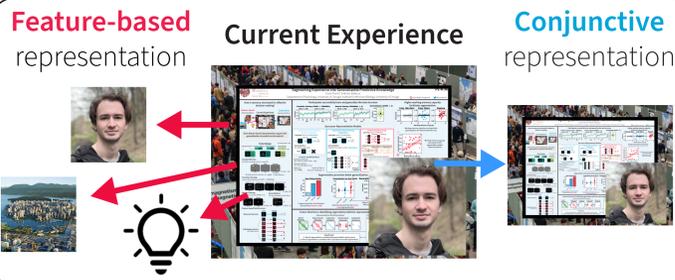


## How is memory structured for effective decision-making?

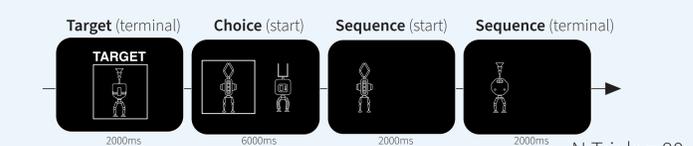


Predictive knowledge supports inferences about distant future outcomes<sup>1</sup>  
**Feature-based** representation may produce more generalizable predictive knowledge?<sup>2</sup>

## Task Design



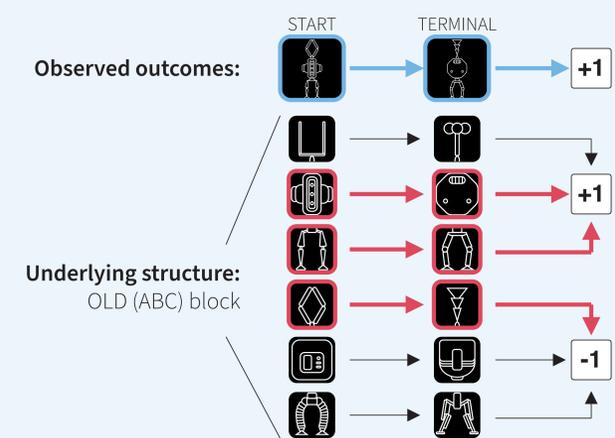
### Transition Training:



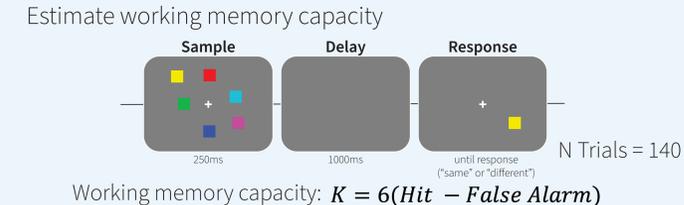
### Reward Training:



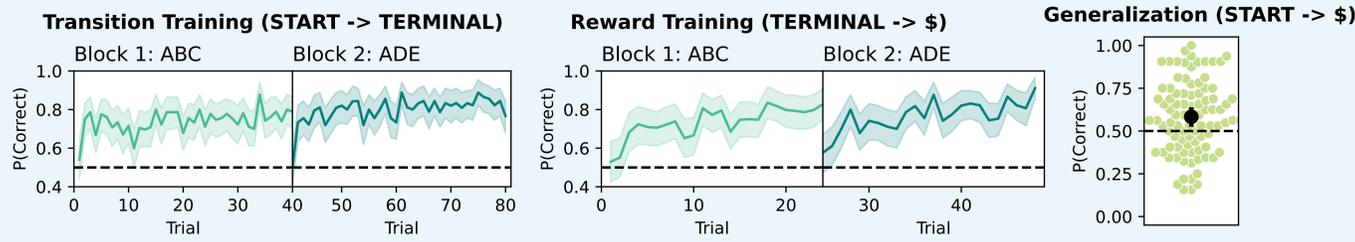
### Feature-based Task Structure



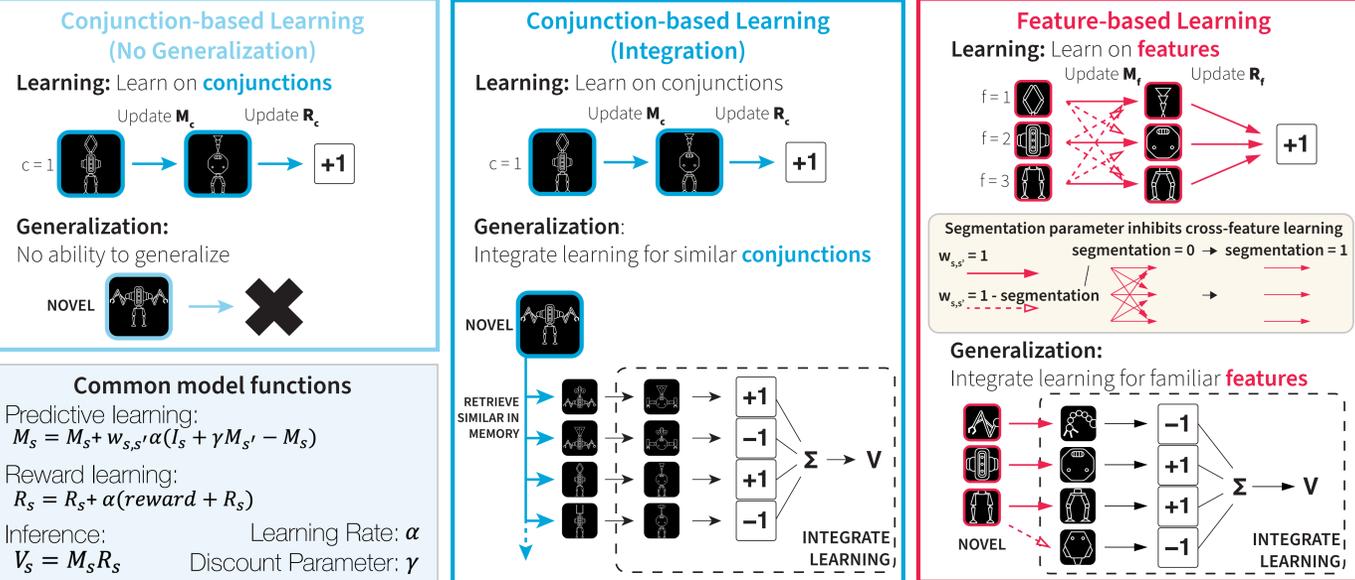
### Change Detection:<sup>3</sup>



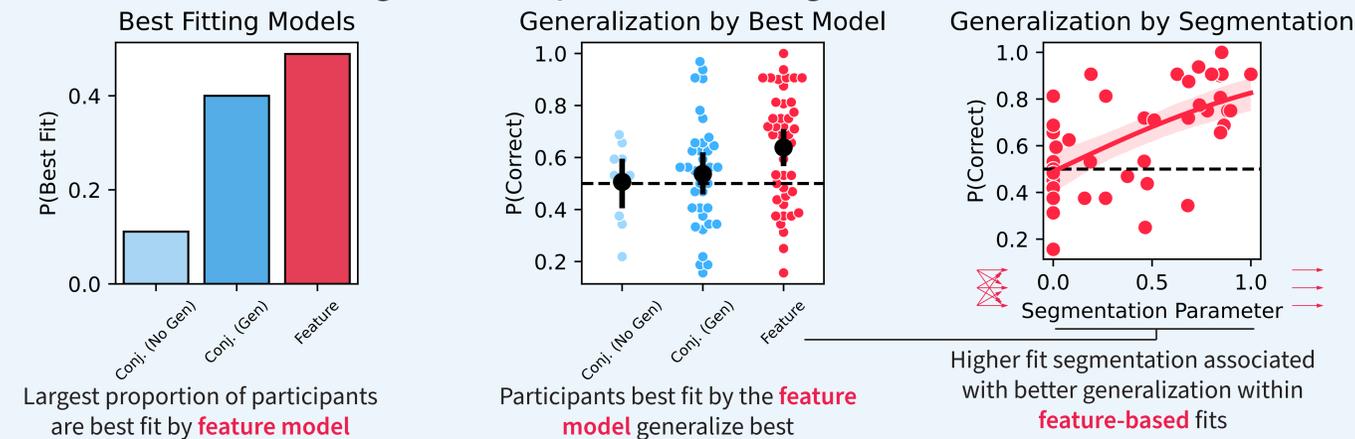
## Participants successfully learn and generalize the task structure



