

The interplay between the memory reactivation of items and task rules

Yağmur Damla Şentürk¹, Nursima Ünver^{1,2}, Can Demircan¹, Tobias Egner³, & Eren Günseli¹



¹Department of Psychology, Sabancı University, Istanbul, Turkey

²Department of Psychology, University of Toronto, Ontario, Canada

³Department of Psychology & Neuroscience, Duke University, Durham, NC, USA

Sabancı Üniversitesi

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Background

Representations repeatedly stored in working memory (WM) are handed off to long-term memory (LTM)

(Atkinson & Shiffrin, 1986; Carlisle et al., 2011; Günseli et al., 2014a,b).

However, in these studies, the same target was used for the same task.

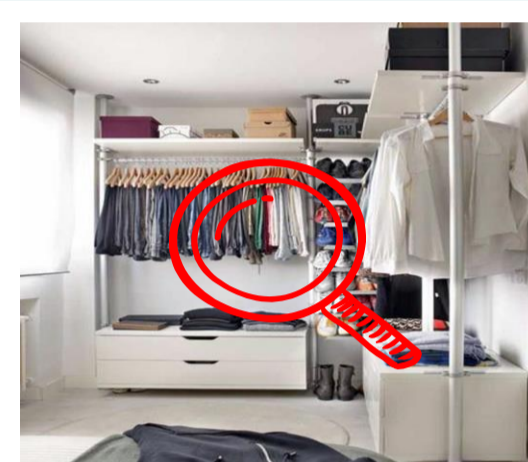
In daily life, we sometimes use the same target for a different task.

What is the impact of switching to a new task rule on the storage of task-relevant items available in long-term memory?

Target
(Declarative WM)



Task rule
(Procedural WM)



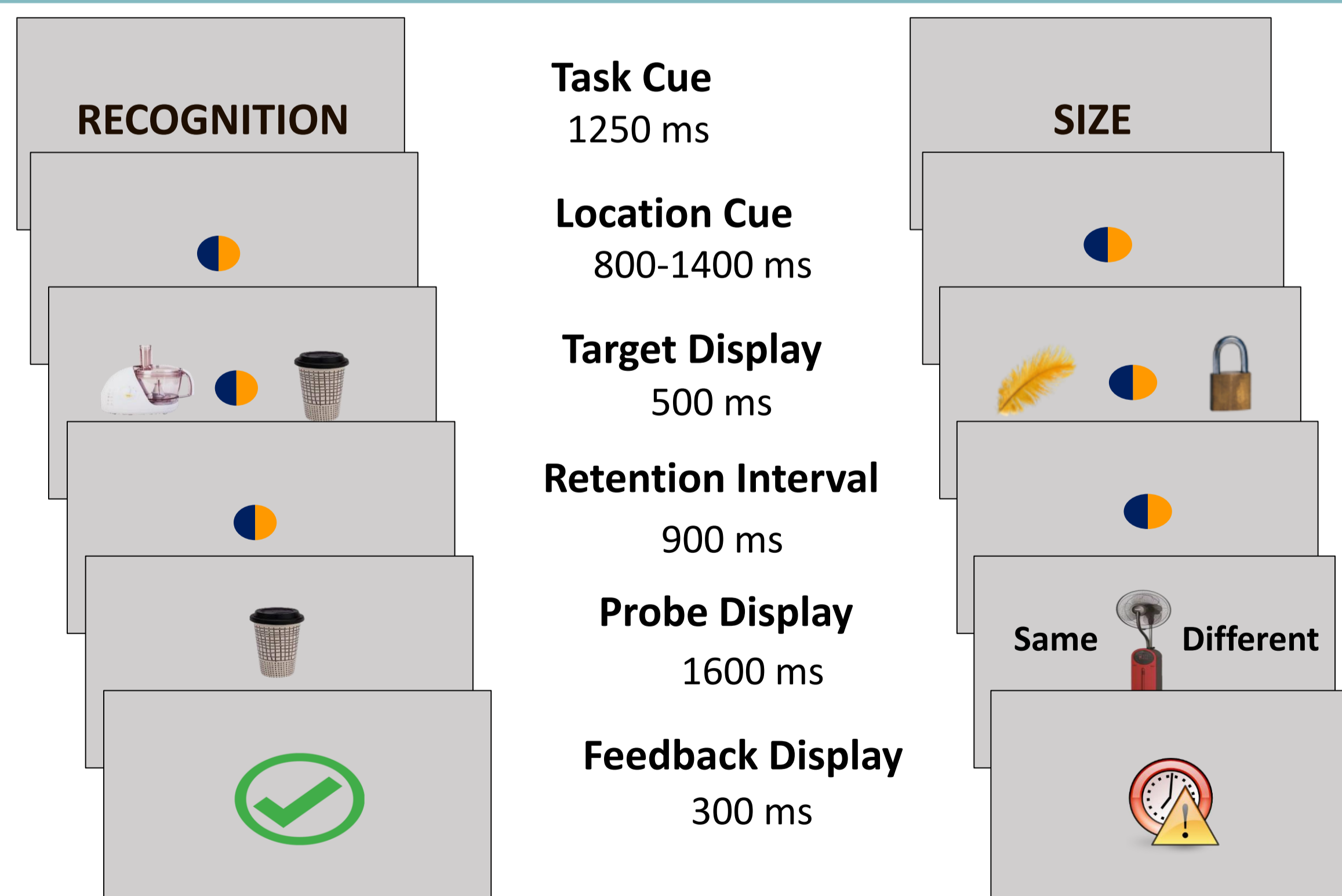
"Where is my dress?"



