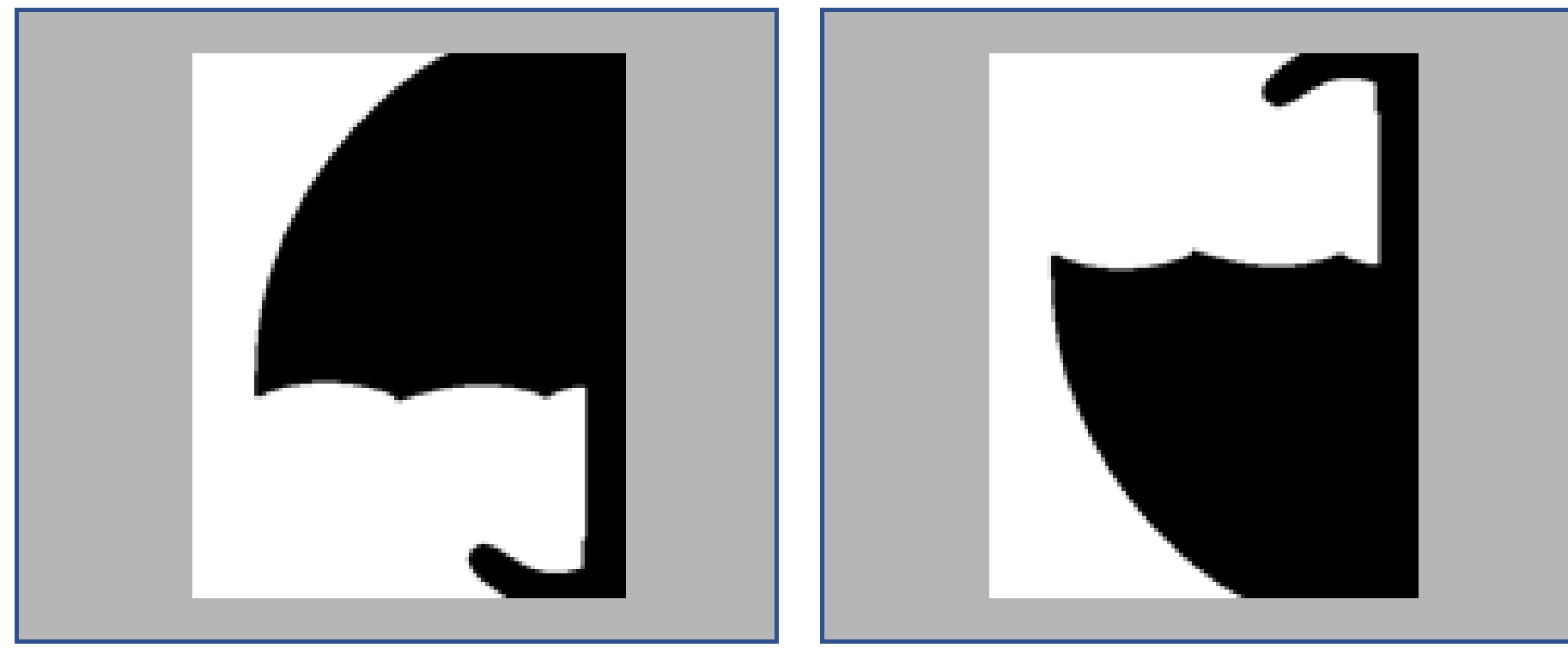
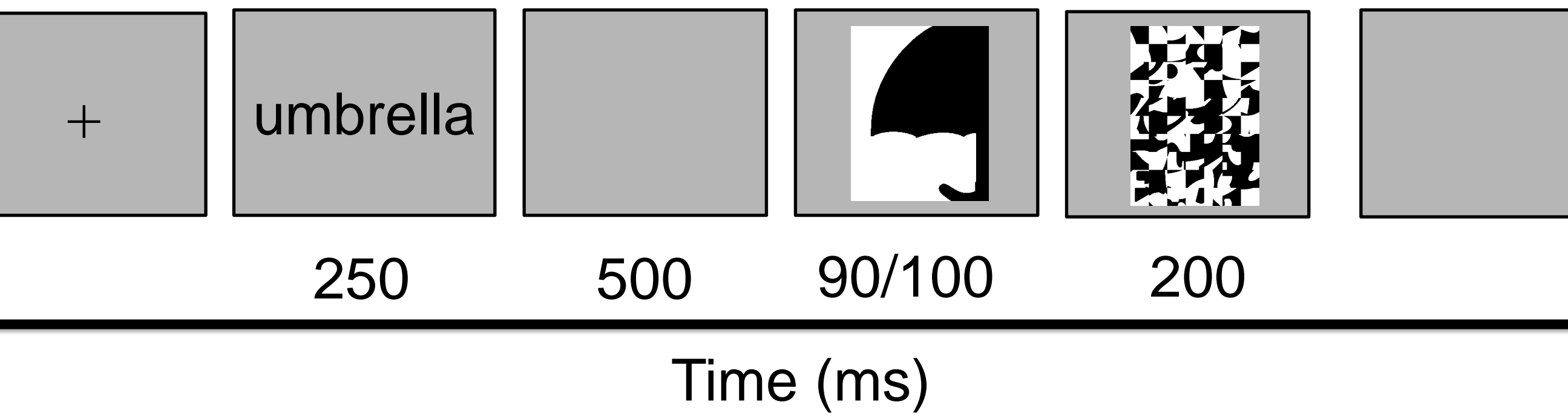


