Does Semantic Knowledge Influence Serial Order Processing In Short-term Memory?

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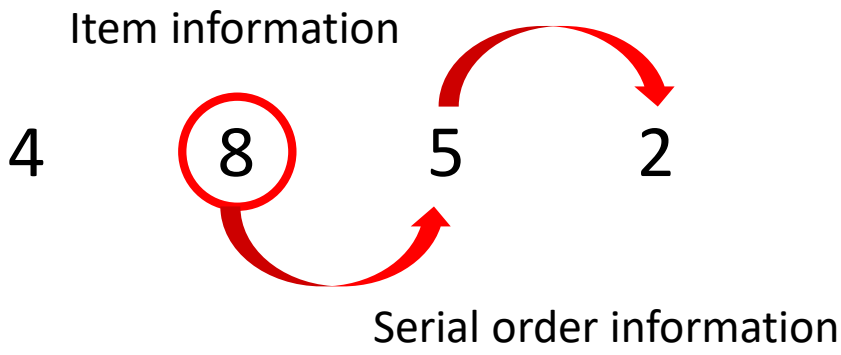
Introduction

Verbal short-term memory: temporary storage of verbal information

« Recall »

Introduction



Introduction

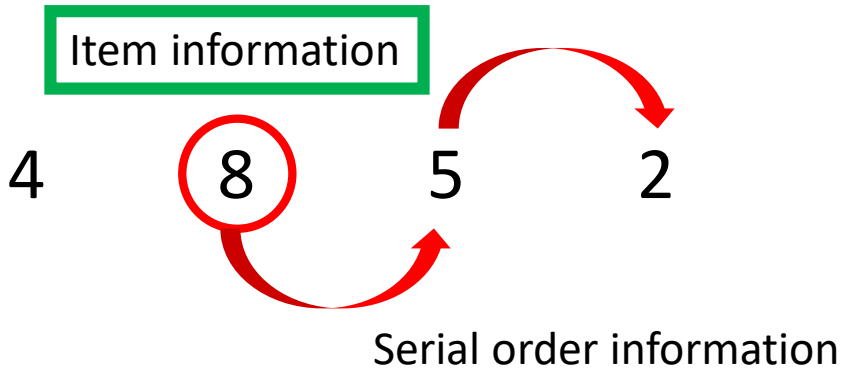
Linguistic knowledge stored in long-term memory influence verbal STM

Ex:

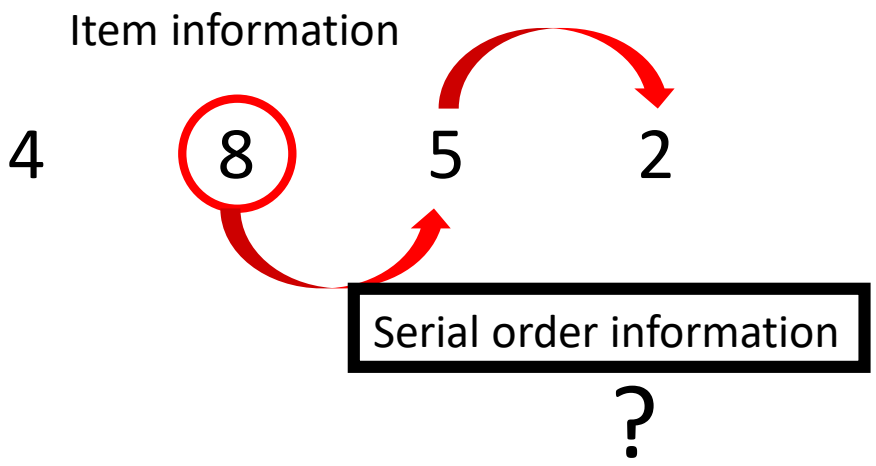
Words vs. Nonwords

Semantically related vs. unrelated words

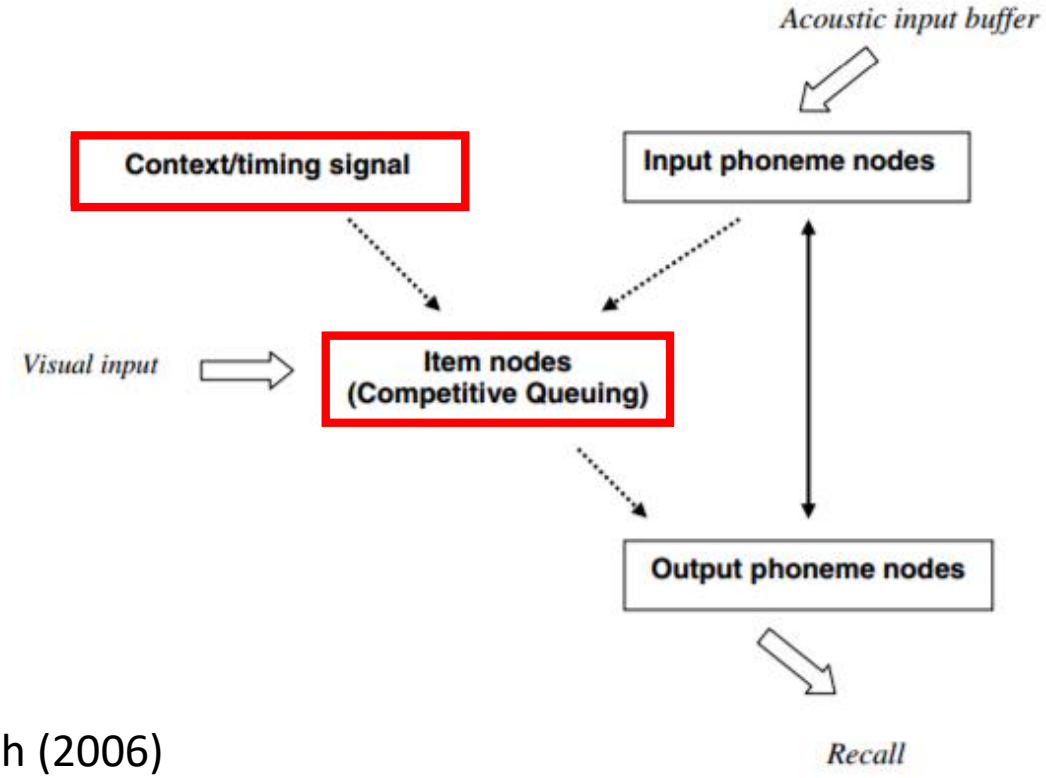
Introduction



Introduction

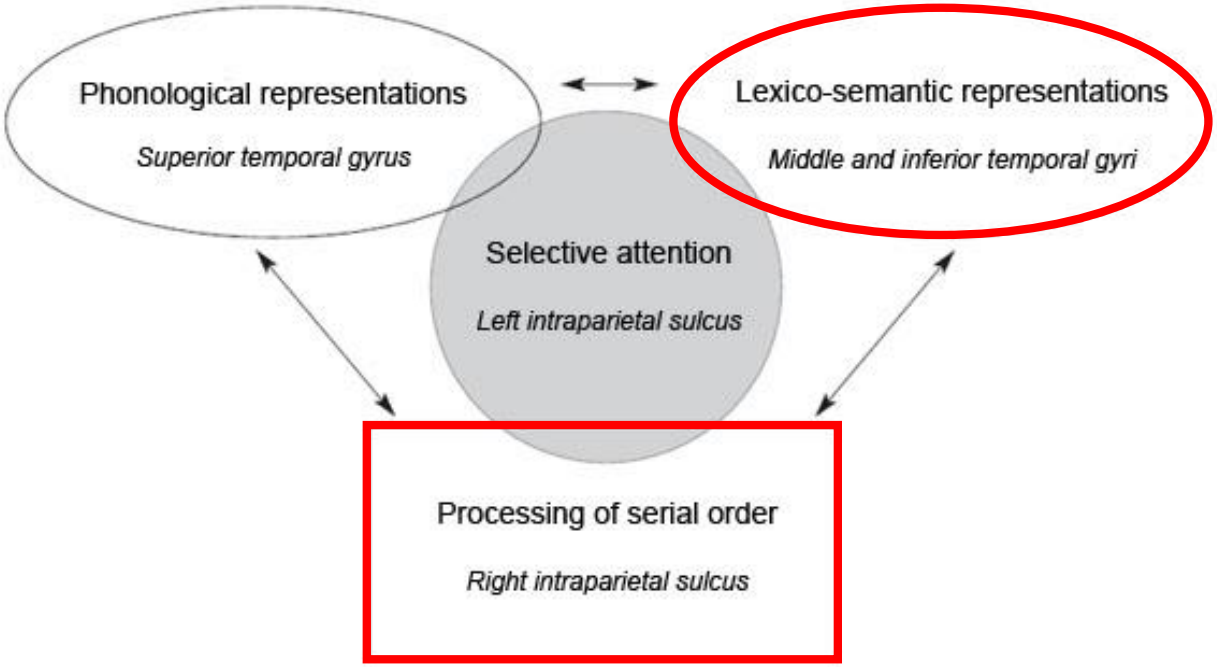


Introduction



Burgess & Hitch (2006)

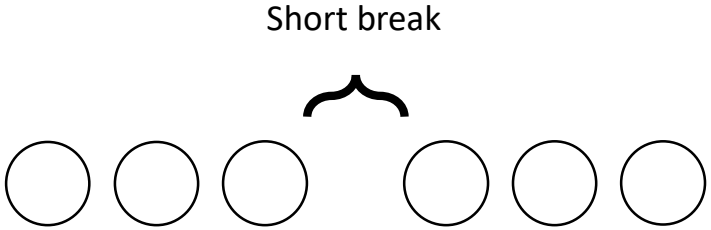
Introduction



Majerus (2013)

Introduction

Temporal grouping

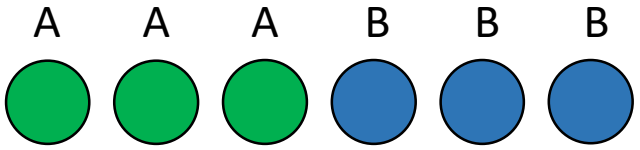