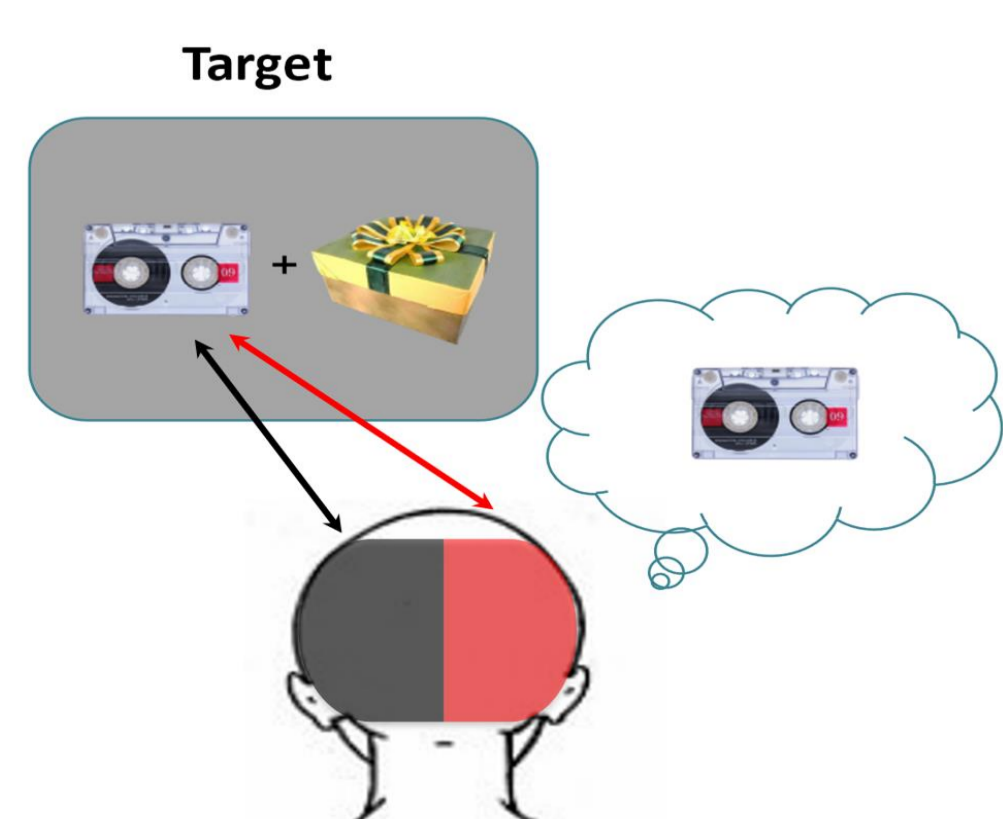
"Would it fit me after the pandemic?"

