

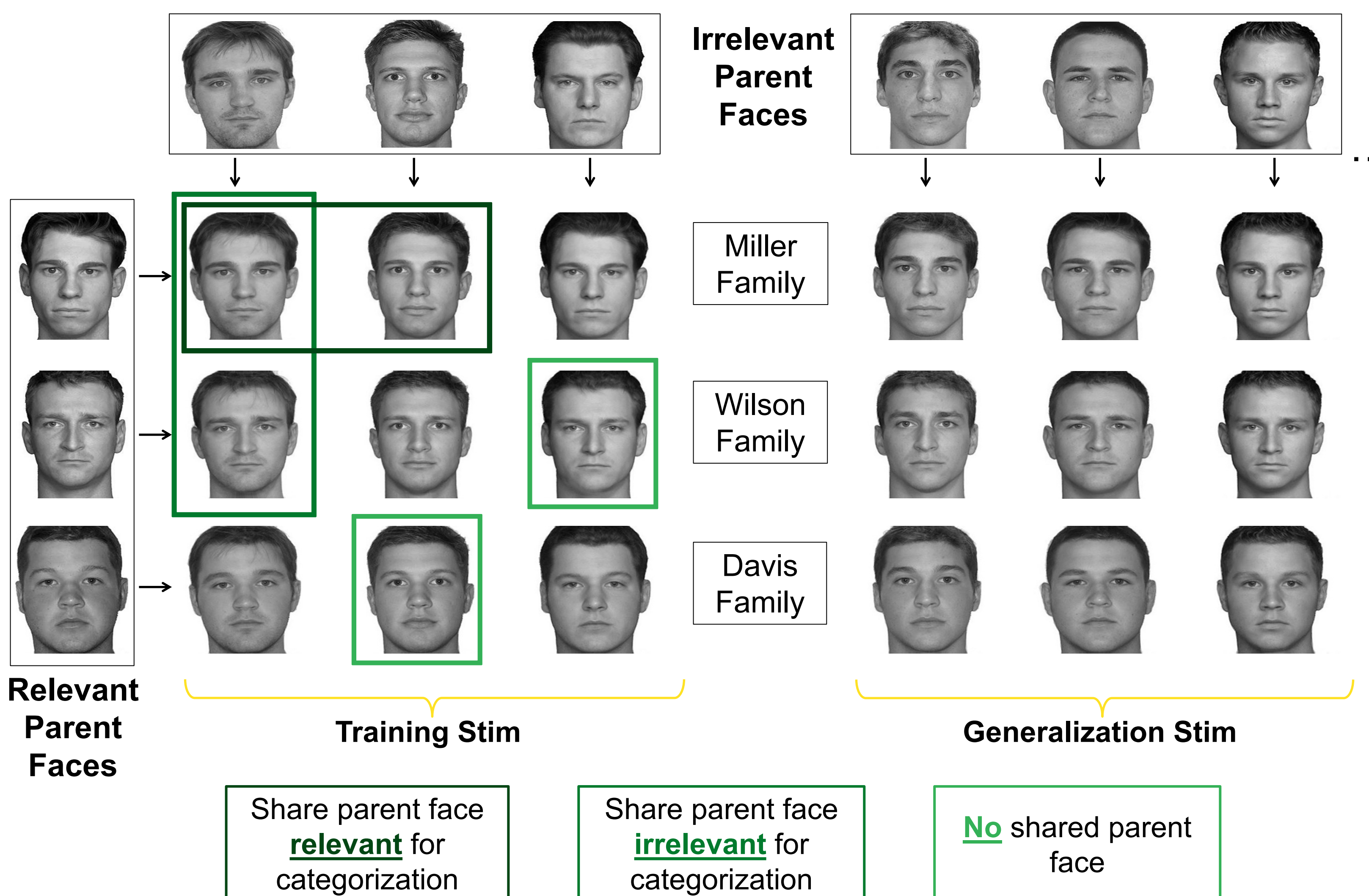
Background

- We extract commonalities from specific experiences to form generalized knowledge applicable to novel situations¹
- Reciprocally, generalized knowledge – such as schemas or concepts – affect perception and memory for new specific experiences^{2,3}
- Hippocampus interacts with ventromedial prefrontal cortex (VMPFC) to organize related memories into schemas in support of generalization^{4,5,6}

