

The control mechanism underlying the processing of horizontal and vertical dimensions

Chae Eun Lim & Yang Seok Cho

Department of Psychology, Korea University, Human Performance Lab

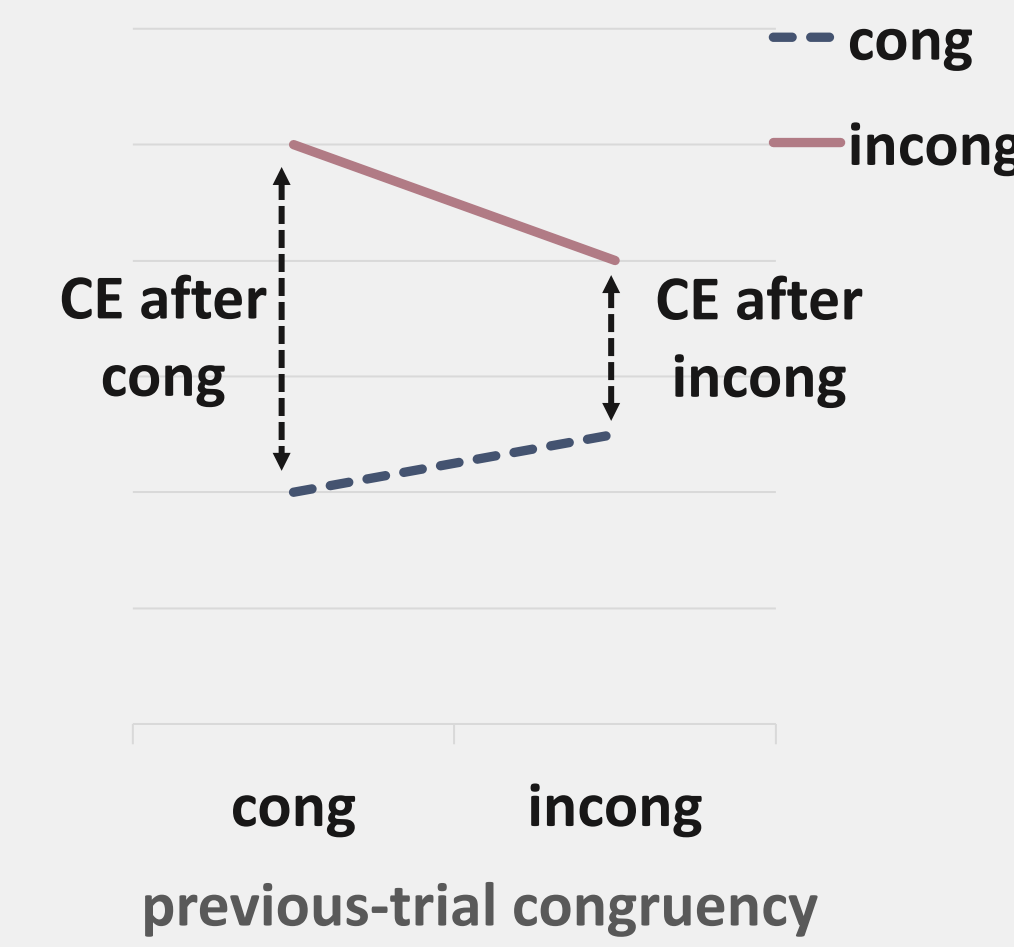
Introduction

Congruency Sequence Effect (CSE)