Background

Semantic activation affects figure assignment  
(i.e., archetypal object detection)<sup>1</sup>.

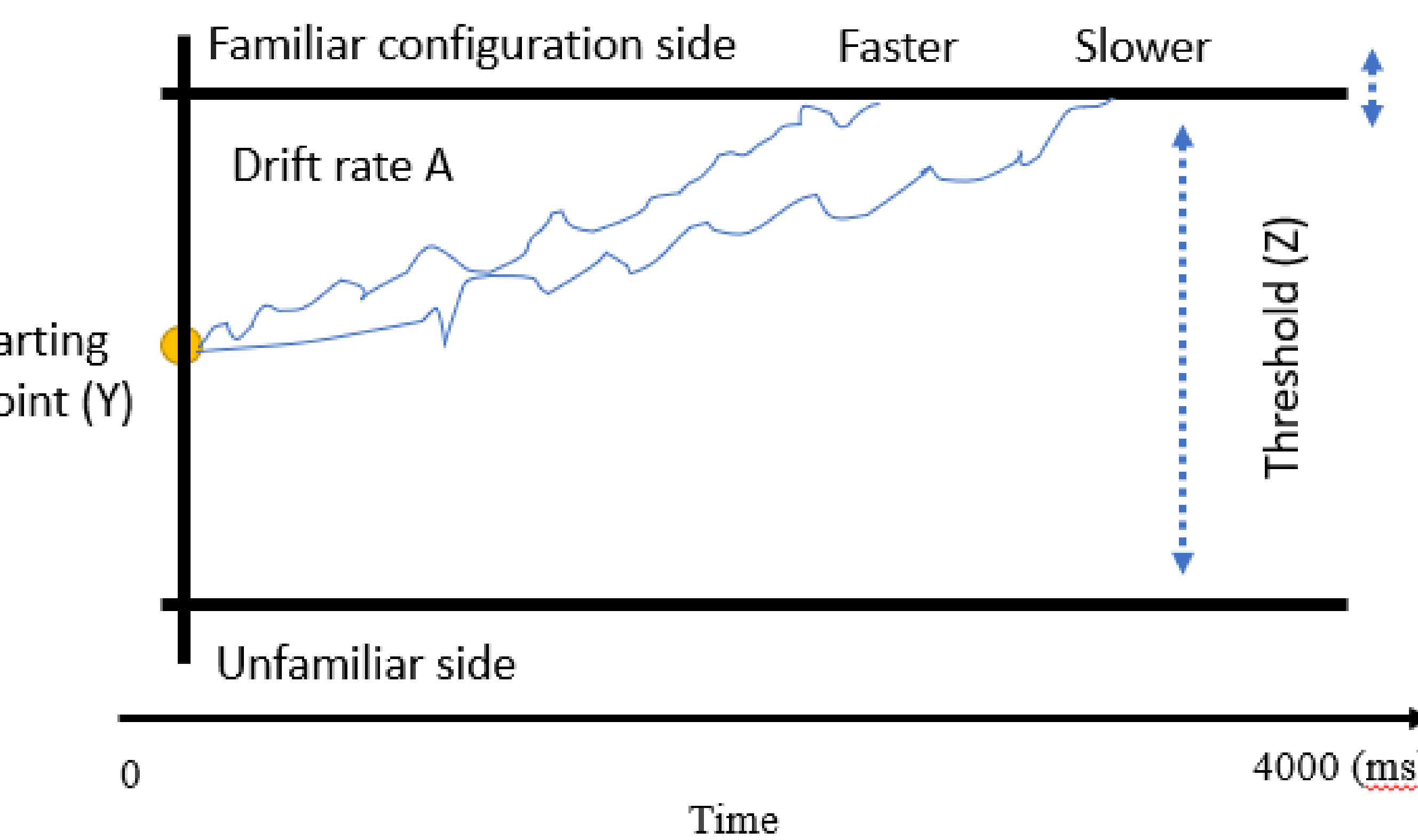


	Study1	Study2	Control
Valid	umbrella	umbrella	N/A
Invalid	squirrel	envelope	N/A
Superordinate category	different	same	N/A



Goal

Using a DDM Model to Reveal the Mechanism<sup>2</sup>.