There usually is a recall advantage for temporally grouped sequences.

Both for item and serial order information.

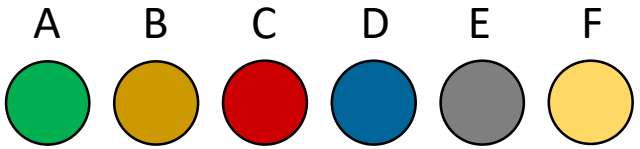
Semantic grouping

Related condition



Ex: leaf – tree – branch – arm – leg – hand

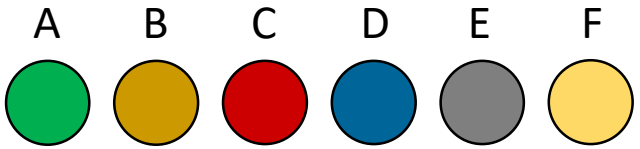
Unrelated condition



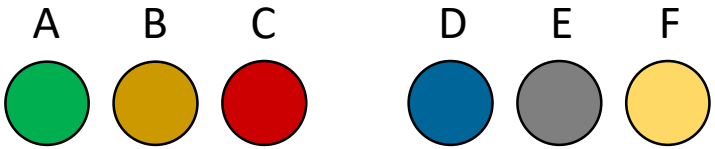
Ex: lake – hand – road – flute – mask – dress