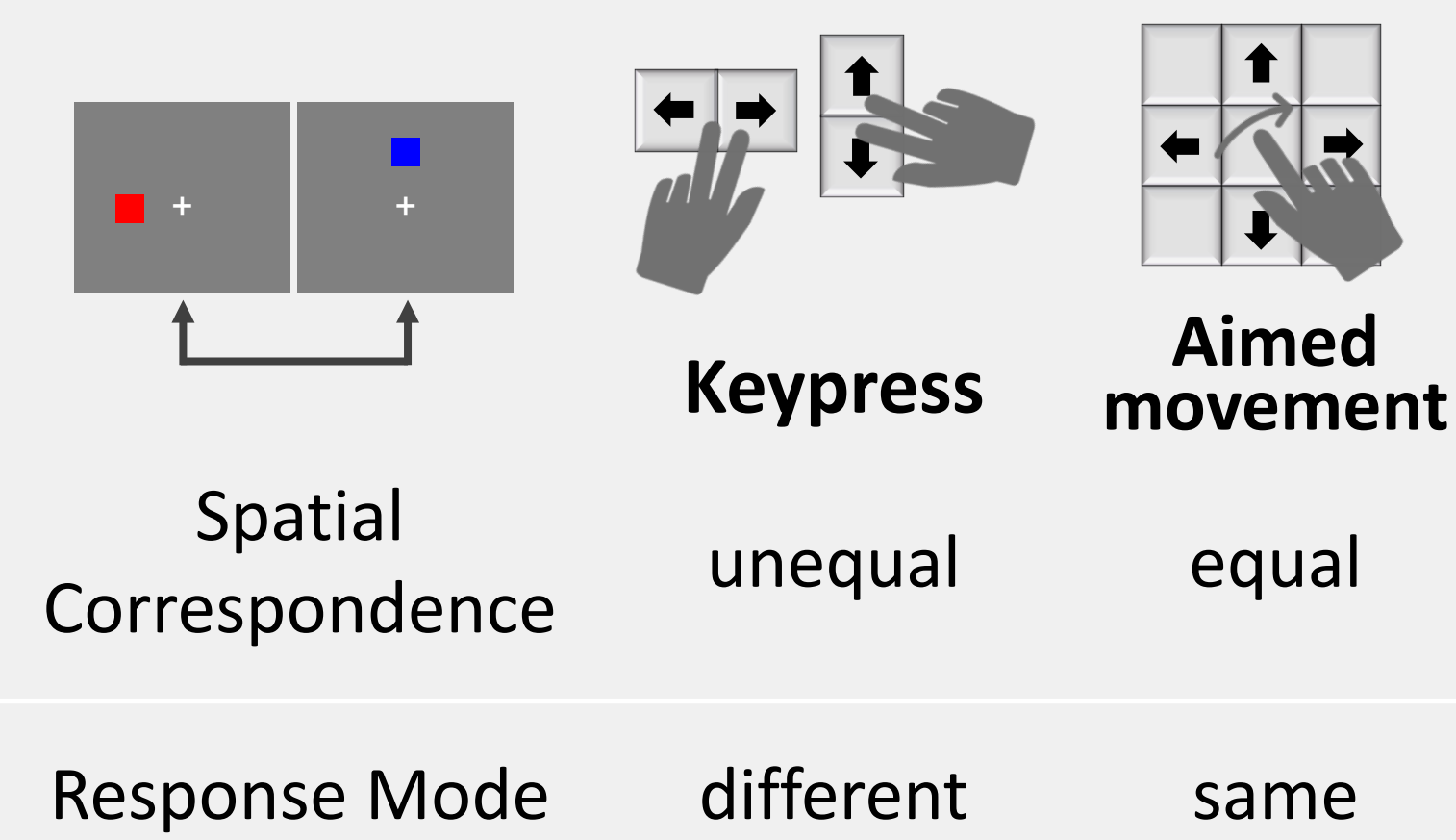
The control mechanism modulates the congruency effect (CE), depending on the previous-trial congruency

Is a common control mechanism applicable to the horizontal and vertical dimensions?