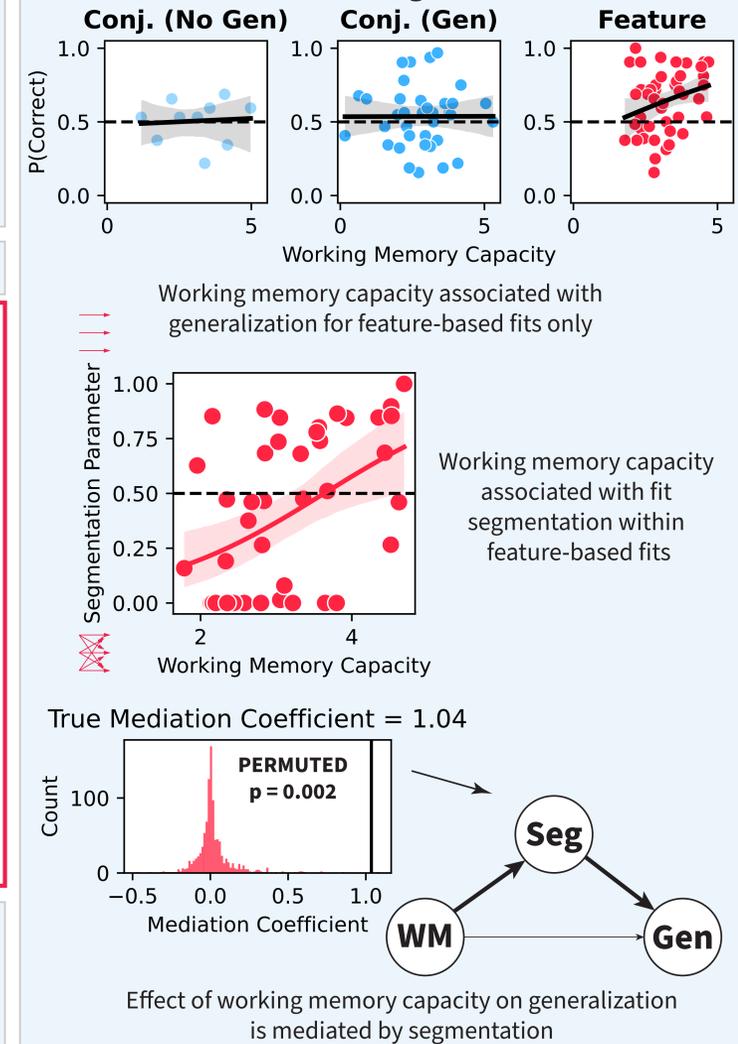
## Successor Representation Models<sup>4</sup>



## Segmentation promotes better generalization



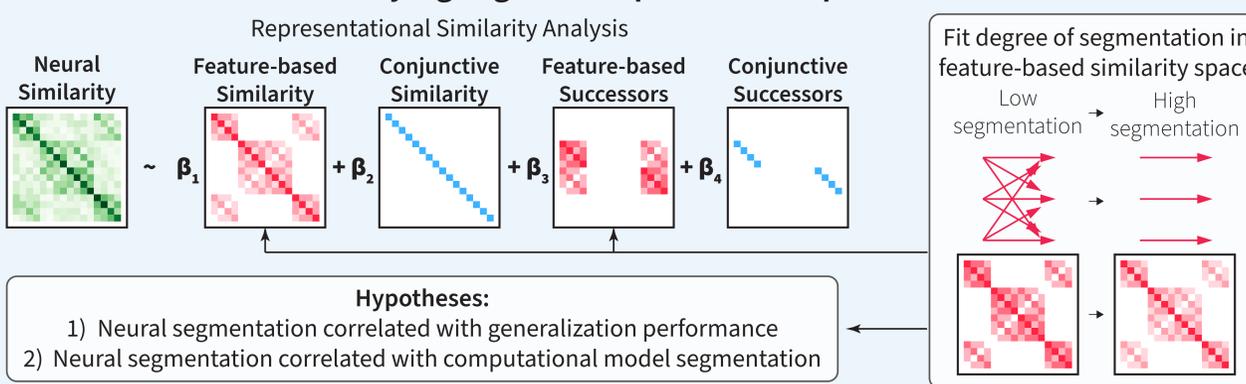
## Higher working memory capacity facilitates segmentation



## Take-aways

1. **Segmented feature-based learning** produces generalizable predictive representations
2. **Working memory may facilitate segmented feature-based learning**, potentially via its role in discretizing information into chunks

## Future directions: Identifying segmented predictive representations in the brain



## References

[1] Momennejad, I. (2020). Learning Structures: Predictive Representations, Replay, and Generalization. *Current Opinion in Behavioral Sciences*, 32, 155–166.  
 [2] Farashahi, S., Rowe, K., Aslami, Z., Lee, D., & Soltani, A. (2017). Feature-based learning improves adaptability without compromising precision. *Nature Communications*, 8(1), 1768.  
 [3] Luck, S. J., & Vogel, E. K. (1997). The capacity of visual working memory for features and conjunctions. *Nature*, 390(6657), 279–281.  
 [4] Dayan, P. (1993). Improving generalization for temporal difference learning: The successor representation. *Neural Computation*, 5(4), 613–624.

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