

Memory accessibility affects choice behavior in value-based decision making

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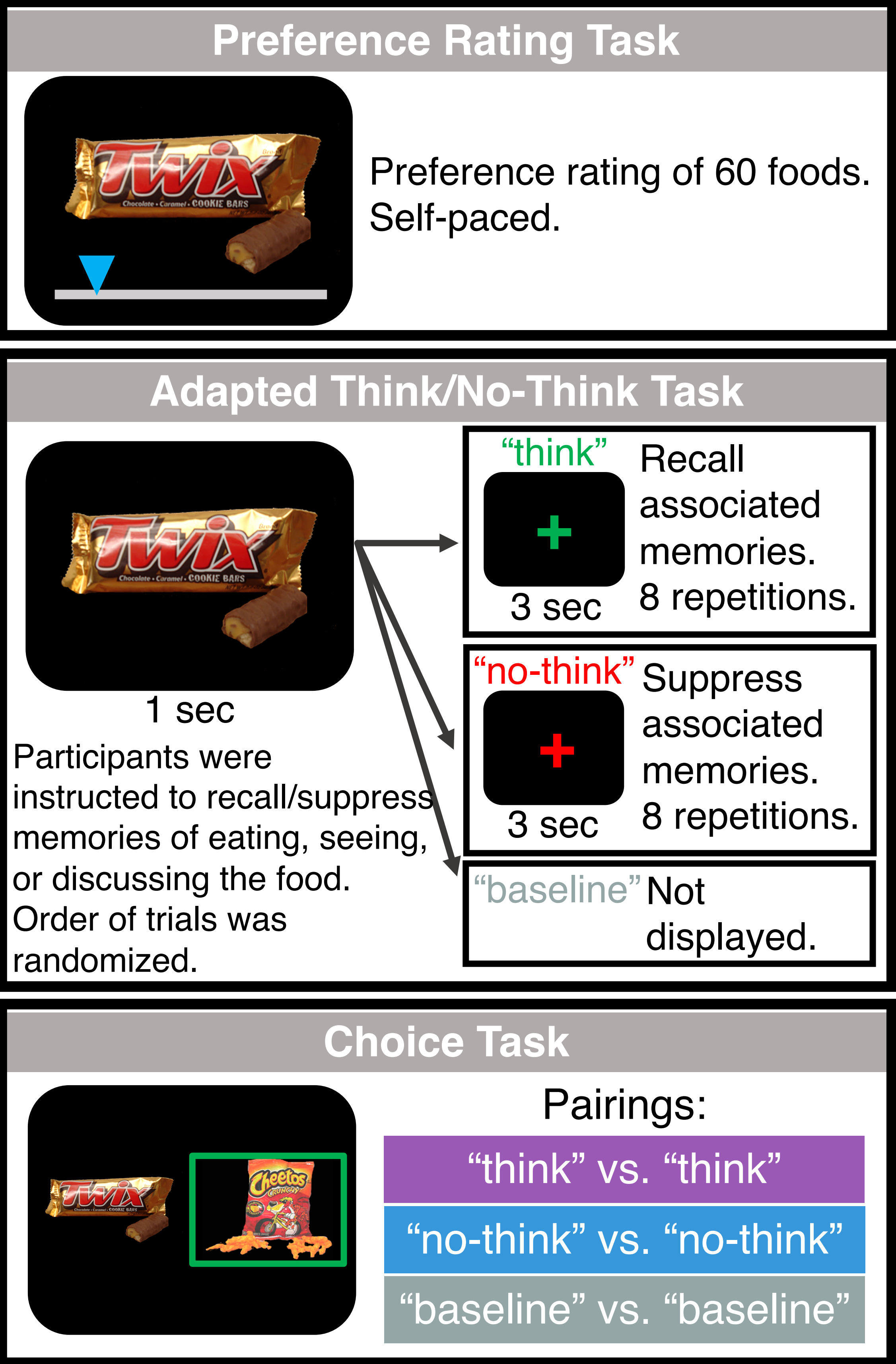
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Introduction

- Decisions between similarly valued items require more time. Deliberation time is correlated with hippocampal activity and amnesic patients are impaired in making these decisions (Bakkour et al. 2019).
- Given that value-based decisions rely on the hippocampus, how does memory contribute to these decisions?
- The think/no-think task shows that repeated memory retrieval promotes remembering and memory suppression induces forgetting (Anderson & Levy 2009).
- We used an adapted think/no-think task to test how causal manipulations of memory accessibility affect value-based decision making.