Inconsistent results on the CSE between the horizontal & vertical tasks

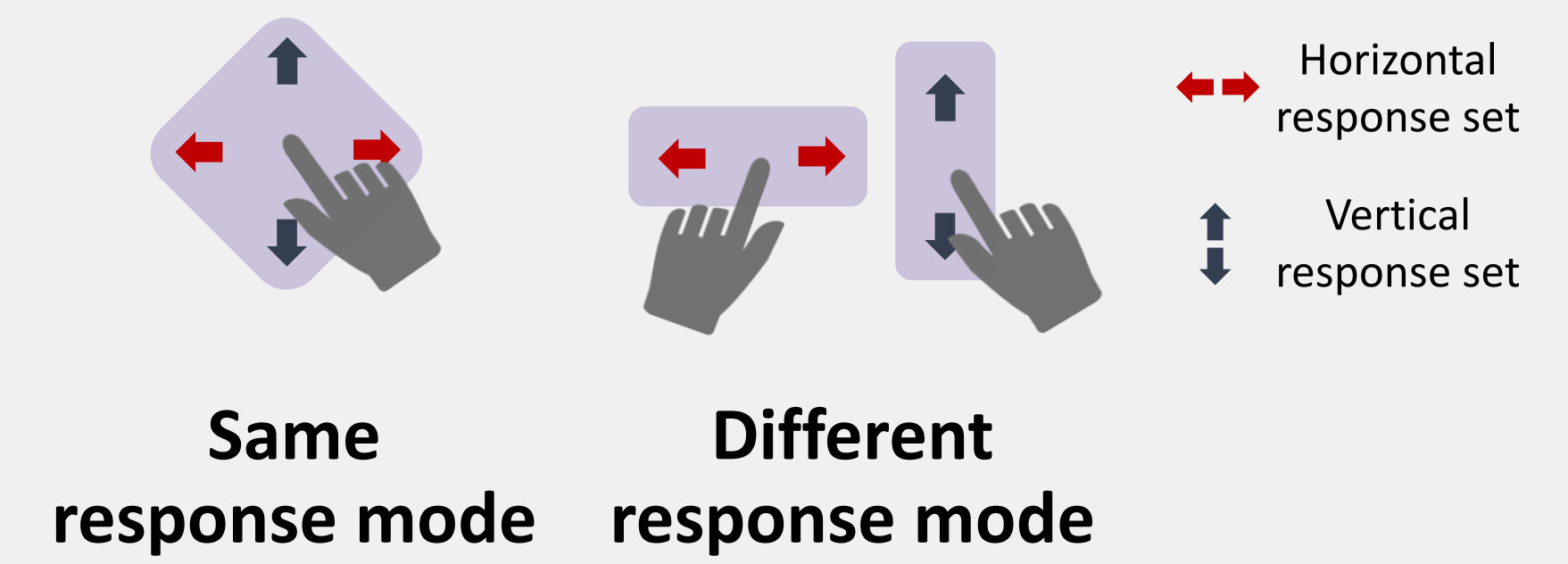


Due to response characteristics?

