

Behavioral and ERP Measures of Conflict Adaptation in Working Memory

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Introduction

What determines the flexible adaptation of WM content?

Do adaptive control processes of WM follow the same principles as proposed by **Conflict Monitoring Theory** (Botvinick, Braver, Barch, Carter, & Cohen, 2001) ?

- The level of cognitive control is adjusted depending on:
 - the proportion of conflict-evoking stimuli (**proportion congruency effect, PCE**)
 - conflict on the previous trial (**congruency sequence effect, CSE**)

Our hypothesis:
 Adaptive control of WM is guided by recently experienced **retrieval conflict**.

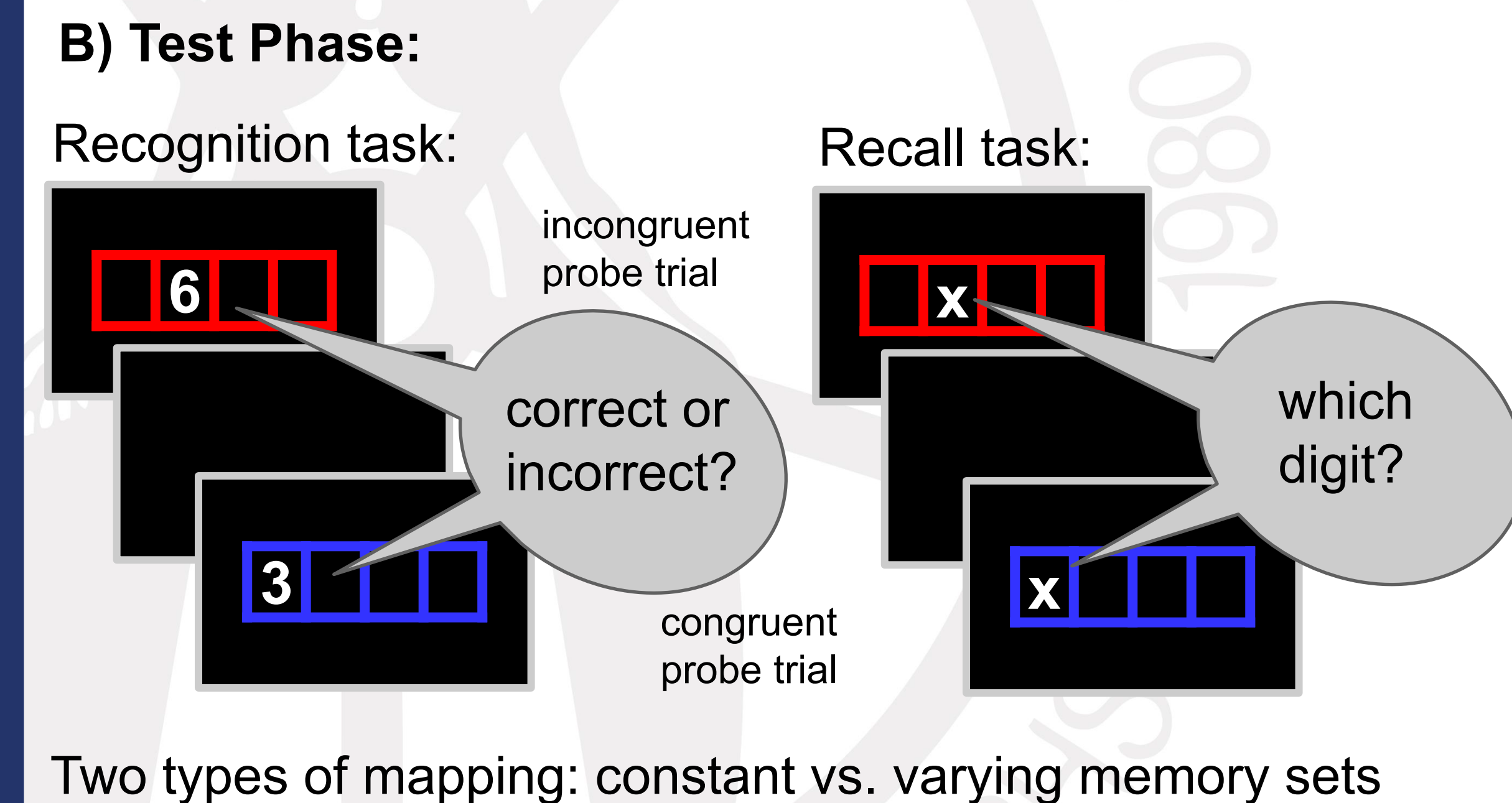
Method – modified Sternberg task

(Oberauer, 2001)