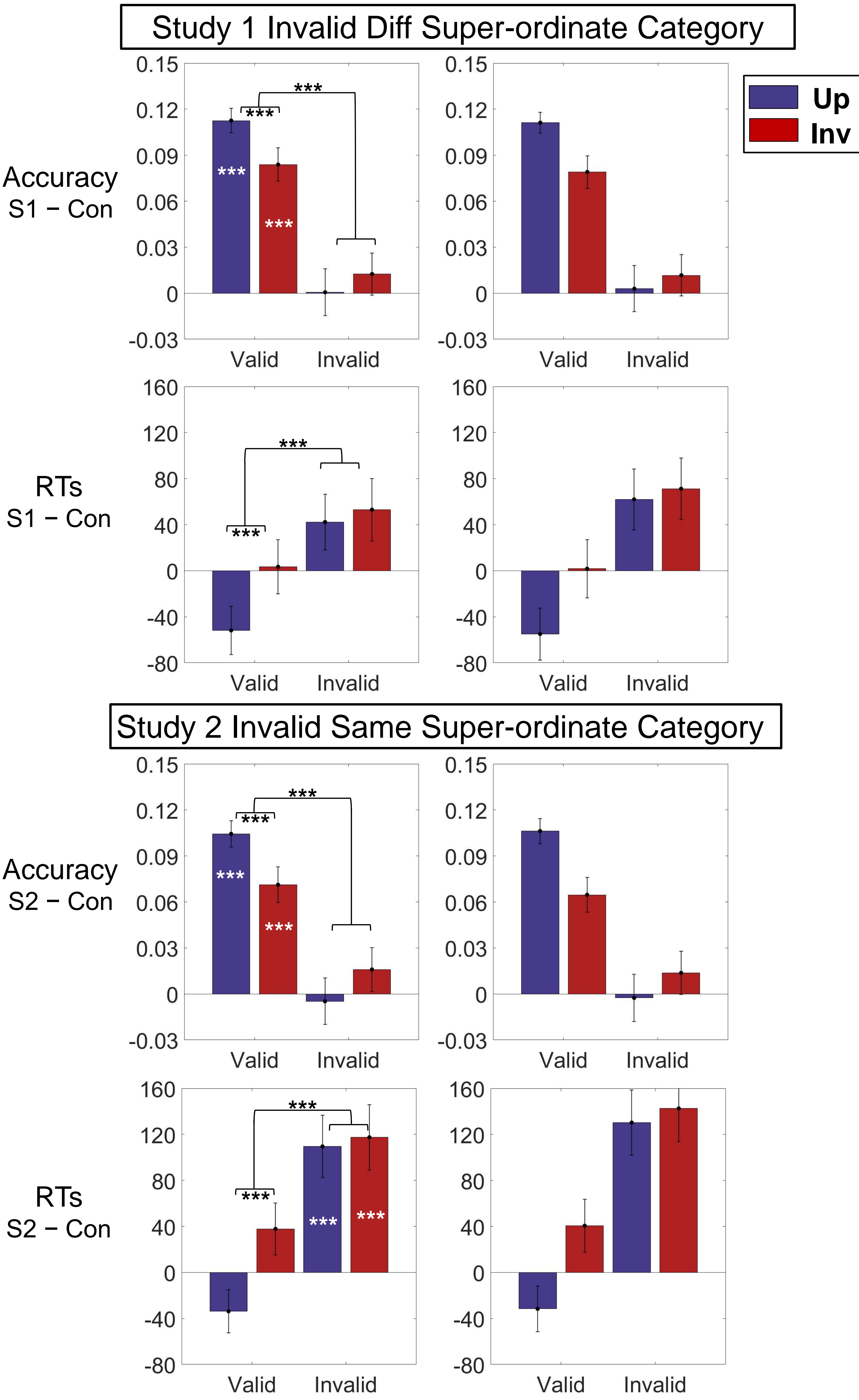
References

1. Skocypec, R. M., & Peterson, M. A. (2022). Semantic Expectation Effects on Object Detection: Using Figure Assignment to Elucidate Mechanisms. *Vision (Basel, Switzerland)*, 6(1), 19.  
2. Wilson RC, Collins AG. Ten simple rules for the computational modeling of behavioral data. *Elife*. 2019 Nov 26;8:e49547.