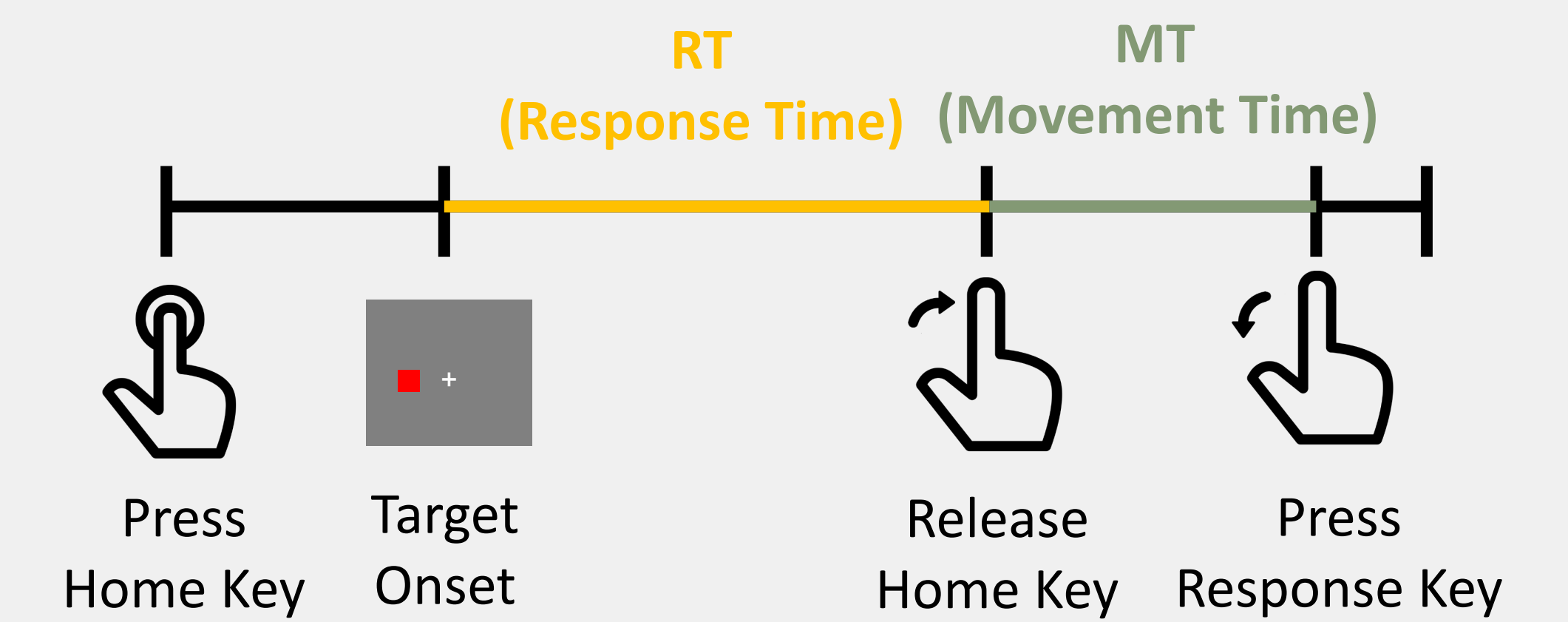


Response Mode

- A representational group of related responses
- Flexibly determined by salient features (Kim & Cho, 2014; Proctor & Reeve, 1985)



