

Kowialiewski, Benjamin<sup>1,2</sup>, Van Akelyen, Dylan<sup>1</sup>, & Majerus, Steve<sup>1,2</sup>

<sup>1</sup>University of Liège, Liège, Belgium; <sup>2</sup>Fund for Scientific Research, F.R.S.-FNRS, Belgium

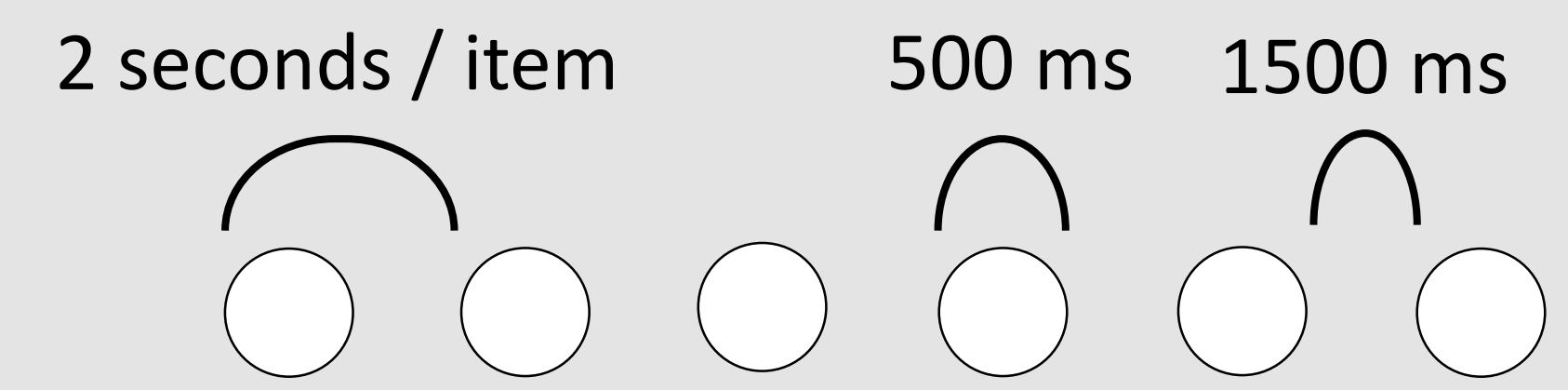
## Introduction & aim

**Verbal working memory**, our ability to temporarily maintain verbal information over short periods, is known to be influenced by several **semantic factors**. This is the case as regards the **imageability/concreteness dimension**, whereby high imageability or concrete words are better recalled as compared to low imageability or abstract words. The nature of this effect however still raises many questions (Campoy et al., 2015, Chubala et al., 2018). In this study, we assessed the possibility that this effect is due to a form of **semantic elaboration** that participants implement during the inter-item interval at the moment of encoding. To do this, our participants had to perform a visuo-spatial or a semantic interfering tasks during encoding of high and low imageability words in WM.