We hypothesized that working memory reactivation of task rules and task-relevant items are **interdependent** given that adjusting to new situations often require both novel rules and items.

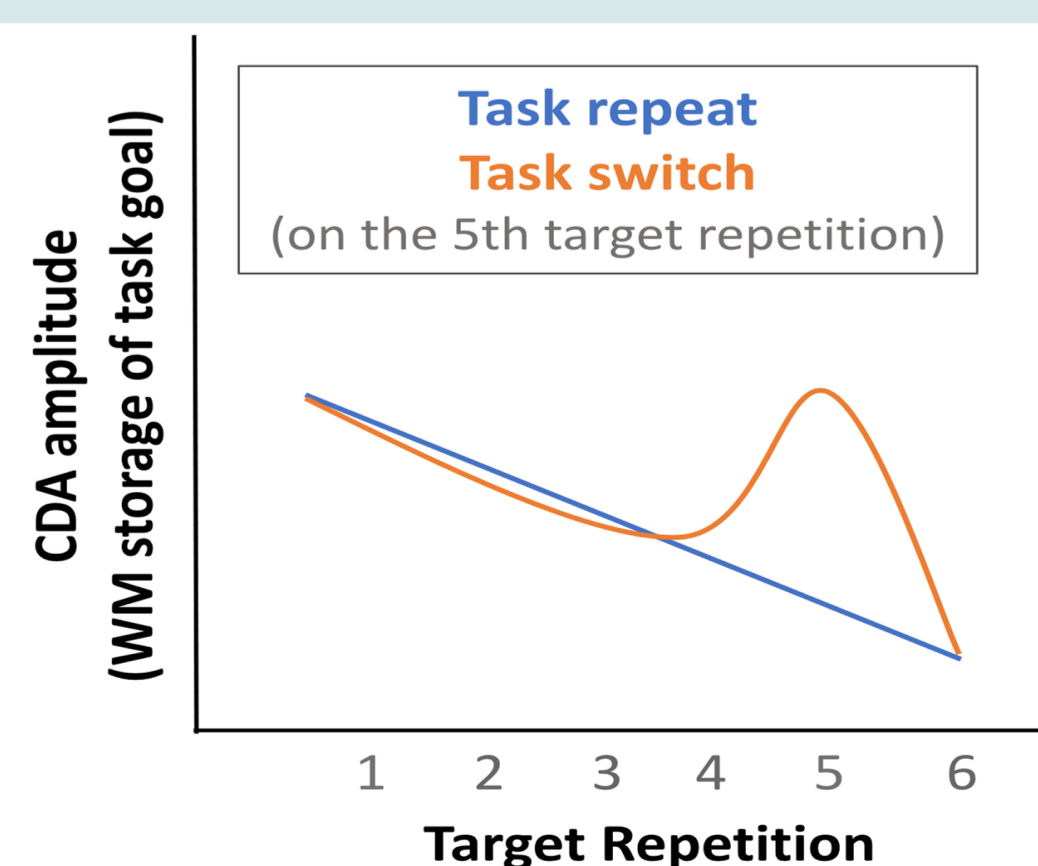
Methods and Expected Findings