Procedure

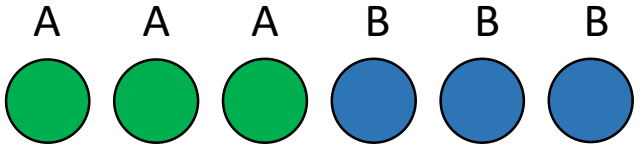
Unrelated – Ungrouped



Unrelated – Grouped



Related - Ungrouped

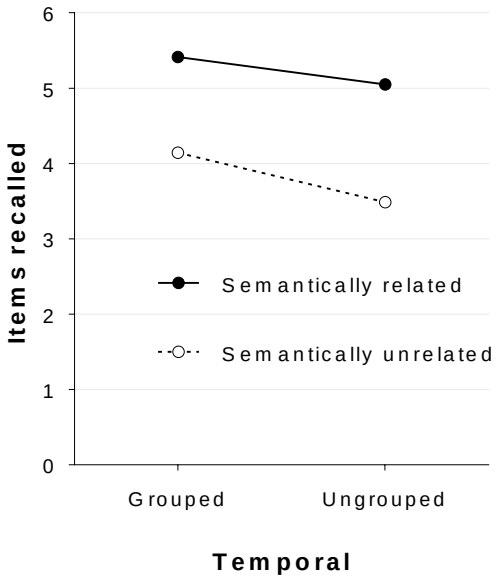


Related - Grouped

Results

N = 39

Item analysis

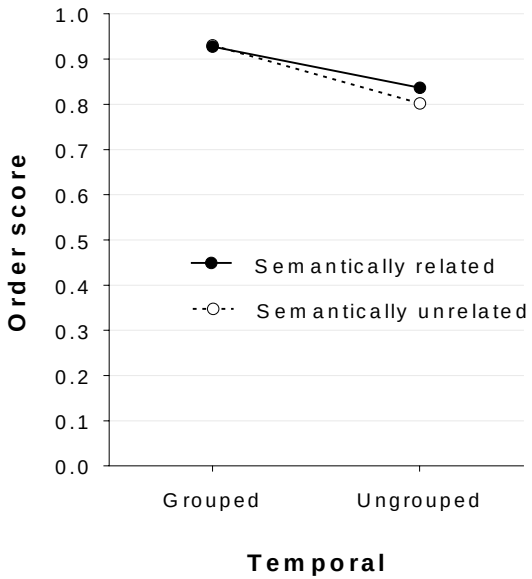


Temporal grouping:
$BF_{10} > 100$, $\eta^2 = .737$
Semantic grouping:
$BF_{10} > 100$, $\eta^2 = .932$
Temporal * Semantic:
$BF_{10} = 18.46$, $\eta^2 = .159$

Results

N = 39

Order analysis



Temporal grouping:
$BF_{10} > 100$, $\eta^2 = .696$
Semantic grouping:
$BF_{01} = 1.17$, $\eta^2 = .077$
Temporal * Semantic:
$BF_{10} = 1.7$, $\eta^2 = .135$

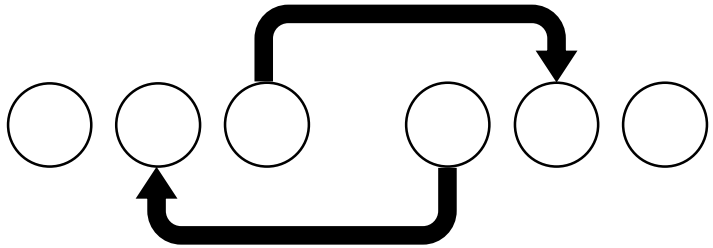
Results

Semantic grouping seems to have no impact on the proportion of order errors

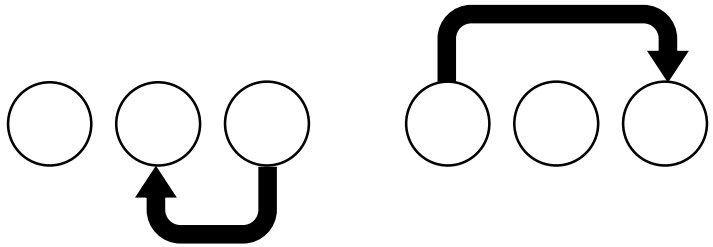
But: more fine-grained analysis also exist.

