

Removal of Information from Working Memory is Not Related to Inhibition

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VIRTUAL PSYCHONOMICS

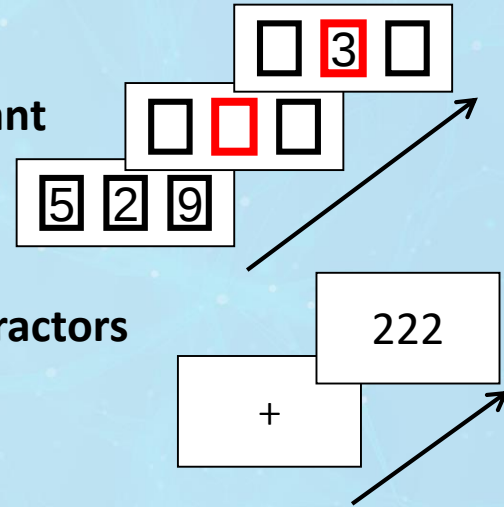
Two interference-control processes in working memory (WM)

- **Removal**

= an active, item-wise process that **removes no-longer relevant information** from WM (e.g., Ecker et al., 2014, J Mem Lang)

- **Inhibition**

= an executive process that **suppresses the activation of distractors** against competing, goal-relevant representations (e.g., Miyake & Friedman, 2012, Curr Dir Psychol Sci)



⇒ Do **removal** and **inhibition** represent the **same cognitive construct**?



Tasks: Reliability & Pearson's correlations

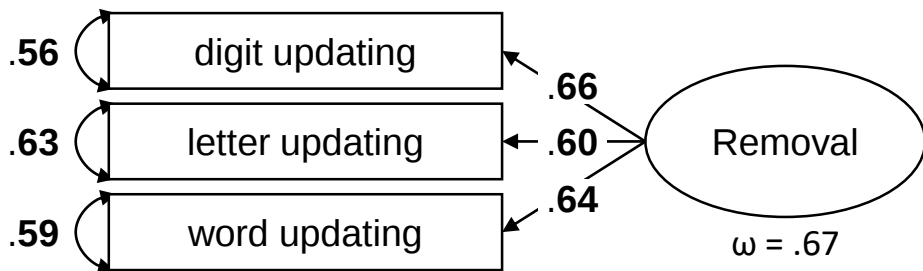
Construct	Tasks	1.	2.	3.	4.	5.	6.	7.	8.	9.
Removal	1. Digit updating	(.69)								
	2. Letter updating	.40	(.68)							
	3. Word updating	.43	.39	(.58)						
Inhibition	4. Number Stroop	.16	.15	.12	(.10)					
	5. Arrow flanker	-.03	-.06	.10	.08	(.66)				
	6. Local	-.11	-.22	.18	-.10	-.05	(.48)			
	7. Simon	.03	.13	.03	.01	.04	-.17	(.73)		
	8. Negative compatibility	.12	-.01	.03	.03	-.02	.08	.03	(.56)	
	9. Antisaccade	.04	.10	.05	.08	.07	-.01	.05	.15	(.92)

 $BF_{10} > 3$
 $BF_{01} > 3$

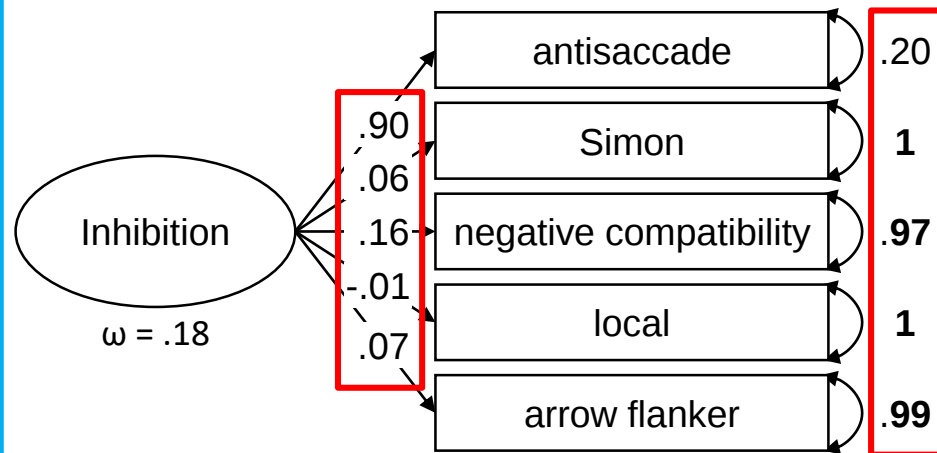
(Sample: 110 young adults; split-half reliability in parentheses; bold = $p < .05$)



Confirmatory factor analysis



⇒ **A coherent factor of removal!**

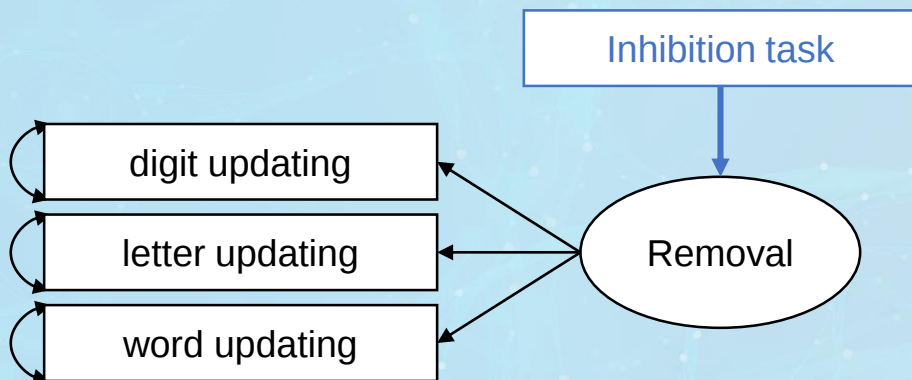


⇒ **No coherent factor of inhibition!**

(bold = $p < .05$)



Each inhibition task predicts the removal factor



Inhibition task	Model fit	Regression	Result
Arrow Flanker	bad	-	✖
Local	bad	-	✖
Simon	good	.09	✖
Negative comp.	good	.09	✖
Antisaccade	good	.10	✖

(bold = $p < .05$; green = $BF_{10} > 3$; red = $BF_{01} > 3$)



Take-Home Message

- **Removal** is not an **inhibitory process**.
⇒ **Removal** should be rather conceptualized as the “**unbinding**” of a **WM item from the context in which it occurred**.

Preprint on PsyArXiv:

Rey-Mermet, A., Singh, K., Gignac, G. E., Brydges, C., & Ecker, U. K. H. (2020). *Removal of information from working memory is not related to inhibition*. PsyArXiv. <https://doi.org/10.31234/osf.io/hdks9>

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Poster session: 11/19/2020 | 5:30 PM - 7:30 PM



Thank you for your attention!

