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How do articulatory rehearsal and attentional refreshing interact with phonological similarity in the complex span paradigm?

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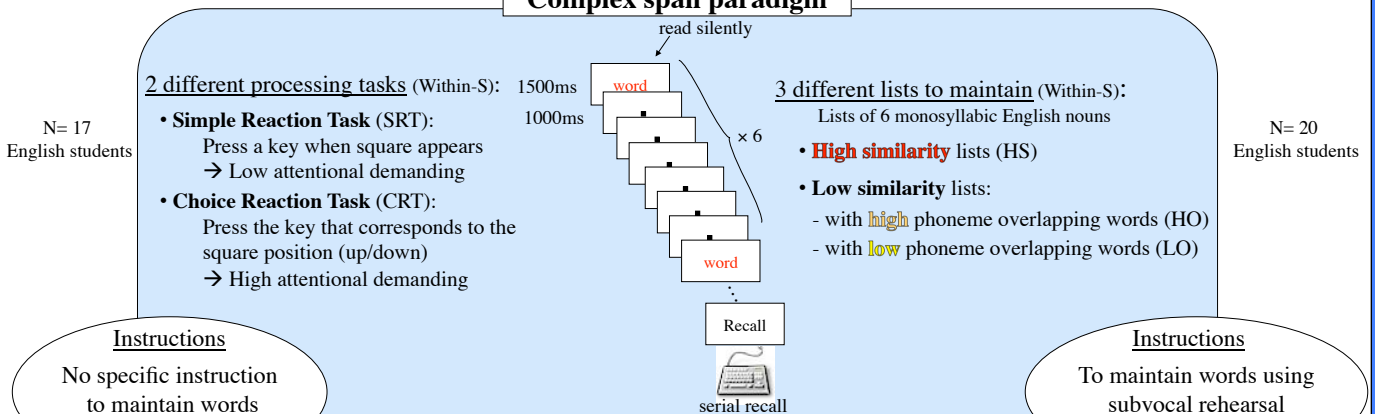
Different accounts of decay and maintenance of verbal information in working memory

	Phonological Loop (Baddeley, 1986)	Time-Based Resource-Sharing model (Barrouillet et al, 2004)	Interference model (Oberauer & Kliegl, 2006)
	<ul style="list-style-type: none"> time related decay articulatory rehearsal 	<ul style="list-style-type: none"> time related decay attentional refreshing 	<ul style="list-style-type: none"> feature overwriting
	How to account for phonological similarity effect: Articulatory Rehearsal or Feature Overwriting? How to account for maintenance: Articulatory Rehearsal or Attentional Refreshing?		
	Aim of the study is to explore the impact of attention demand on phonological similarity effect		
Phonological similarity	Effect	???	Effect
Feature overlap	No effect	???	Effect
Attention load	No effect	Effect	No effect

Exp 1

Exp 2

Complex span paradigm



Instructions

No specific instruction to maintain words
(No Instruction)

Instructions

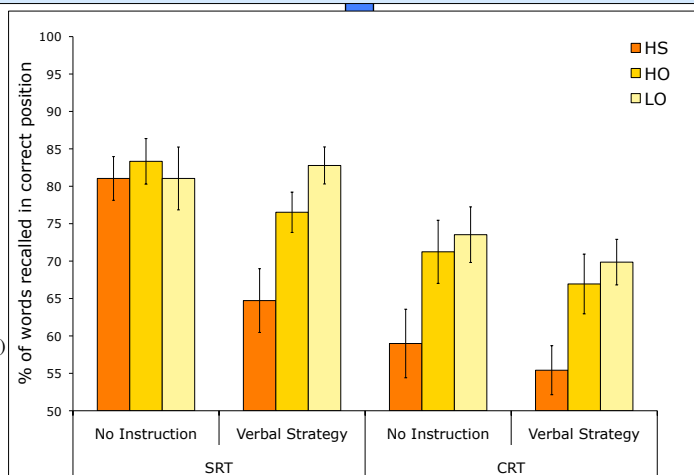
To maintain words using subvocal rehearsal
(Verbal Strategy)

Results:

Task effect ($p < .001$):
SRT > CRT

Similarity effect ($p < .05$):
HS < HO = LO

Interaction Task x Similarity ($p = .05$)
 In SRT → No similarity effect
 In CRT → Similarity effect ($p < .01$)



SRT

- Marginal effect of Instruction ($p < .07$)
 - Interaction Instruction x Similarity ($p < .01$)

CRT

- No effect of Instruction ($p < .38$)
 - No interaction Instruction x Similarity ($p = .99$)

Results:

Task effect ($p < .001$):
SRT > CRT

Similarity effect ($p < .001$):
 HS < HO < LO
 HO < LO only for SRT

No interaction Task x Similarity
($p = .73$)

Conclusion

- Effect of similarity as predicted by phonological loop model and interference model
- Effect of feature overlapping only with rehearsal instruction and low attentional demanding processing task → feature overwriting involves when both articulatory rehearsal and attentional refreshing are used simultaneously?
- Effect of attentional load as predicted by TBRS

Strategy used for maintenance

	No articulatory constraint	Articulatory constraint
SRT low attentional demand	Attentional Refreshing	Articulatory Rehearsal (+ attentional refreshing?)
CRT high attentional demand	Articulatory Rehearsal	Articulatory Rehearsal