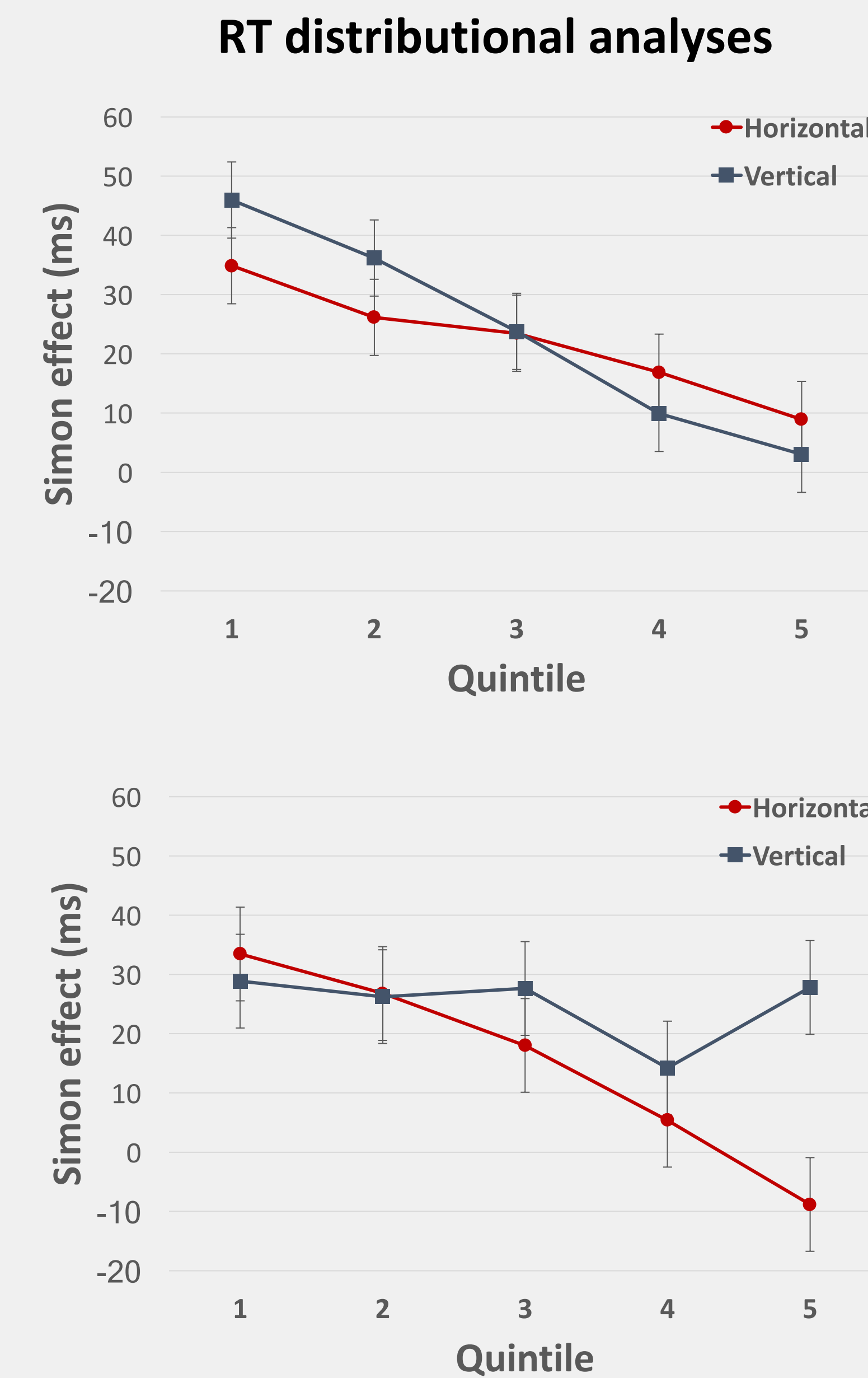