Results

Between-group transpositions

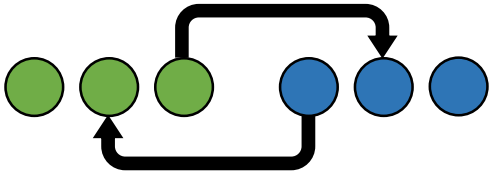


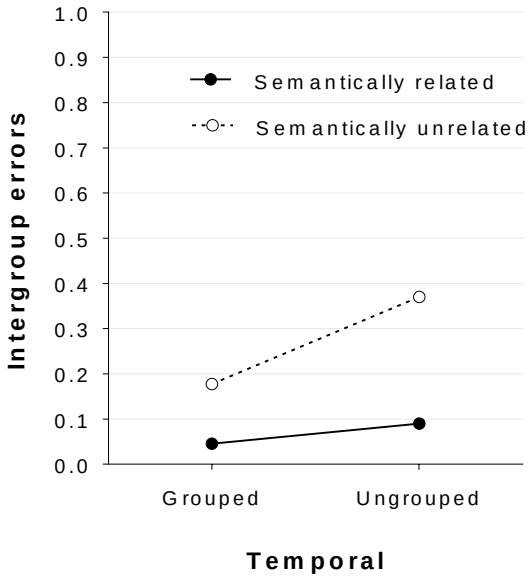
Within-group transpositions



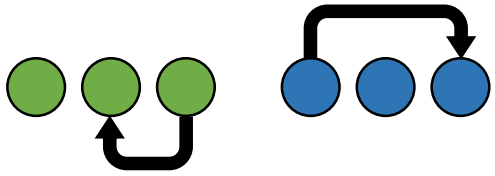
Results

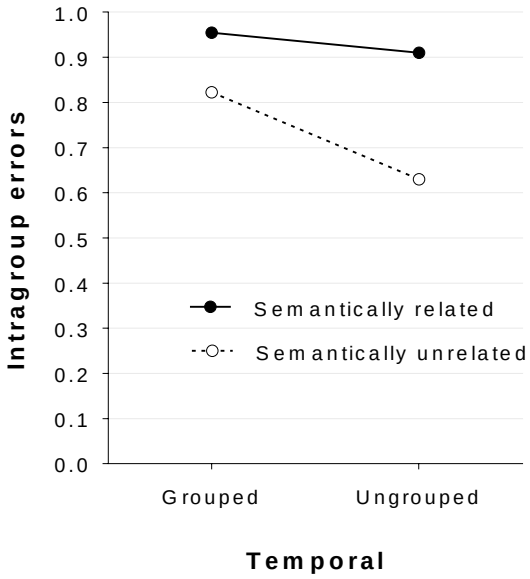
Between-group transpositions





Within-group transpositions



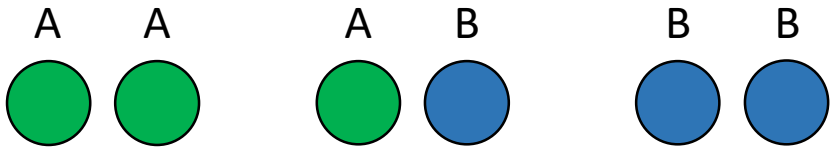


$N = 39$

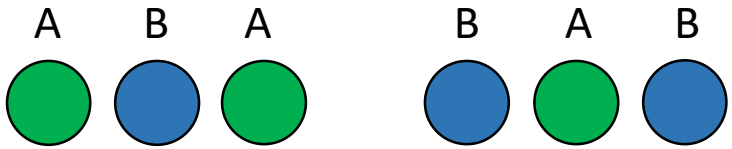
Temporal grouping:
$BF_{10} > 100$, $\eta^2 = .270$
Semantic grouping:
$BF_{10} > 100$, $\eta^2 = .681$
Temporal * Semantic:
$BF_{10} > 100$, $\eta^2 = .242$