DDM replicates behavioral data

Behavior

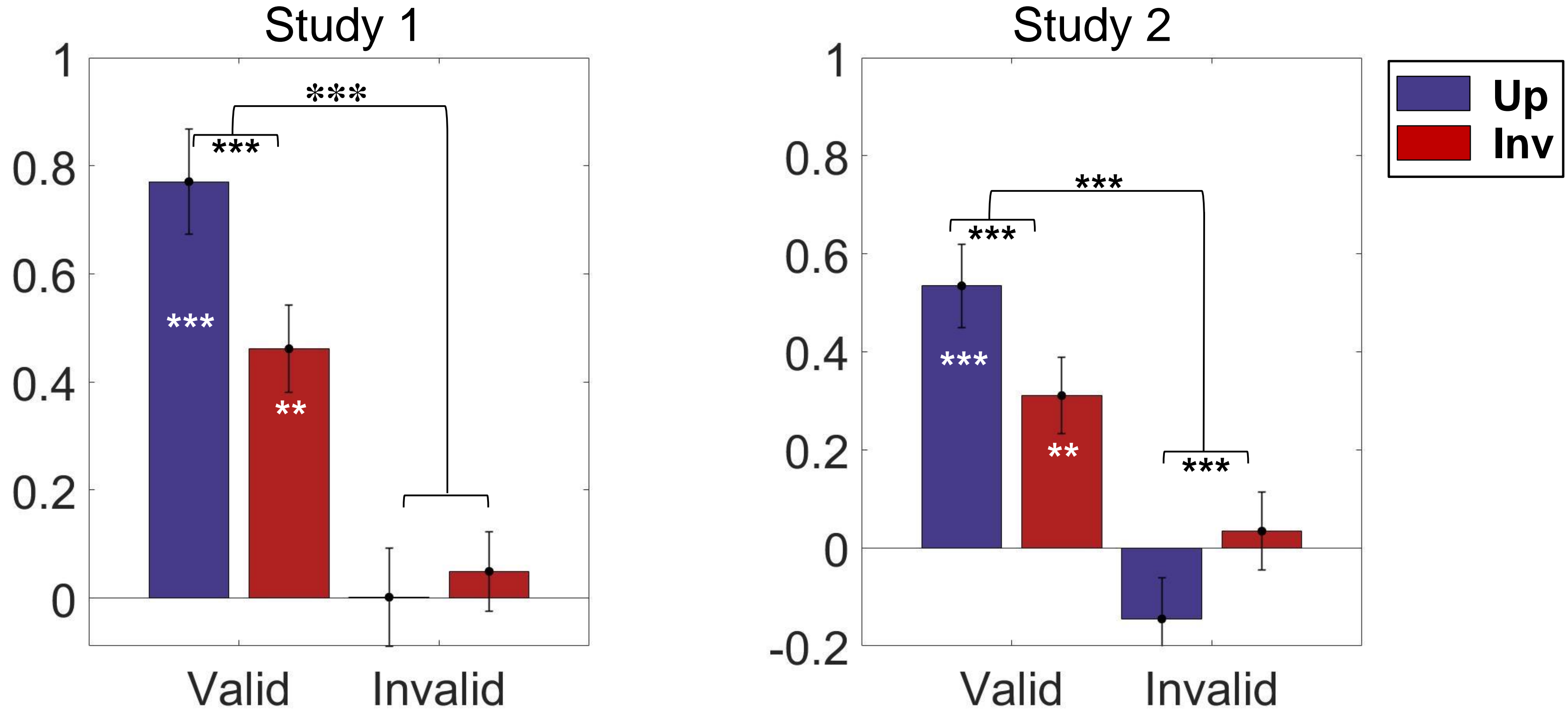
Model



**Valid primes:** improved accuracy & reduced RTs. UP > INV  
→ **object detection not feature detection**  
**Invalid primes:** no effect on accuracy in S1 & S2; no effect on RTs in S1.  
→ Again, not feature detection. But very long RTs in S2 (orientation independent)  
**Therefore,**  
Primes activate neural populations of denoted objects. Invalid primes don't affect build up of evidence in neural population of display object, but cause within category semantic conflict which delays response.