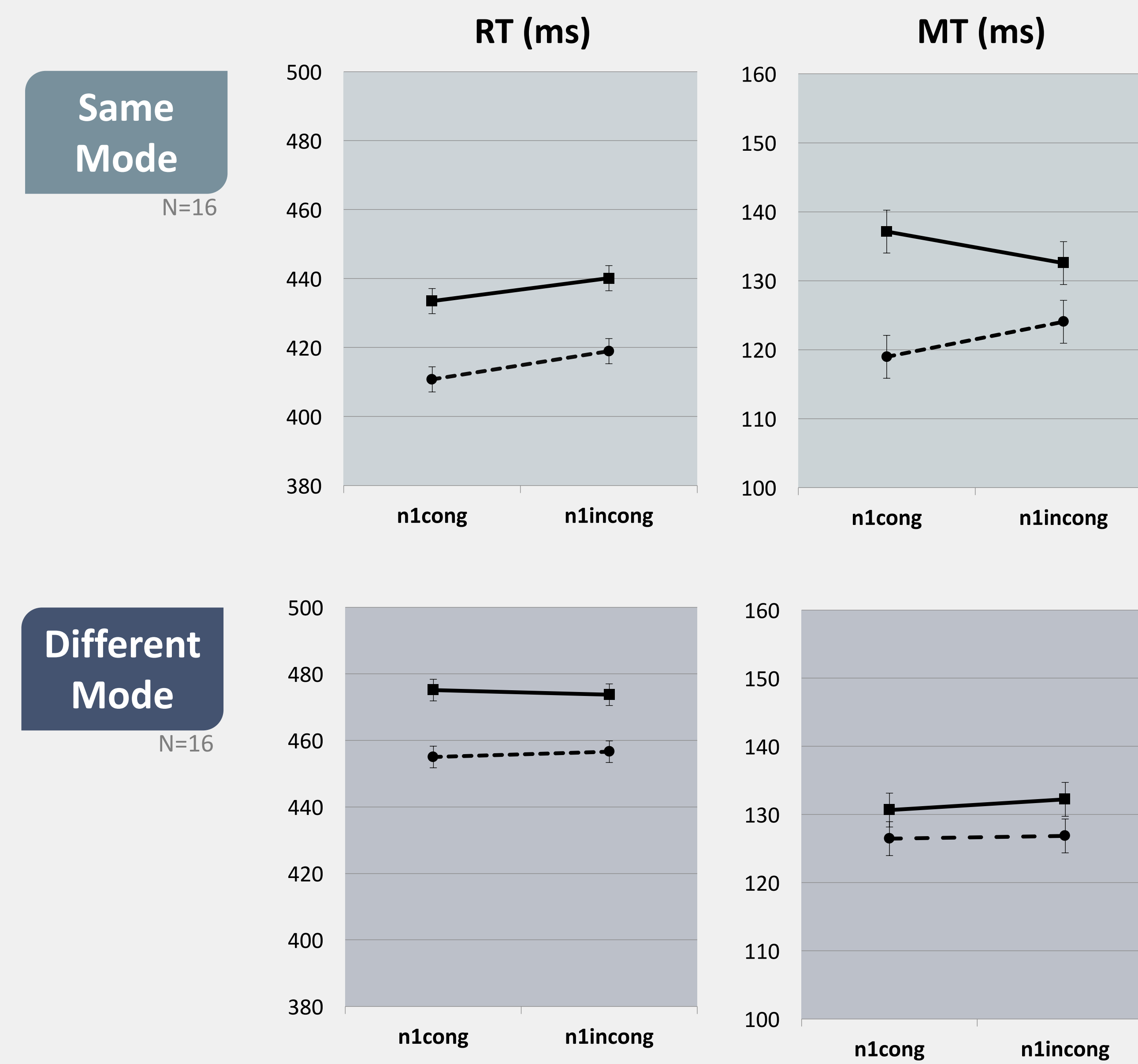
Aimed Movement Response