Results

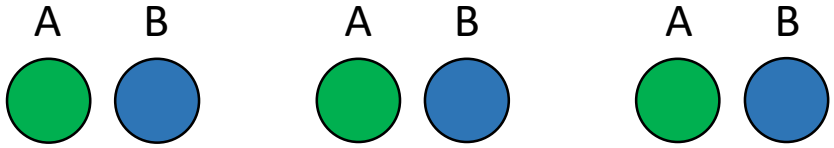
Experiment 2



Experiment 3



Experiment 4



Discussion/Conclusion

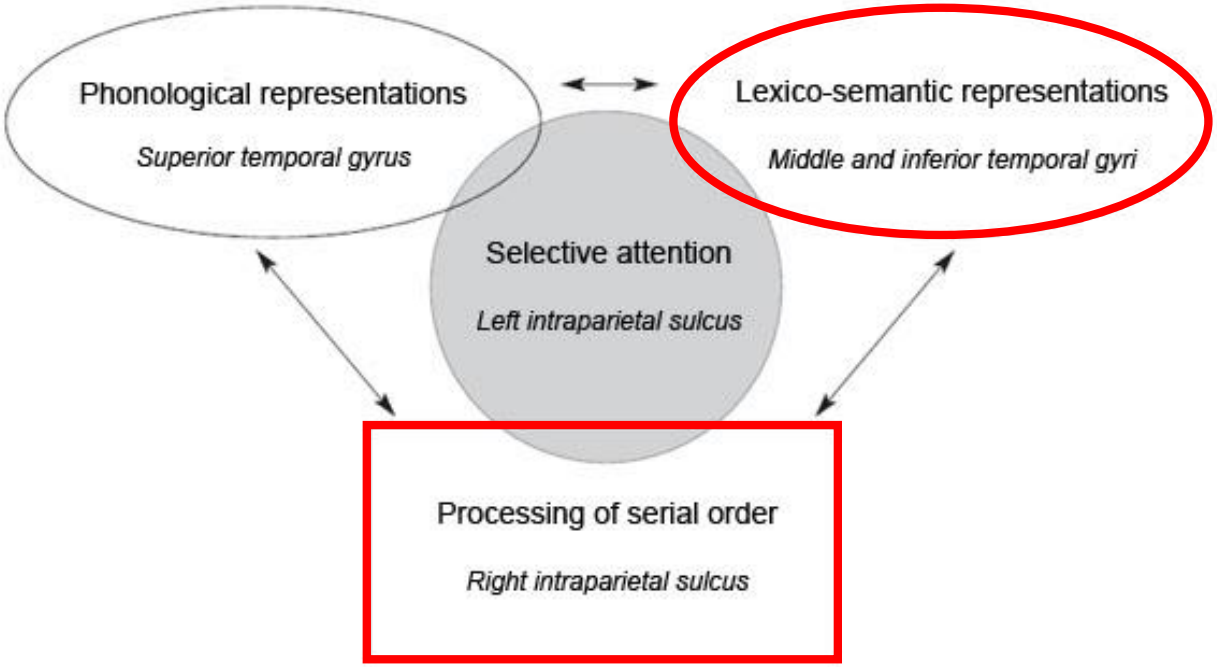
Our results support recent evidence showing that serial order processing may partially be coded through semantic knowledge

Acheson, MacDonald & Postle (2011)

Poirier, Saint-aubin, Mair, Tehan, Tolan (2015)

Ginsburg, Archambeau, van Dijck, Chetail, & Gevers (2017)

Discussion/Conclusion

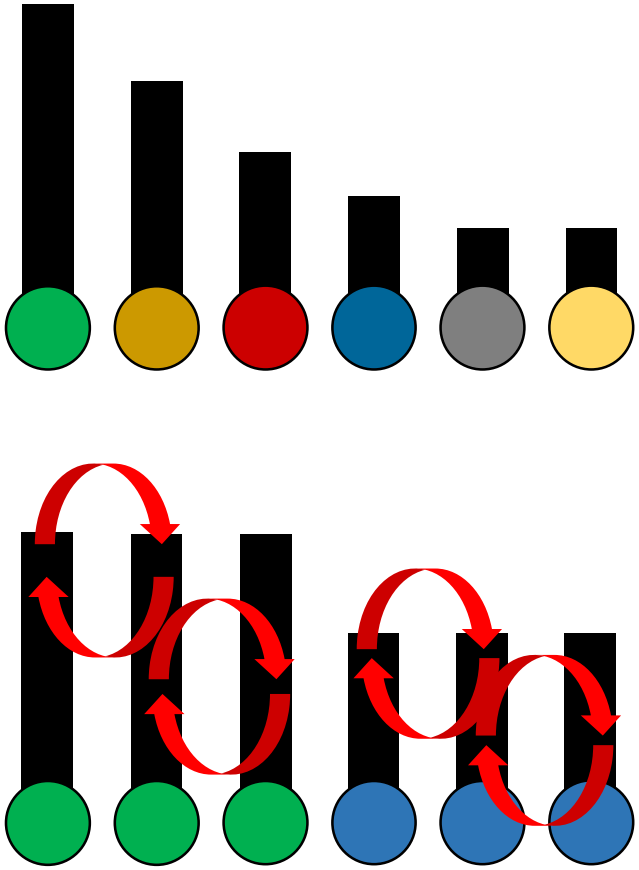


Majerus (2013)

Discussion/Conclusion

What is the exact nature of these interactions?

Discussion/Conclusion



Page & Norris (1998)

Poirier, Saint-aubin, Mair, Tehan, Tolan (2015)

Thank you for your attention