

Living without imagery: study of episodic associative memory strategies in aphantasia

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Introduction

- **Unitization** consists in encoding associations in episodic memory as one unique entity [1]
- It allows recognition to rely on **familiarity** (sense of knowing), instead of **recollection** (retrieval of the associated encoding context) that would otherwise be required for associative recognition [2]
- The **underlying mechanisms** of unitization are not understood yet.
- Some authors proposed that unitization requires **visual imagery** to integrate the different pieces of information before their **anchoring within semantic memory** [3].
- In this study, we tested this hypothesis in populations with vs. without visual imagery (aphantasia), using materials with vs. without semantic content

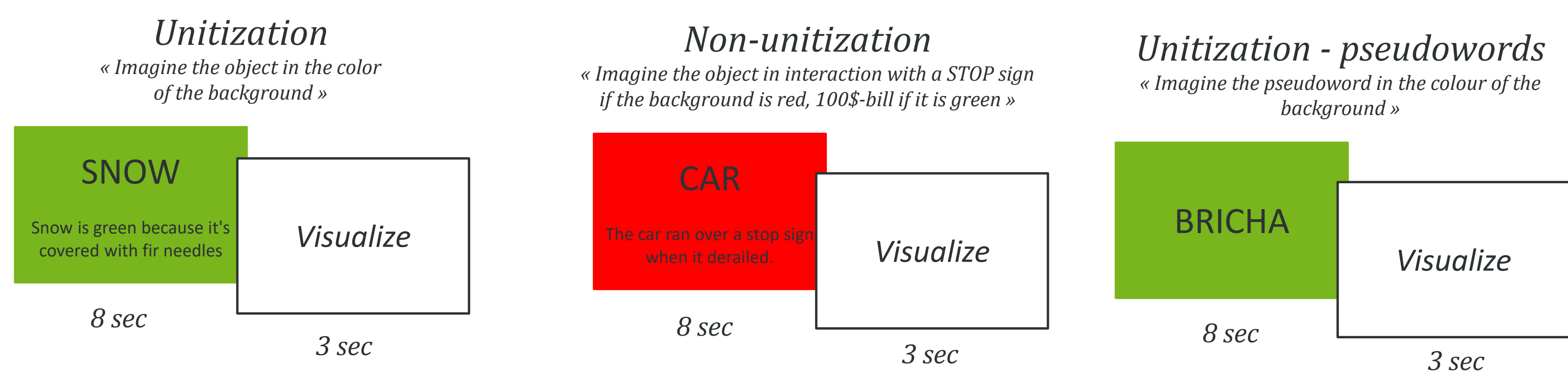
Methods

Materials and procedure

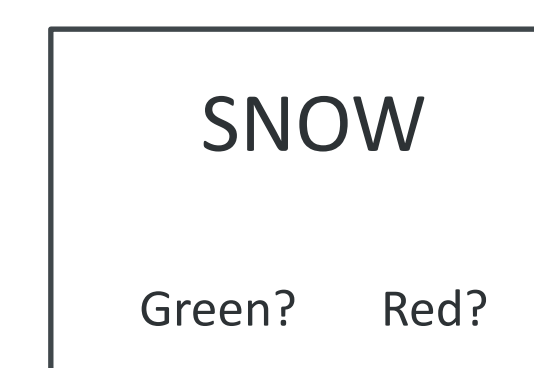
Participants

	Aphantasics (N=19)	Controls (N=35)
Age	31.47 (8.66)	31.57 (9.08)
Education (years)	17.05 (3.37)	17.31 (3.07)
VVIQ	20.74 (6.10)	64.60 (7.79)
Mill-Hill (/33)	26.47 (3.01)	26.20 (2.56)

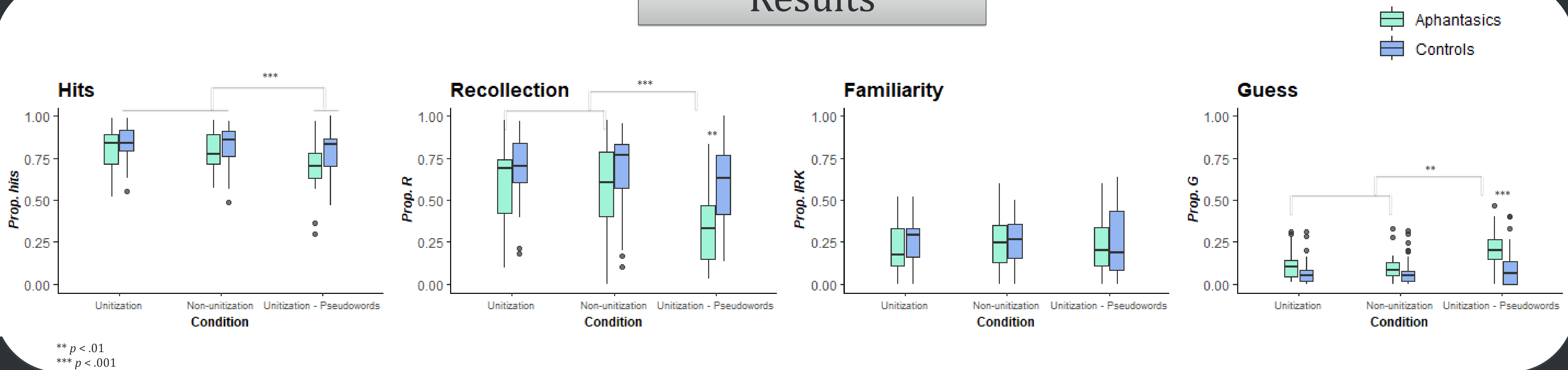
3 encoding conditions



Forced-choice recognition + Remember/Know/Guess



Results



Discussion

- Controls display similar strategies across the 3 tasks, with weaker performance for colour-pseudowords associations
- Aphantasics display **preserved overall performance**, while using **different strategies** than controls specifically for colour-pseudowords associations; i.e. where semantics cannot compensate for the absence of visual imagery
- For colour-pseudowords associations, aphantasics display **reduced recollection, preserved familiarity, and increased guessing**
- This suggests that visual imagery is not necessary for unitization, as long as semantic information is available; in the absence of semantic information, aphantasics seem to operate a switch in strategy, that does not prevent them from performing similar to controls
- Limitation: the absence of task effect in controls questions about whether unitization actually happened

References

- [1] Graf, P., & Schacter, D. L. (1989). Unitization and Grouping Mediate Dissociations in Memory for New Associations. 11.
- [2] Yonelinas, A. P. (2002). The Nature of Recollection and Familiarity : A Review of 30 Years of Research. Journal of Memory and Language, 46(3), 441-517
- [3] Ryan, J. D., Moses, S. N., Barense, M., & Rosenbaum, R. S. (2013). Intact Learning of New Relations in Amnesia as Achieved through Unitization. Journal of Neuroscience, 33(23), 9601-9613

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