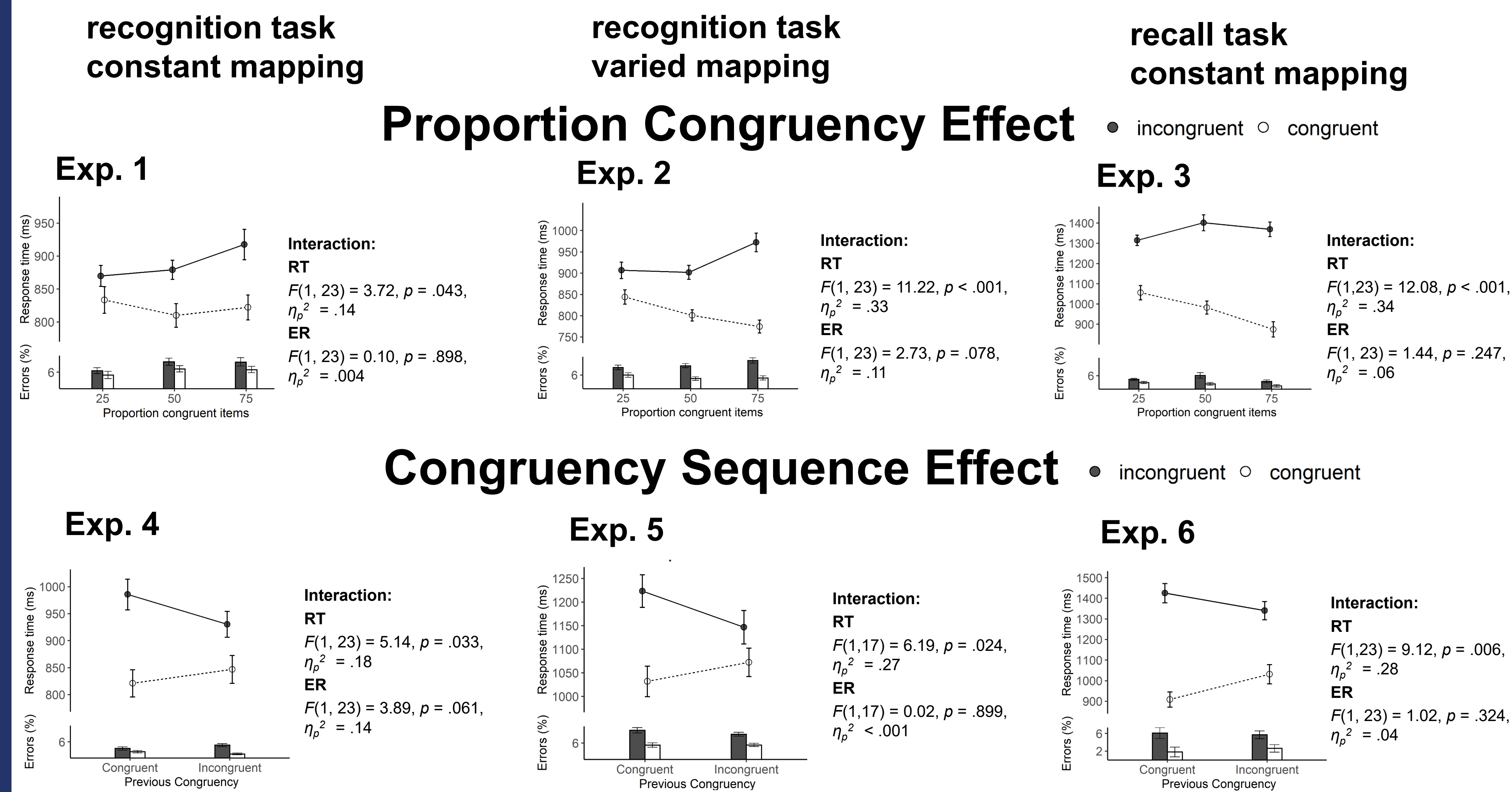
A) Learning Phase:
 Memory set has to be encoded and maintained



