The Interaction Between Task Switching and Priming

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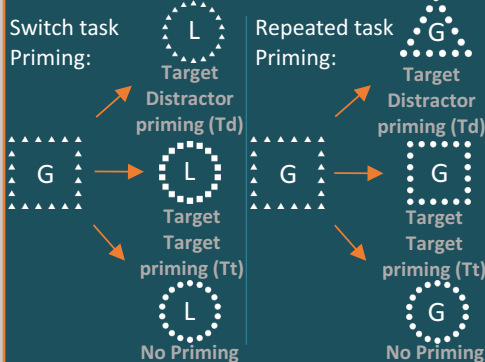
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Introduction

Can we reduce task switching costs through priming?
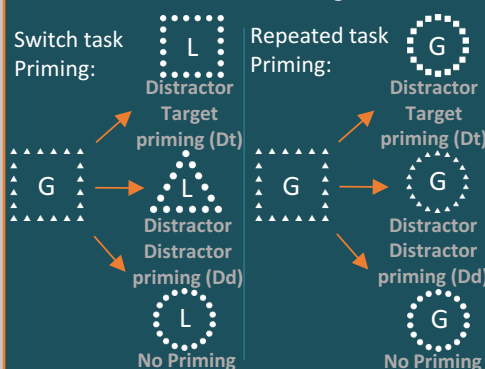Switch Task: "Report the larger shape for 'G' and the smaller shape for 'L'"

Methods
Target Priming

Switch task Priming:

Target Distractor priming (Td)

Target Target priming (Tt)

No Priming

Repeated task Priming:

Target Distractor priming (Td)

Target Target priming (Tt)

No Priming

Distractor Priming

Switch task Priming:

Distractor Target priming (Dt)

Distractor Distractor priming (Dd)

No Priming

Repeated task Priming:

Distractor Target priming (Dt)

Distractor Distractor priming (Dd)

No Priming

References:
1. Schuch, S. & Koch, I. The costs of changing the representation of action: response repetition and response-response compatibility in dual tasks. *J Exp Psychol Hum Percept Perform* **30**, 566-582, (2004).
2. Schuch, S. & Koch, I. Response-repetition effects in task switching with and without response execution. *Acta Psychol (Amst)* **135**, 302-309, (2010).
3. Teskey, M. L. & Masson, M. E. J. Components of competitor priming in task switching. *Mem Cognit* **45**, 1384-1397, (2017).
4. Waszak, F., Hommel, B. & Allport, A. Interaction of task readiness and automatic retrieval in task switching: negative priming and competitor priming. *Mem Cognit* **33**, 595-610, (2005).
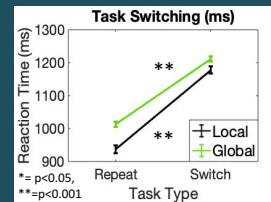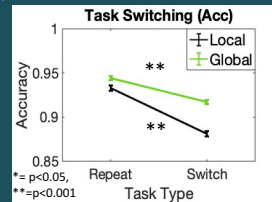
Can priming reduce switch costs?

Using the keyboard, complete the switch task

1 End — Square
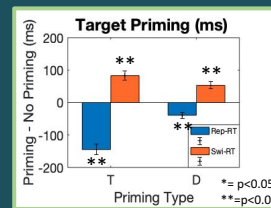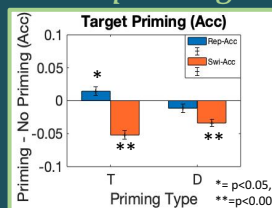@2 — Triangle
#3 — Circle

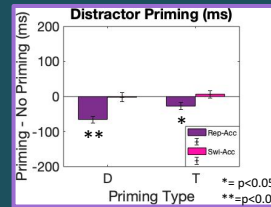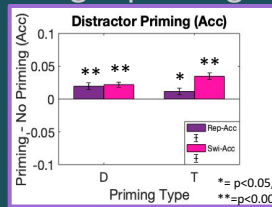### Can we reproduce the switch costs?

N=36

Yes, task switching is **costly**

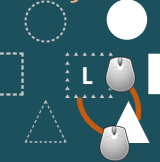### Did priming reduce switch costs?

Target priming **increased** switch costs

Distractor priming **reduced** switch costs
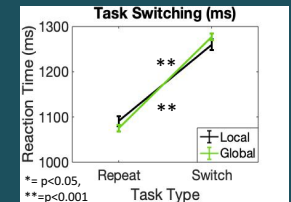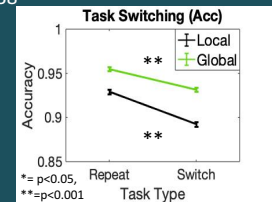
What's the source of this priming effect?

"Drag the mouse to the solid shaped side for 'L' and the dotted shaped side for 'G'"

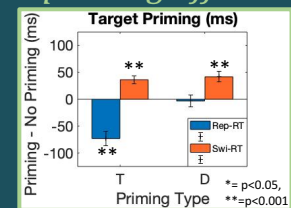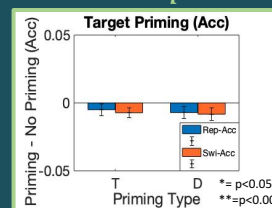"To get to the next trial, drag the mouse to the center of the screen."

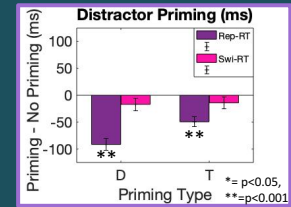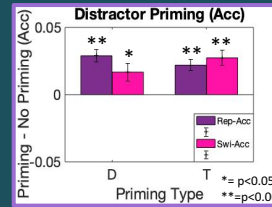### Can we reproduce the switch costs?

N=38

Yes, we see the same **switch costs**

Can we reproduce the priming effects?

Target priming **increased** switch costs

Distractor priming **reduced** switch costs

Discussion

In the context of task switch,
1) Target priming ***increases*** the switch cost[1,2] while distractor priming ***reduces*** switch cost[3,4].
2) These effects take place ***upstream*** of motor planning/execution[2].