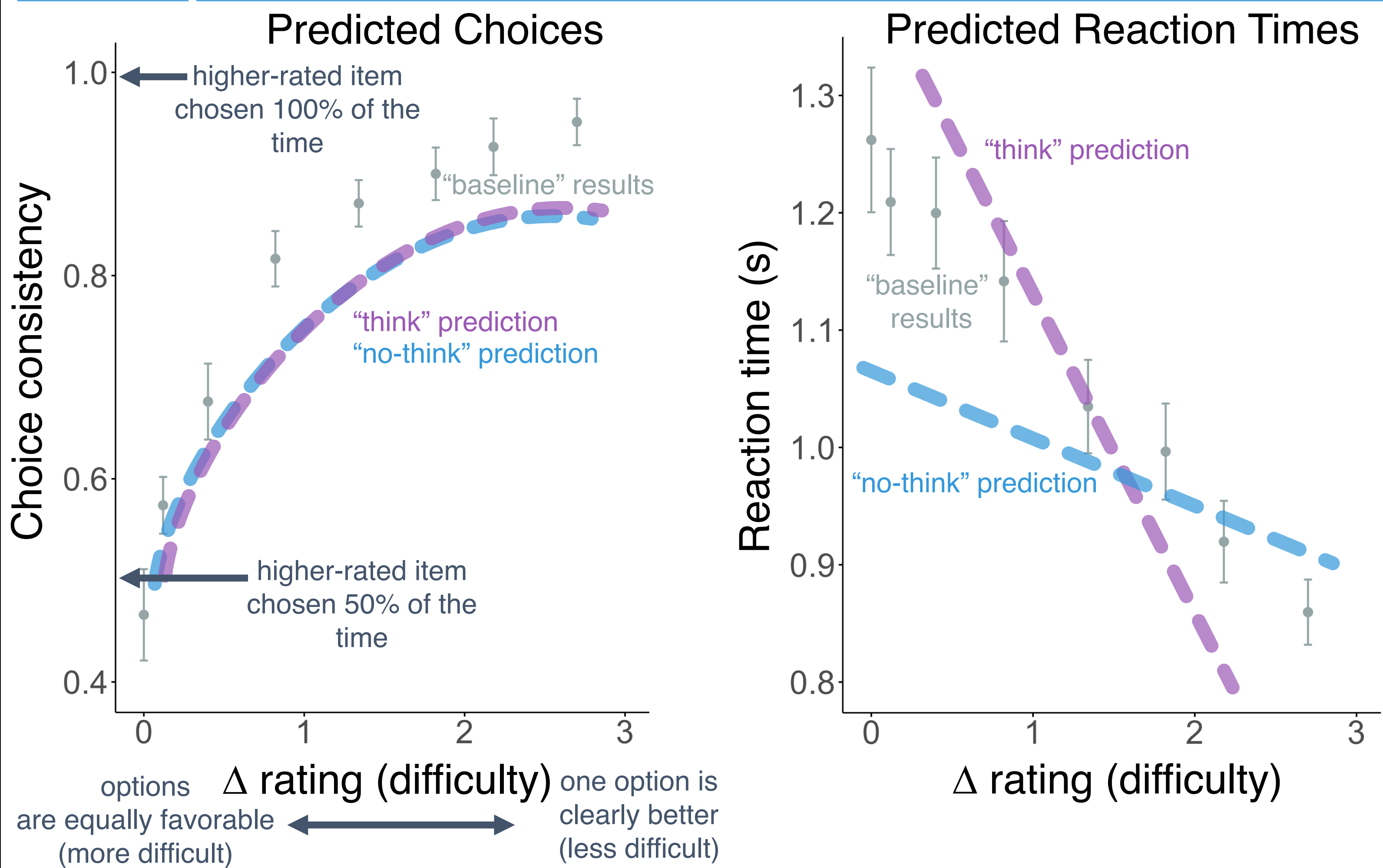