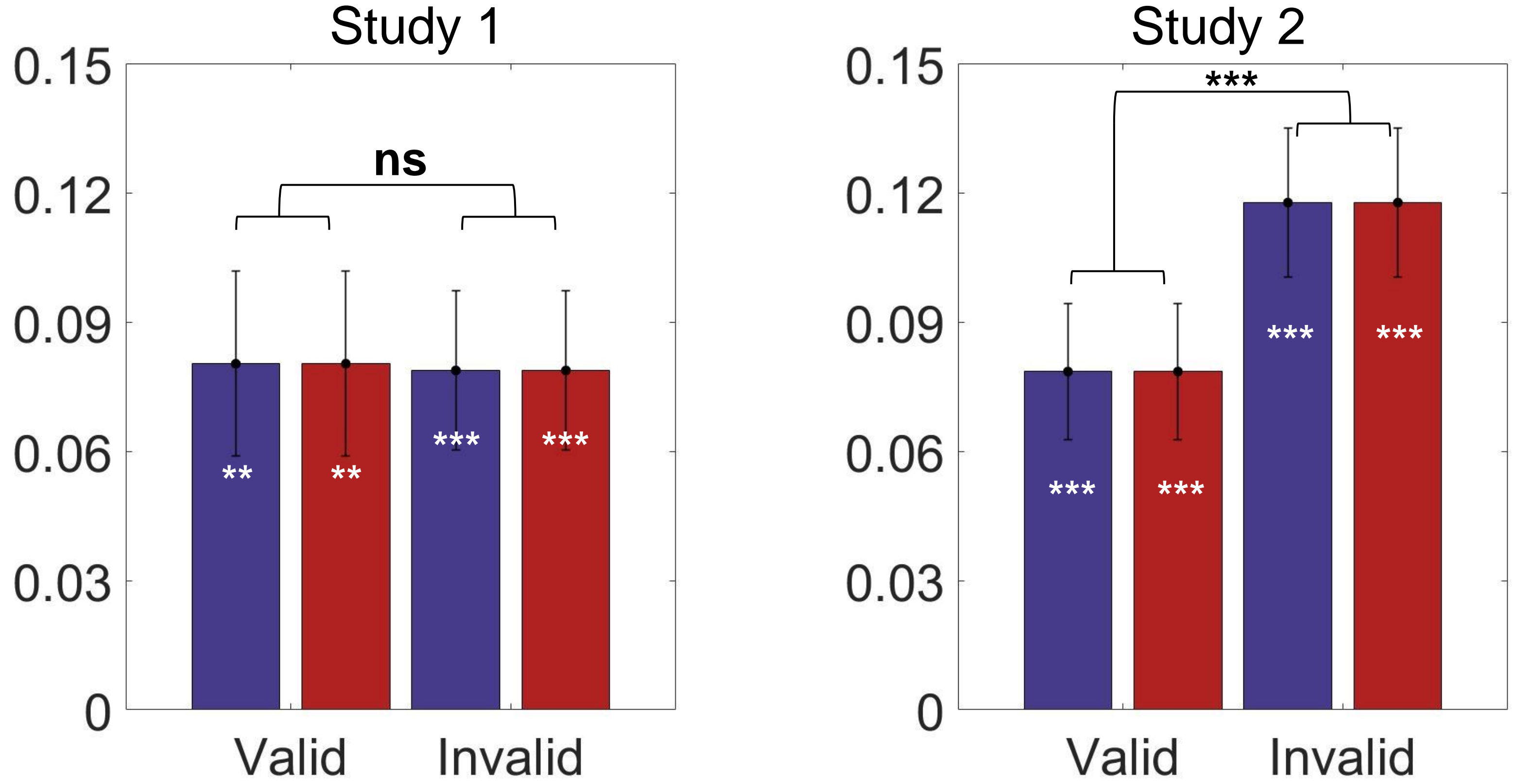
Parameter Values

Drift Rate (processing speed: Exp – Con)



Valid prime: faster processing for up than inv. Invalid prime: overall, no upright advantage

Threshold (evidence required: Exp – Con)



Study 1: Same threshold valid and invalid. Study 2: Higher threshold invalid than valid  
Study 2: Invalid thresholds higher than Study 1

\* No starting point (bias differences)

Conclusions

**Primes operate via different mechanisms:**  
**Valid primes:** Speed evidence accumulation in neural populations for familiar objects  
Evident in drift rate.  
**Invalid primes:** Raise threshold if they denote objects close to familiar configuration  
in representational space.