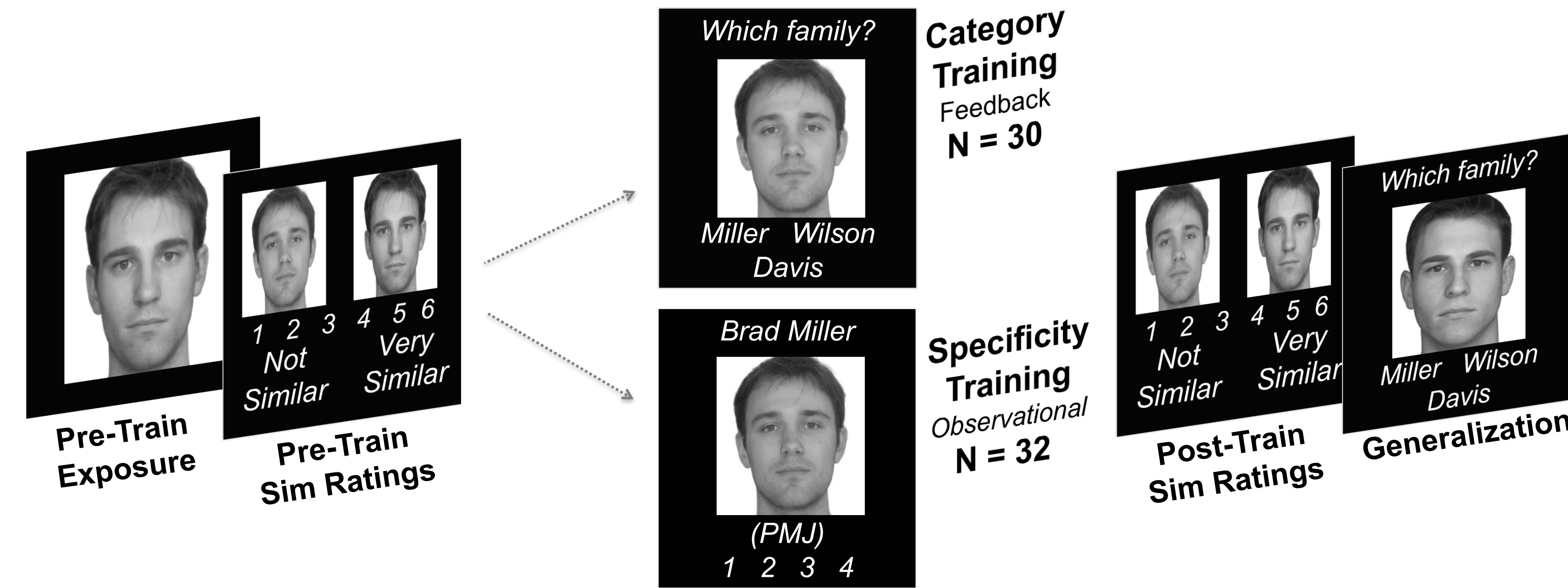
- How do learning goals at encoding affect item representations and generalization?
- How is incidental generalization reflected in the hippocampus, VMPFC, and higher-order perceptual regions?