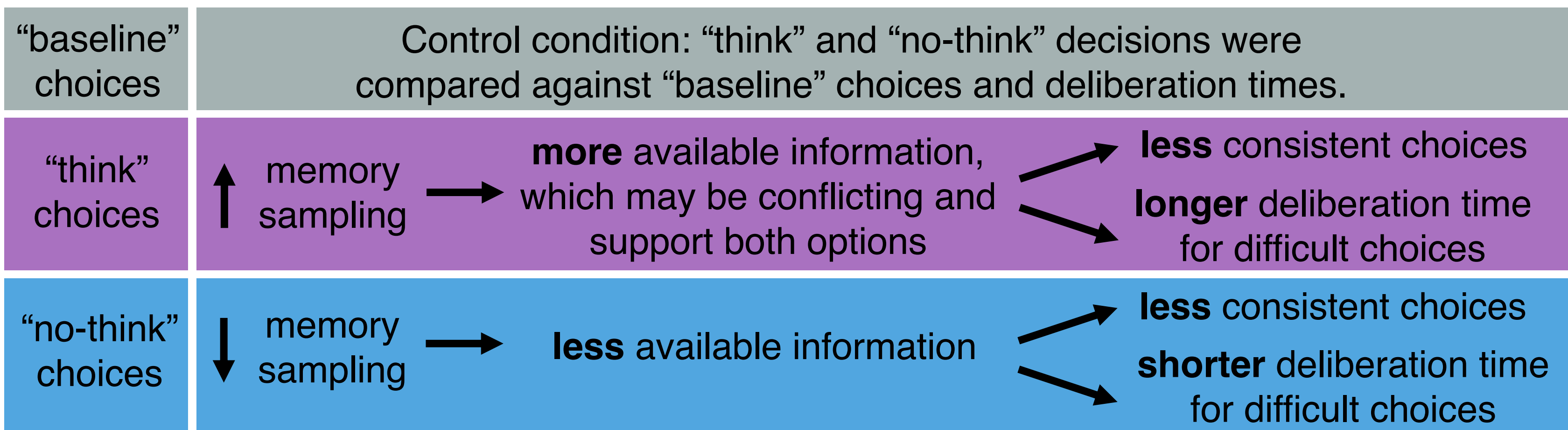
Methods