Criterion to start the test phase: 3 correct recalls in a row



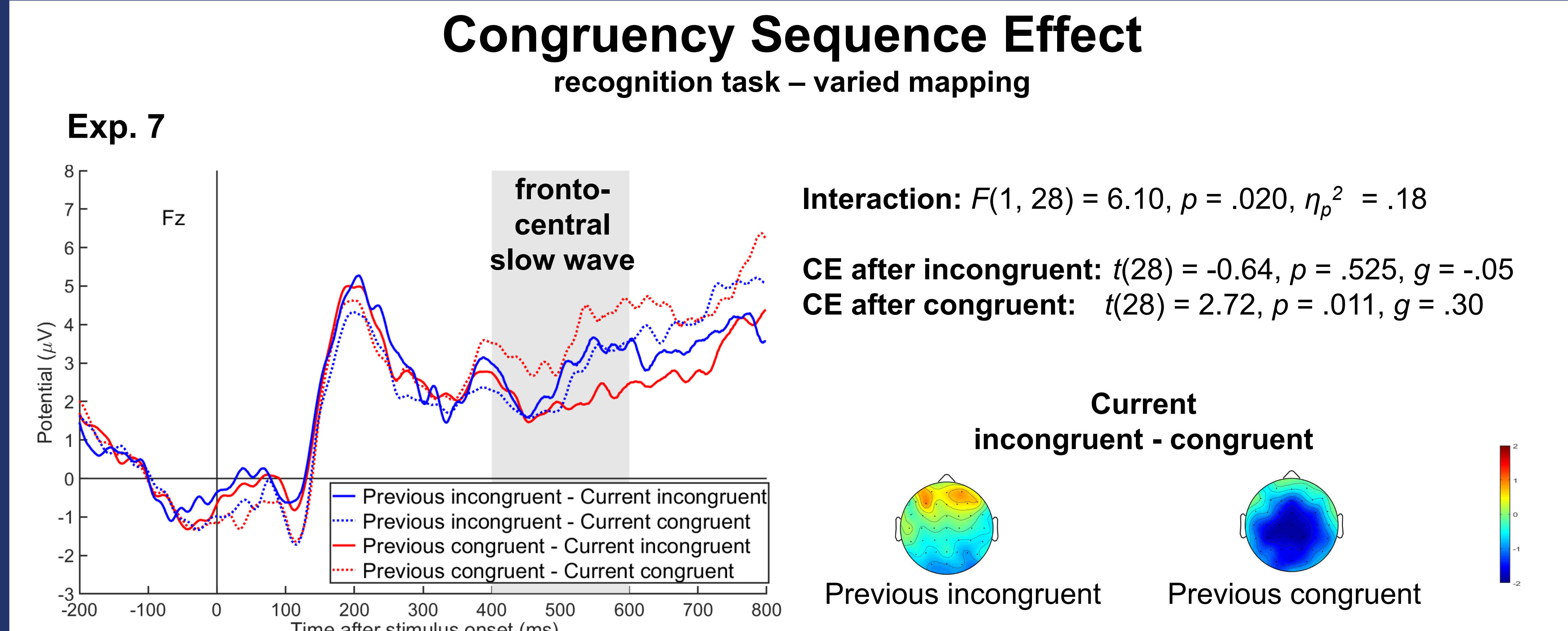
Behavioral Results



Conclusions

- Behavior:**
- Behavioral phenomena reflecting adaptive control (PCE and CSE) could be replicated in the domain of WM.
 - **Conflict in WM retrieval leads to an adaptation of control processes.**
 - The principles of Conflict Monitoring Theory can be applied to WM processes. (Kiyonaga & Egner, 2014)
- ERP:**
- Conflict adaptation in WM was associated with the modulation of a fronto-central slow wave.**
 - a conflict-related ERP (Larson, Clayson, & Clawson, 2014) can also be found for conflict in WM retrieval

ERP Results



References

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