Methods

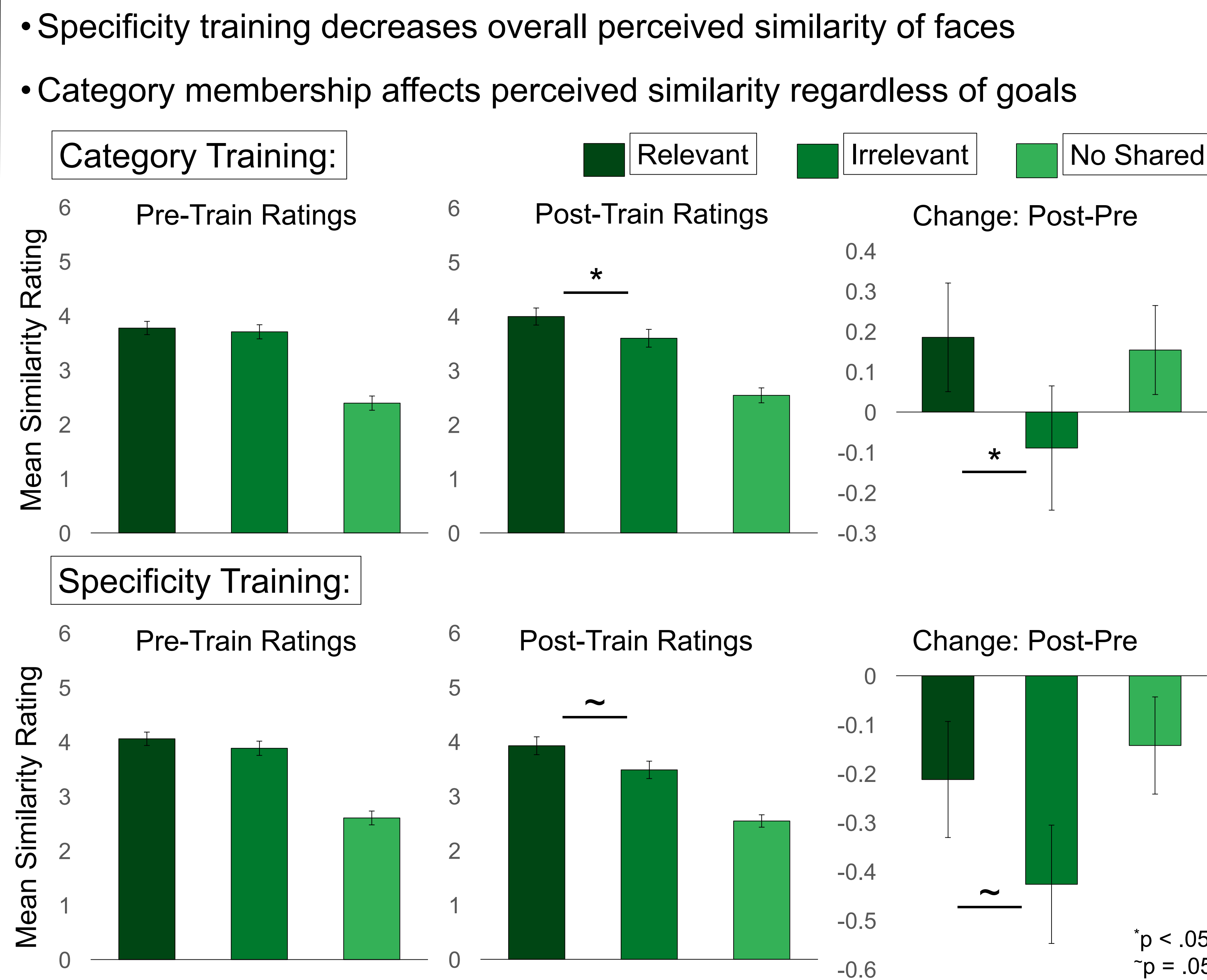
- Face-blend stimuli were 50/50 blends of one face **relevant** and one face **irrelevant** for category (family) membership
- Behavioral data was collected from 69 subjects and exclusions were made due to poor performance:
 - 3 from the category training
 - 4 from the specificity training
- Pilot fMRI data was collected from 9 subjects and MVPA analyses were conducted