- 34 healthy young participants were recruited from the Columbia Psychology Subject Pool.
- Memory accessibility for choice options was manipulated in an adapted think/no-think task. In the choice task, Participants were instructed to choose the snack they preferred.

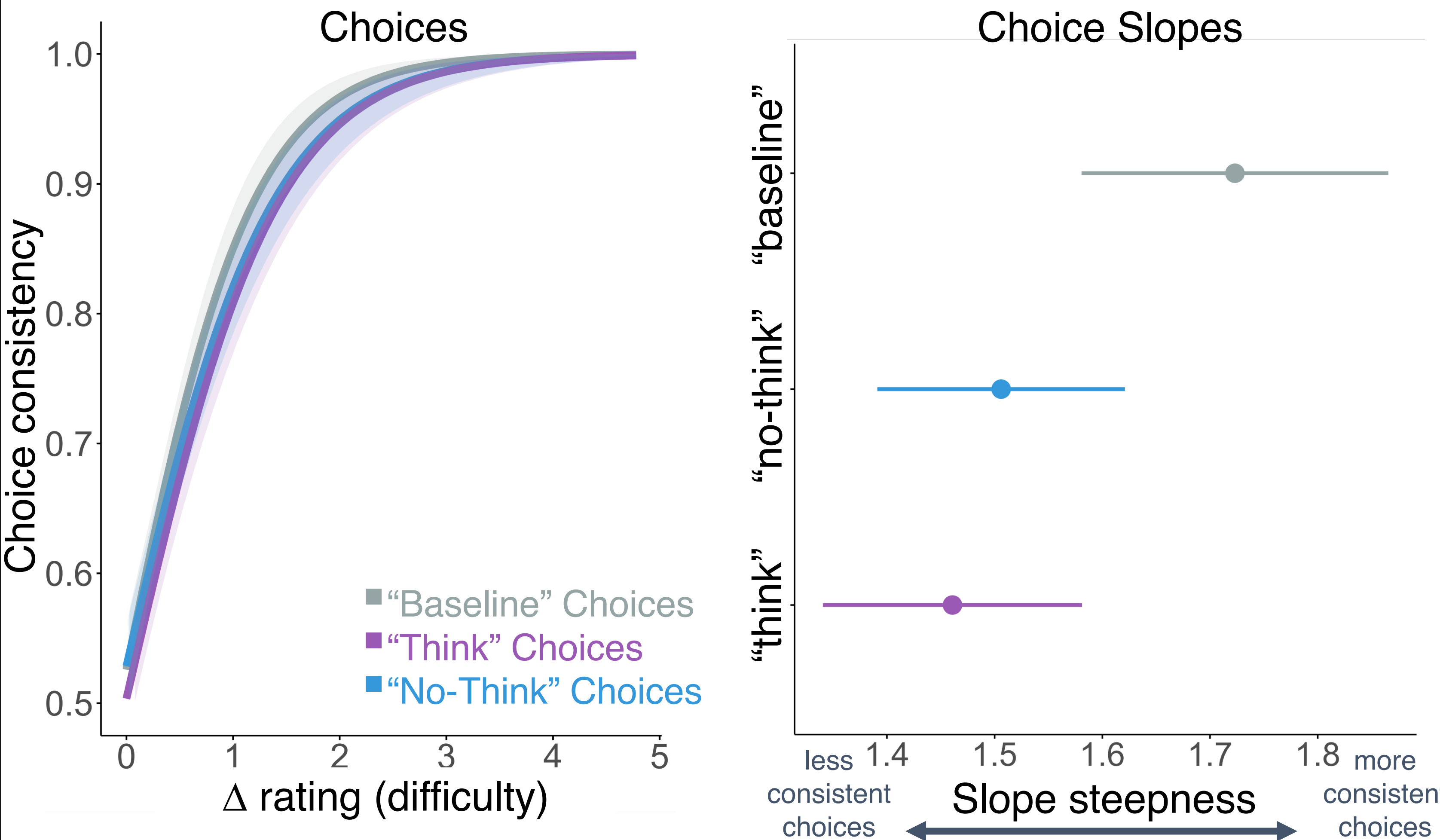


Predictions

Repeatedly recalling memories ("think") should increase memory accessibility. Repeatedly suppressing memories ("no-think") should decrease memory accessibility.

