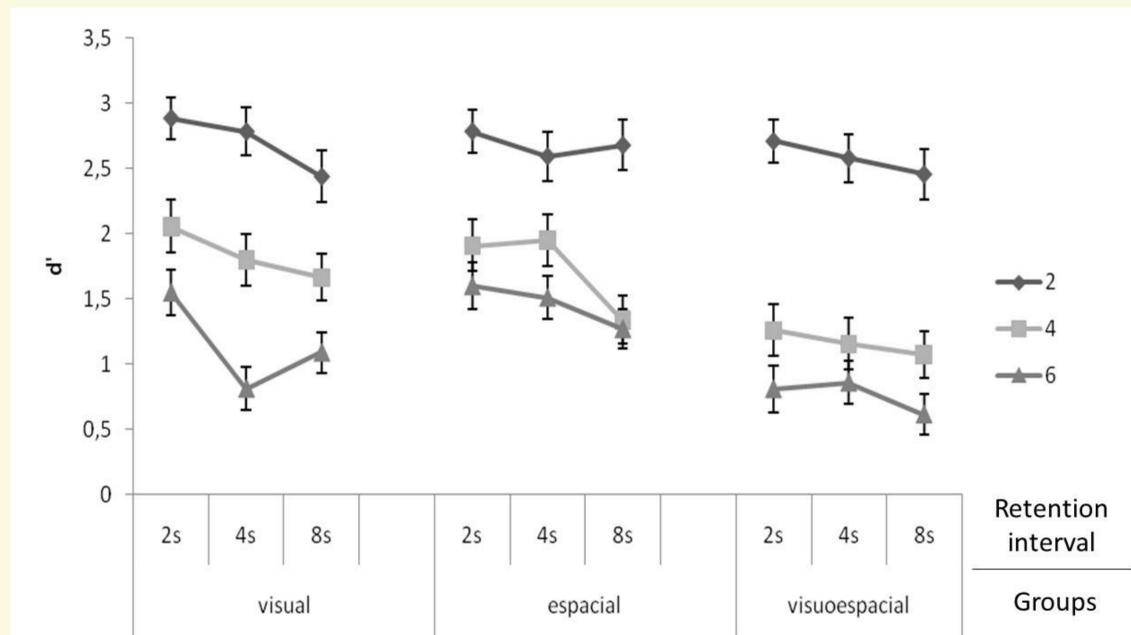


Fig. 2. The proportion of correct responses is in discrimination index (d'). The results of all groups is showed. The comparisons are in between groups ($F(2, 51) = 3,81$; $p = 0,03$; $\eta^2p = 0,13$), memory load ($F(4,102) = 183,53$; $p < 0,01$; $\eta^2p = 0,78$) and retention interval ($F(4,102) = 20,06$; $p < 0,01$; $\eta^2p = 0,28$).

References

Schwartz, BL, Evans, S. 2001. Episodic Memory in Primates. Am. J Prim. 55: 71-85.