Experiment 1

Need to share a common response mode?

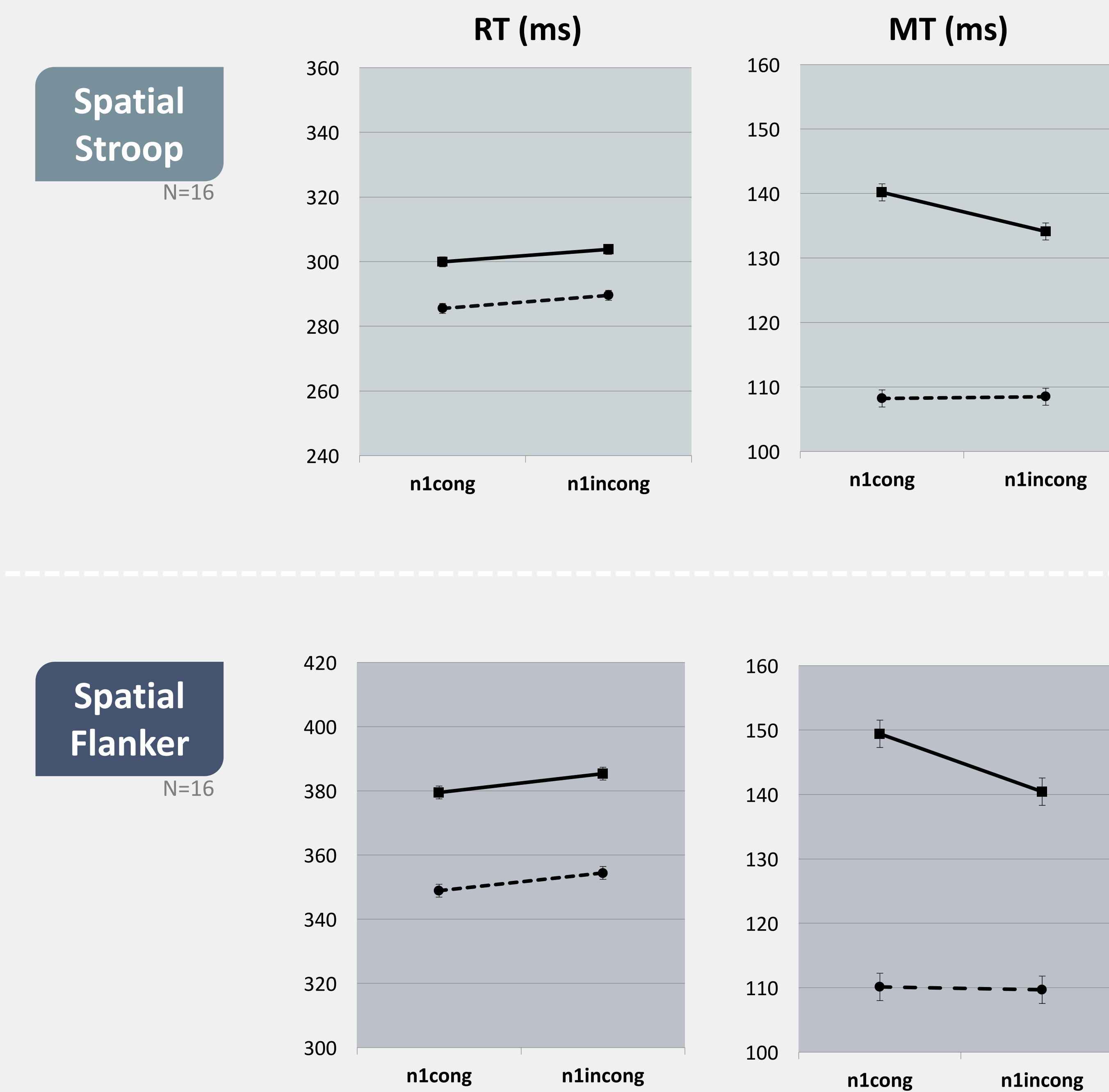
- Performed the horizontal & vertical Simon tasks
- Manipulated **response mode**



Experiments 2 & 3

Generalizable to other types of tasks?

- The **response mode** remained the same
- Performed the horizontal and vertical spatial Stroop (Expt2) or spatial flanker tasks (Expt3)



• A significant CSE was found in the MT data, $F(1, 15) = 26.08, p < .001$

• A significant CSE was found in the MT data, $F(1, 15) = 18.35, p < .001$

- The overall CSE was significant in the **MT data**, $F(1, 30) = 5.16, p = .0305$
- This CSE was modulated by response mode**, $F(1, 30) = 8.4, p = .0069$
CSE with the same mode, $F(1, 15) = 10.95, p = .0048$
No CSE with different modes, $F(1, 15) < 1$

- The vertical Simon effect**, as well as the horizontal one, decreased across quintiles with the **same response mode**, $F(4, 60) = 13.68, p < .001$, but not with different response modes, $F(4, 60) = 1.16, p = .3356$.

References

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- Proctor, R. W., & Reeve, T. G. (1985). Compatibility effects in the assignment of symbolic stimuli to discrete finger responses. *Journal of Experimental Psychology: Human Perception and Performance*, 11(5), 623–639.
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Discussion

- ✓ Response mode reconfigures the spatial coding of the horizontal and vertical dimensions, and thus modulates the specificity of control in Simon tasks
- ✓ The specificity of control varied depending on response mode even in those tasks of which conflict is not directly triggered by the response dimension