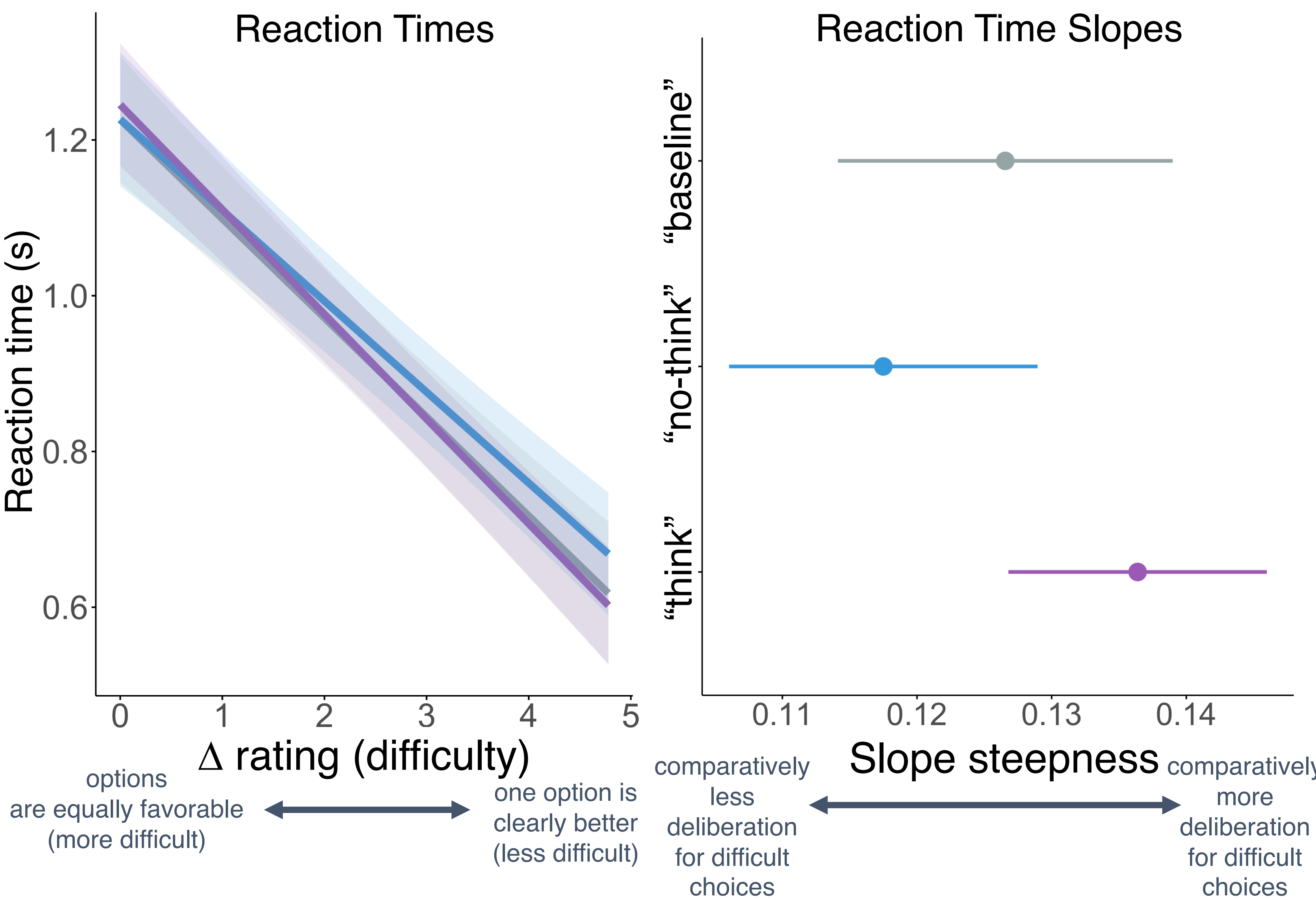


Choice Results



"Think" choices were less consistent with initial stated preferences than "baseline" choices. "No-think" choices were marginally less consistent than "baseline" choices.

Reaction Time Results



Difficult choices in all conditions required more time than easier choices, a well-established effect. The "think" and "no-think" conditions did not significantly affect reaction times. However, the reaction time slopes show that the difference in deliberation time between difficult and easy choices was largest for "think" choices and smallest for "no-think" choices, suggesting that difficult "think" choices required more time to deliberate than difficult "no-think" choices.

Discussion

- Repeated memory retrieval and repeated memory suppression affected choice outcomes via different deliberation mechanisms.
 - Memory manipulations known to affect item memory also affect decisions about those items.
 - These findings support the theory that value-based decisions rely on sampling of evidence from memory.
- (Shadlen & Shohamy 2016, Bakkour et al. 2019).

References

Bakkour, A et al. (2019) The hippocampus supports deliberation during value-based decisions. eLife, 8:e46080.
Anderson, MC & Levy, BJ (2009) Suppressing unwanted memories. Current Directions in Psychological Science 18 (4), 189-194.
Shadlen, MN & Shohamy, D (2016) Decision making and sequential sampling from memory. Neuron 90 (5), 927-939.

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