Contralateral Delay Activity

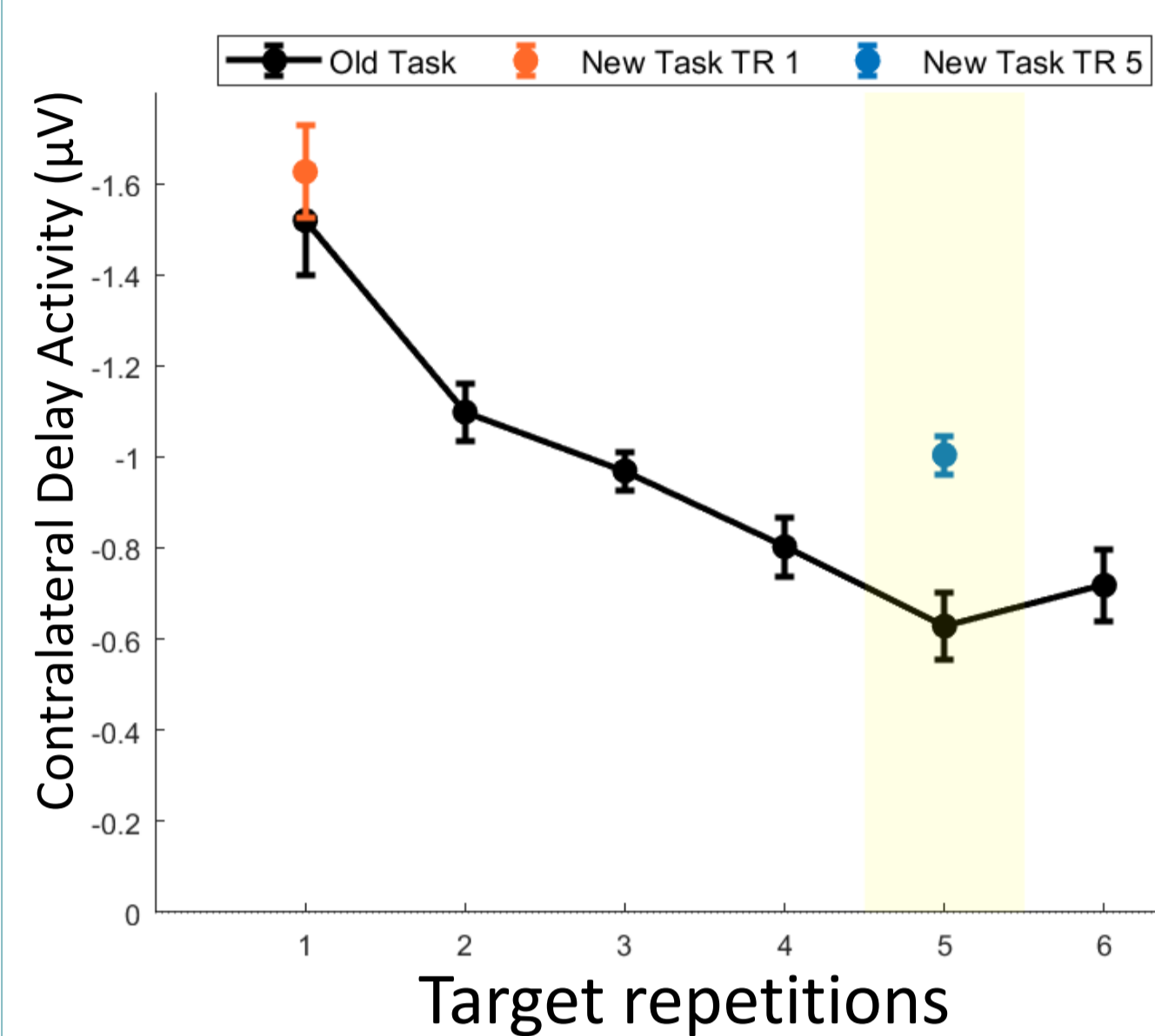


Expected Findings

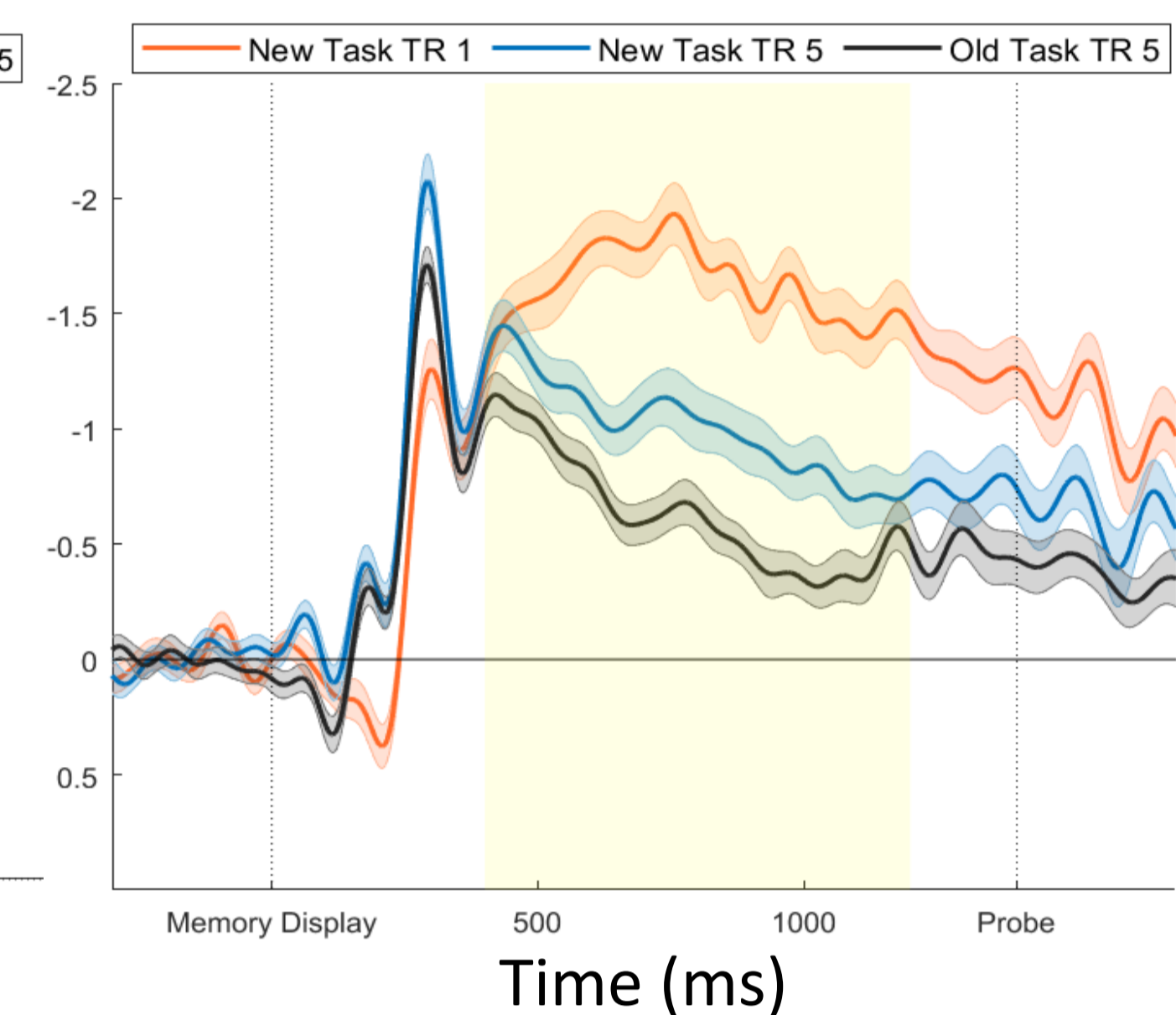


Results (N = 45)