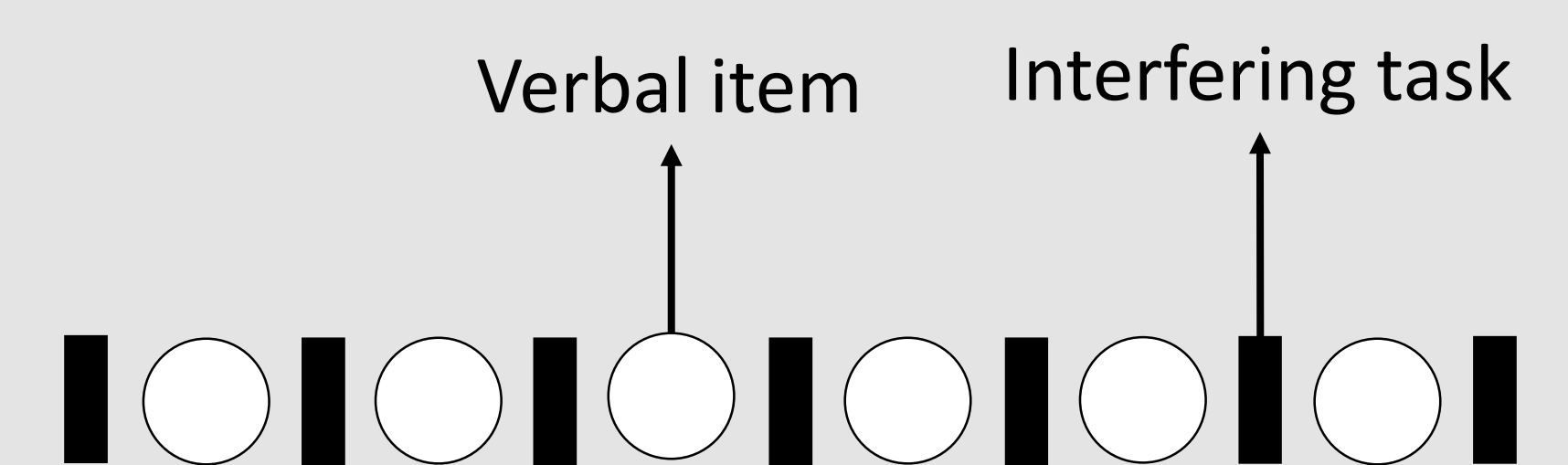
## Method

**General procedure.** Participants (N = 33 and 27 for Experiments 1 and 2, respectively) had to encode lists composed of 6 items presented auditorily, with each item being presented at a pace of **2 seconds by item**. After list presentation, participants were invited to directly **recall** the items in the order in which they were presented. Half the lists were composed of **high imageability** words, while the other half were composed of **low imageability** words.

**Baseline condition:** Participants were invited to encode the items.



**Interference condition:** Participants were invited to perform an **interfering task** between the inter-stimulus interval:

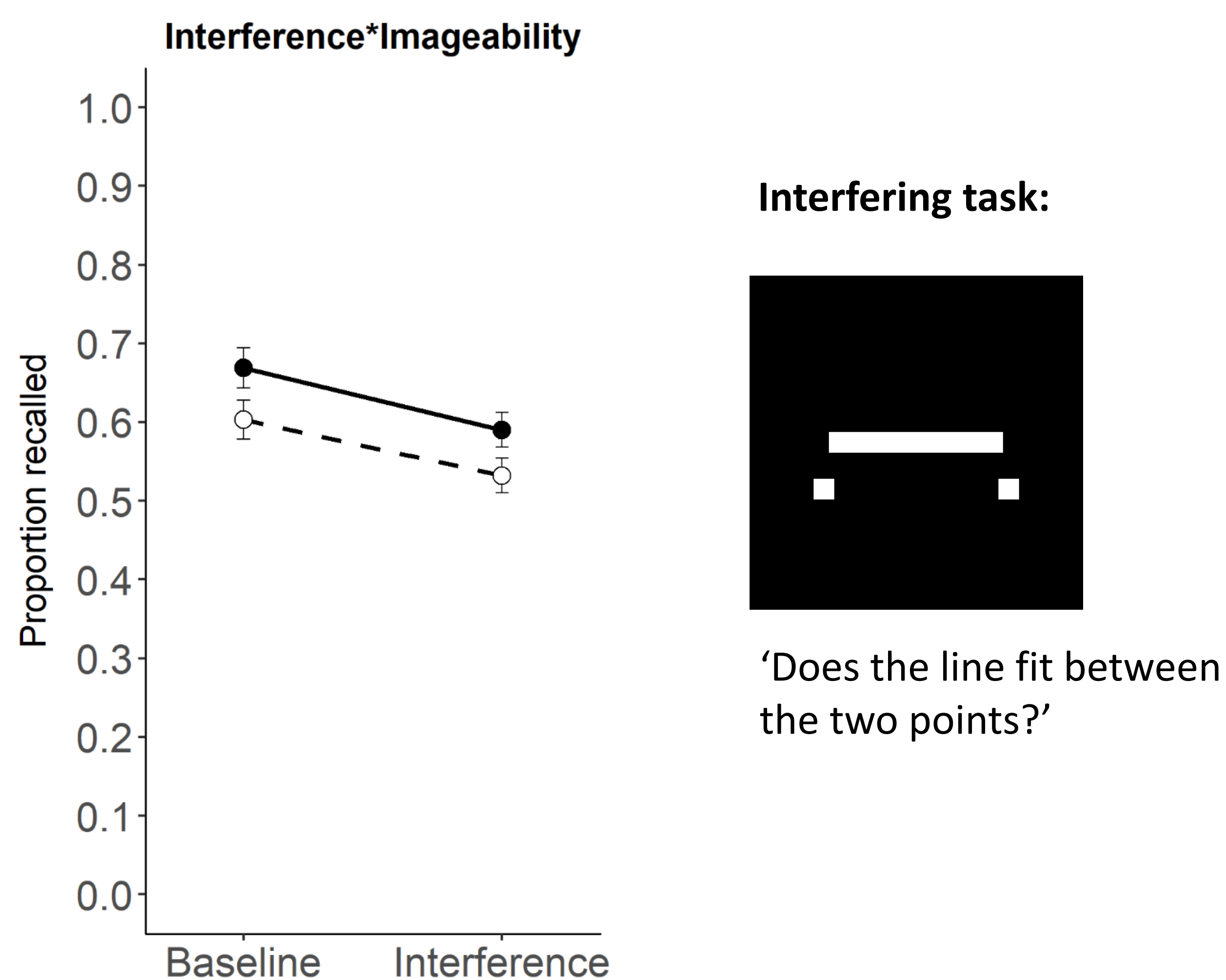


- **Experiment 1:** visuo-spatial judgement
- **Experiment 2:** semantic categorization

