

The linguistic foundations of verbal working memory: further evidence from syntactic knowledge effects

XIAO Hong^a, QUERELLA Pauline^a, ATTOUT Lucie^{a, b, c}, SCHWEPPE Judith^d, MAJERUS Steve^a

^a Psychology & Cognitive Neuroscience Research Unit, University of Liège, Belgium

^b Epsilon, Université Paul Valéry 3 de Montpellier, France

^c National Fund for Scientific Research - FNRS, Belgium

^d Universität Passau, Germany

✉ hong.xiao@uliege.be

INTRODUCTION

Studies highlight the interactions between verbal WM and language knowledge, particularly at phonological and lexico-semantic levels, and regarding recall of item rather than serial order information in WM.

The influence of syntactic knowledge on verbal WM has been investigated to a much lesser extent but could be theoretically informative, as syntactic knowledge is, by definition, sequential knowledge that should also impact the maintenance of serial order information in WM.

This study examines the impact of adjective-noun positional syntactic knowledge on verbal WM.

MATERIALS & METHOD

Participants: 93 native French speakers

Materials:

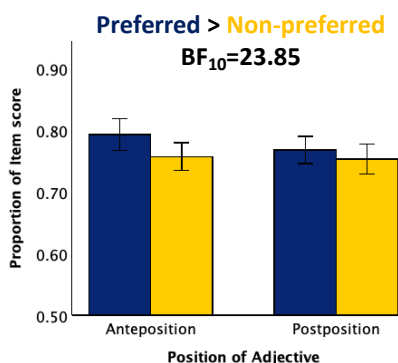
	adjective-noun	noun-adjective
preferred order	(e.g. grand – titane)	(e.g. orteil – agressif)
non-preferred order	(e.g. titane – grand)	(e.g. agressif – orteil)

Immediate serial recall task: 32 trials of 6-word lists containing 3 adjective-noun or noun-adjective pairs in mixing order (16 lists with preferred-order pairs and 16 lists with non-preferred-order pairs).

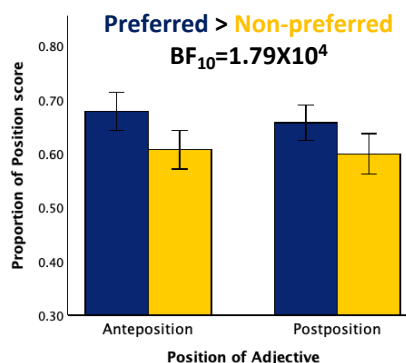


RESULTS

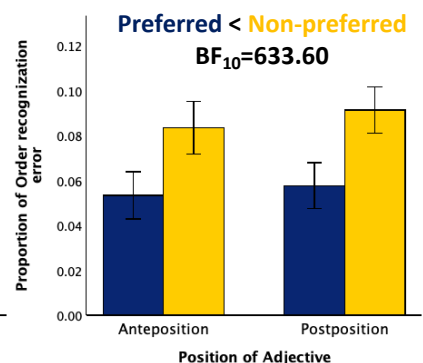
ITEM SCORE



POSITION SCORE



ORDER ERRORS



CONCLUSION

We observed an impact of syntactic regularity on recall performance for both item and order aspects of verbal WM.

These results support the pivotal role of syntactic knowledge in WM for serial order, and highlight the strong dependency of verbal WM on linguistic structures.

REFERENCES

Querella, P., & Majerus, S. (2023). Sequential syntactic knowledge supports item but not order recall in verbal working memory. *Memory & Cognition*, 1-25.

Schwepe, J., Schütte, F., Machleb, F., & Hellfritsch, M. (2022). Syntax, morphosyntax, and serial recall: How language supports short-term memory. *Memory & Cognition*, 50(1), 174-191

Perham, N., Marsh, J. E., & Jones, D. M. (2009). Syntax and Serial Recall: How Language Supports Short-Term Memory for Order. *Quarterly Journal of Experimental Psychology*, 62(7), 1285-1293.