CDA Amplitude Across Target Repetitions



CDA Amplitude Across Conditions

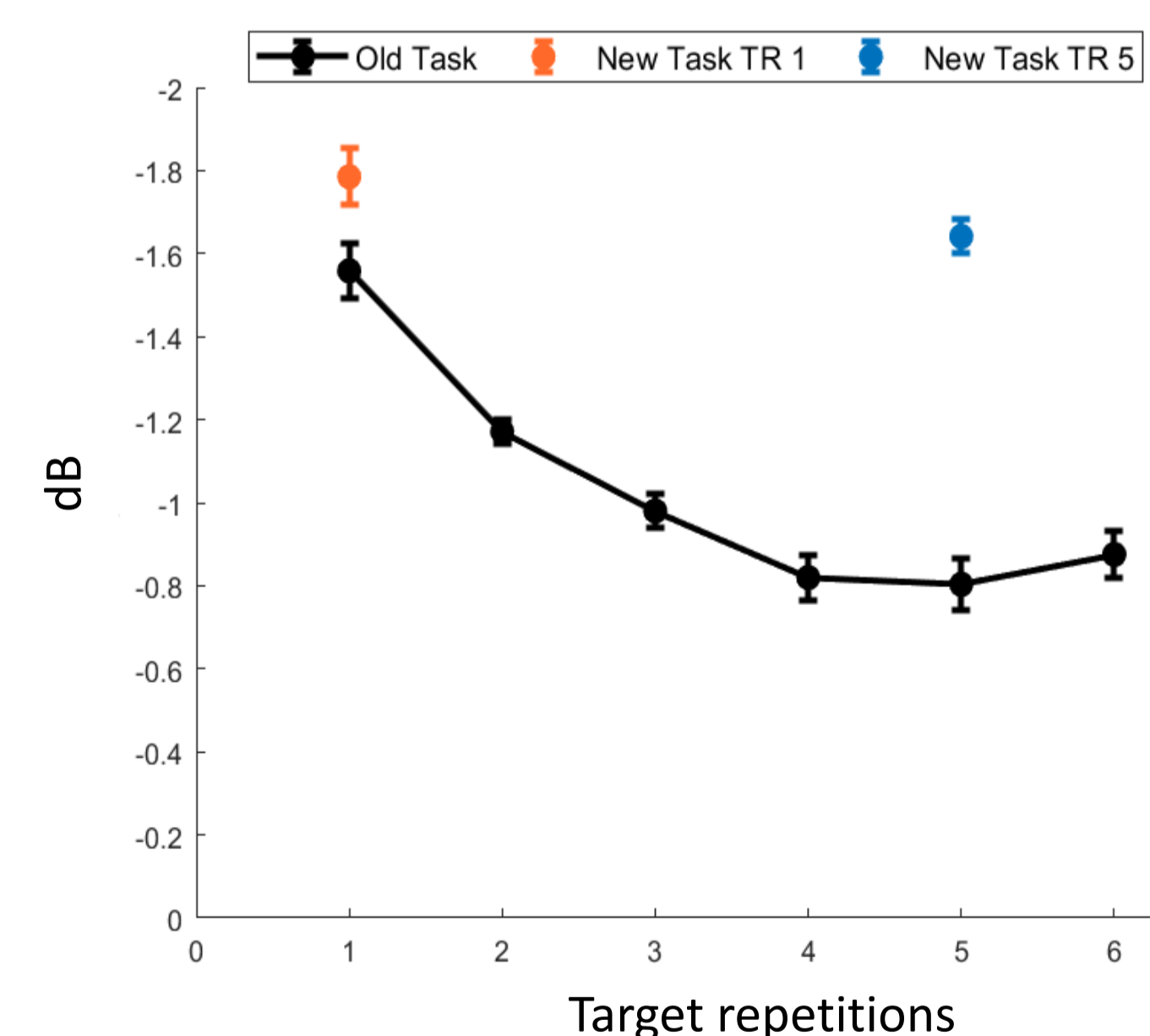


Novel targets are stored in WM
($BF_{10} = 2.09e+7$).

Repeated targets are handed off to LTM
($BF_{10} = 75601$).

WM reactivation of LTM items is independent for procedural and declarative subsystems
($BF_{10} = 21.6$).

Bilateral Alpha Power Across Repetitions



Conclusion

Updating task rules (procedural WM) necessitate the reactivation of task-relevant items (declarative WM). This interplay suggests the interdependence of the procedural and declarative WM subsystems.

Scan me for references