## Results

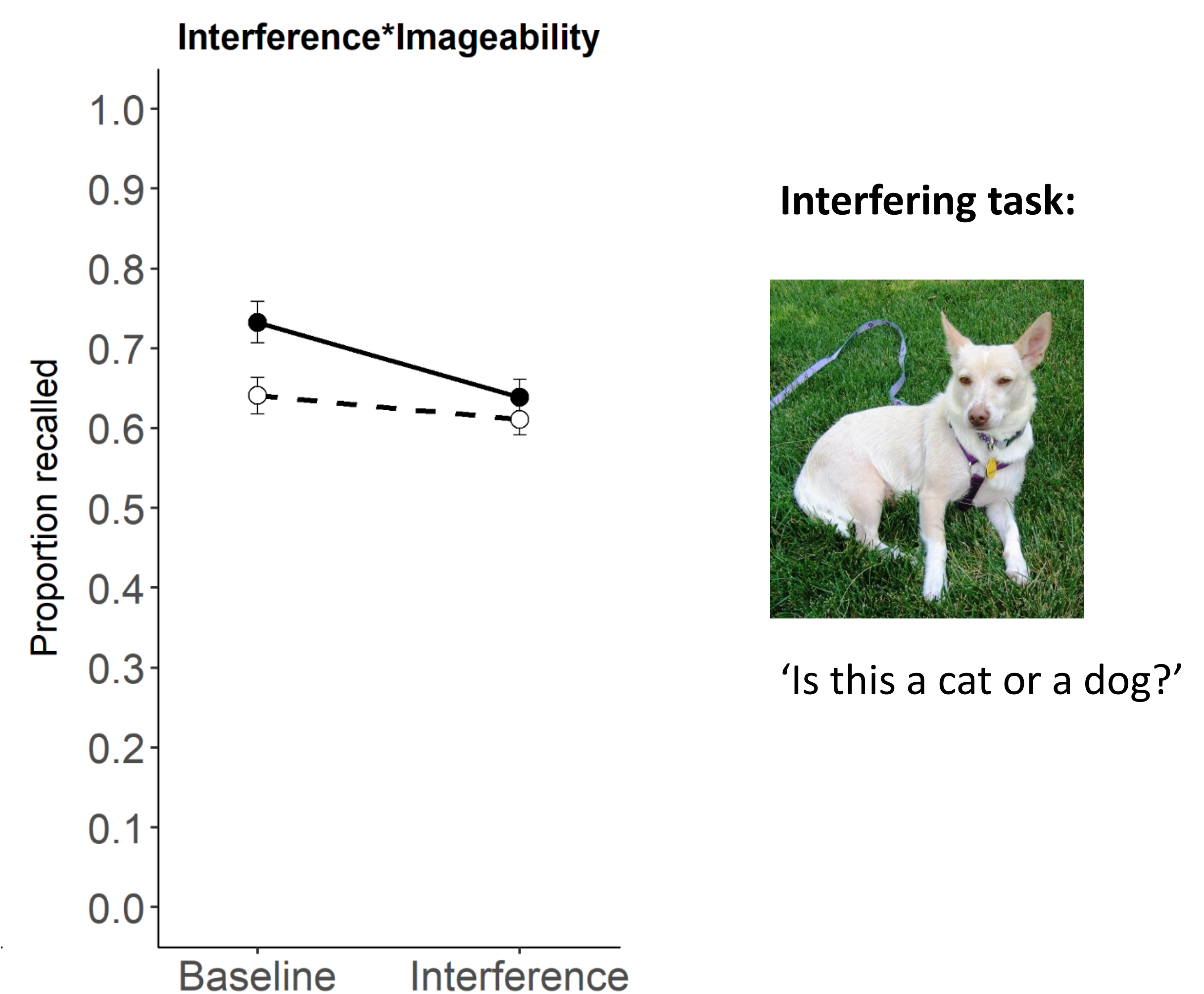
Recall performance

### Experiment 1 – Visuo-spatial interference



Imageability:  $BF_{10} > 100$   
Interference:  $BF_{10} > 100$   
Interaction:  $BF_{01} = 8.645$

### Experiment 2 – Semantic interference



Imageability:  $BF_{10} > 100$   
Interference:  $BF_{10} > 100$   
Interaction:  $BF_{10} = 7.974$

## Discussion & Conclusion

- **Experiment 1** showed that the **visuo-spatial** interfering task did **not** reduce the magnitude of the imageability effect, as shown by the **absence of interaction** between imageability and interference.
- **Experiment 2** showed that the **semantic categorization** interfering task did **reduce** the magnitude of the imageability effect, as shown by the **presence of interaction**.

Recent studies have shown that the imageability effect disappears when strategic processes are maximally prevented (Kowialiewski & Majerus, 2018). The results of this study refine these interpretation, and suggest that the imageability effect is the result of **semantic elaborative processes** that participants perform during the inter-item interval of working memory processing. Another possibility is that the semantic categorization task more strongly **interfered** with the richer semantic content of high imageability words.

## References

- Chubala, C., Surprenant, A. M., Neath, I., & Quinlan, P. T. (2018). Does dynamic visual noise eliminate the concreteness effect in working memory? *Journal of Memory and Language*, 102(May), 97–114.
- Campoy, G., Castellà, J., Provencio, V., Hitch, G. J., & Baddeley, A. D. (2015). Automatic semantic encoding in verbal short-term memory: Evidence from the concreteness effect. *The Quarterly Journal of Experimental Psychology*, 68(4), 759–778.
- Kowialiewski, B., & Majerus, S. (2018). The non-strategic nature of linguistic long-term memory effects in verbal short-term memory. *Journal of Memory and Language*, 101, 64–83.

## Contact

Kowialiewski Benjamin    bkowialiewski@ulg.ac.be  
PhD Student F.R.S-FNRS    Tél: +32(0)4 366 39 95  
University of Liège