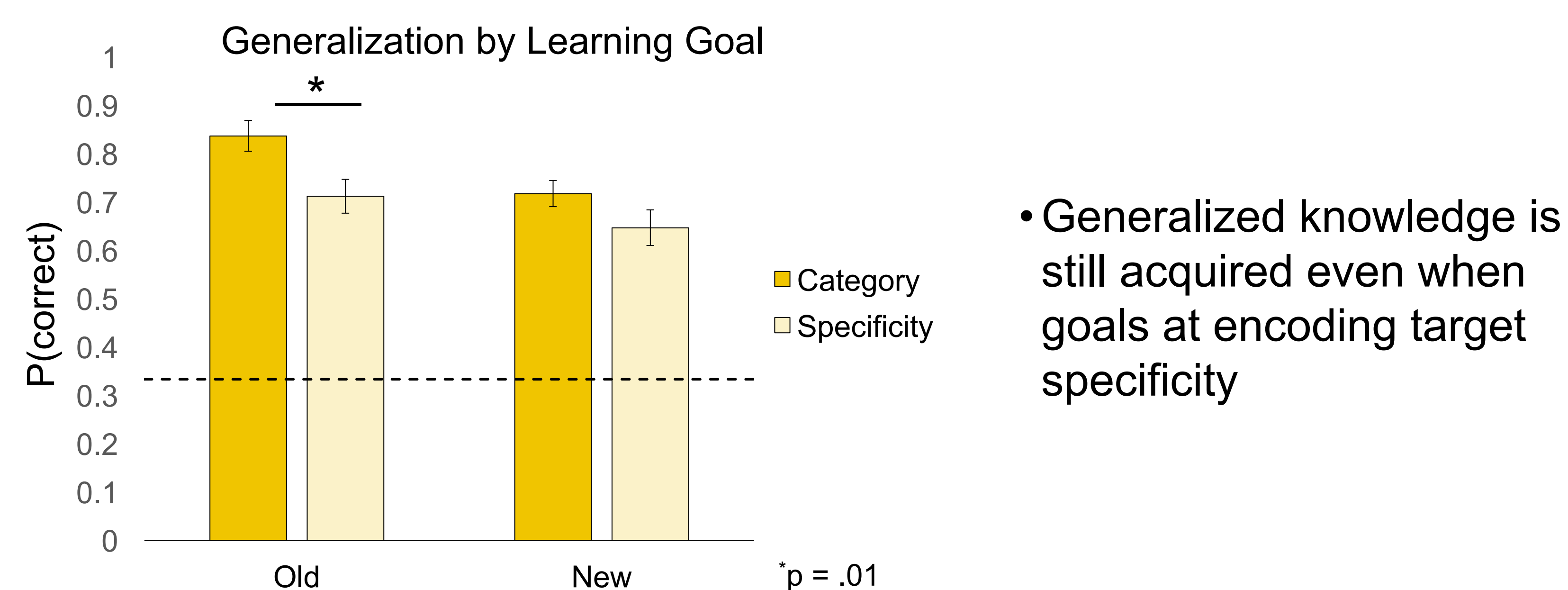
Task Design



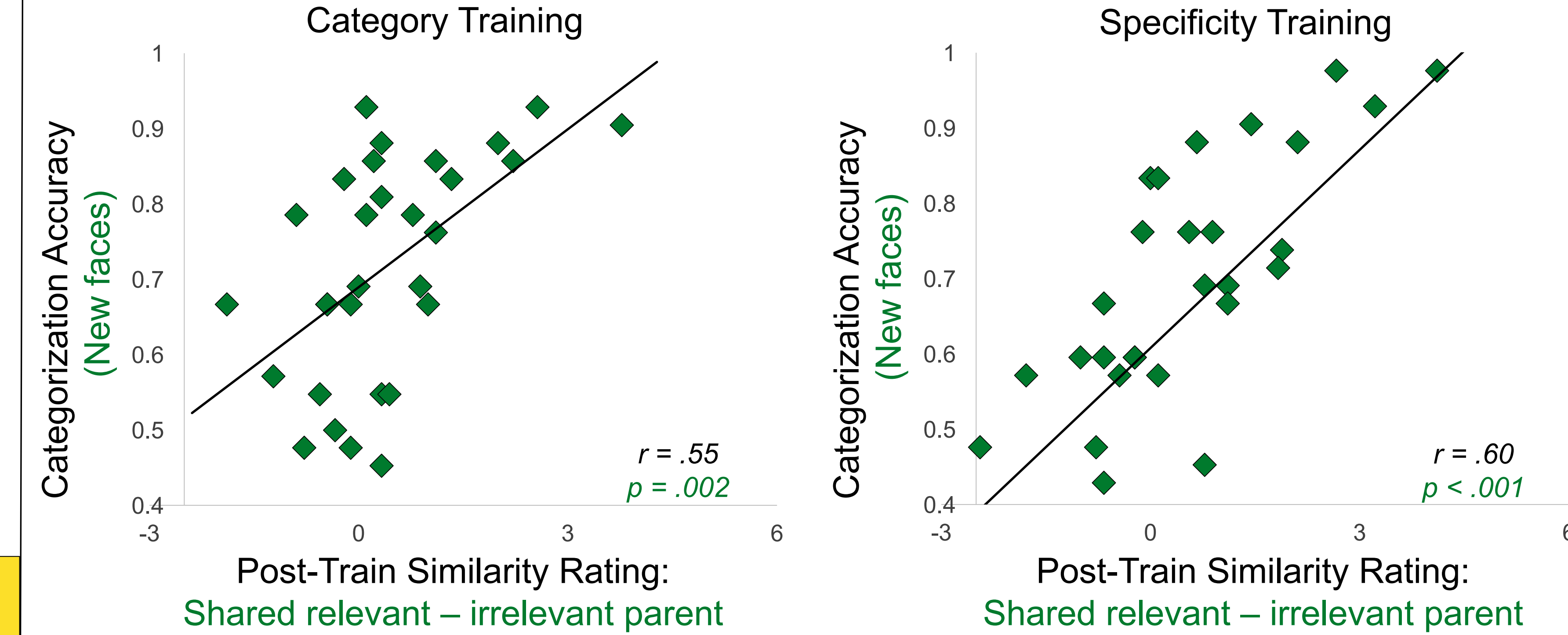
Perceptual Similarity Results



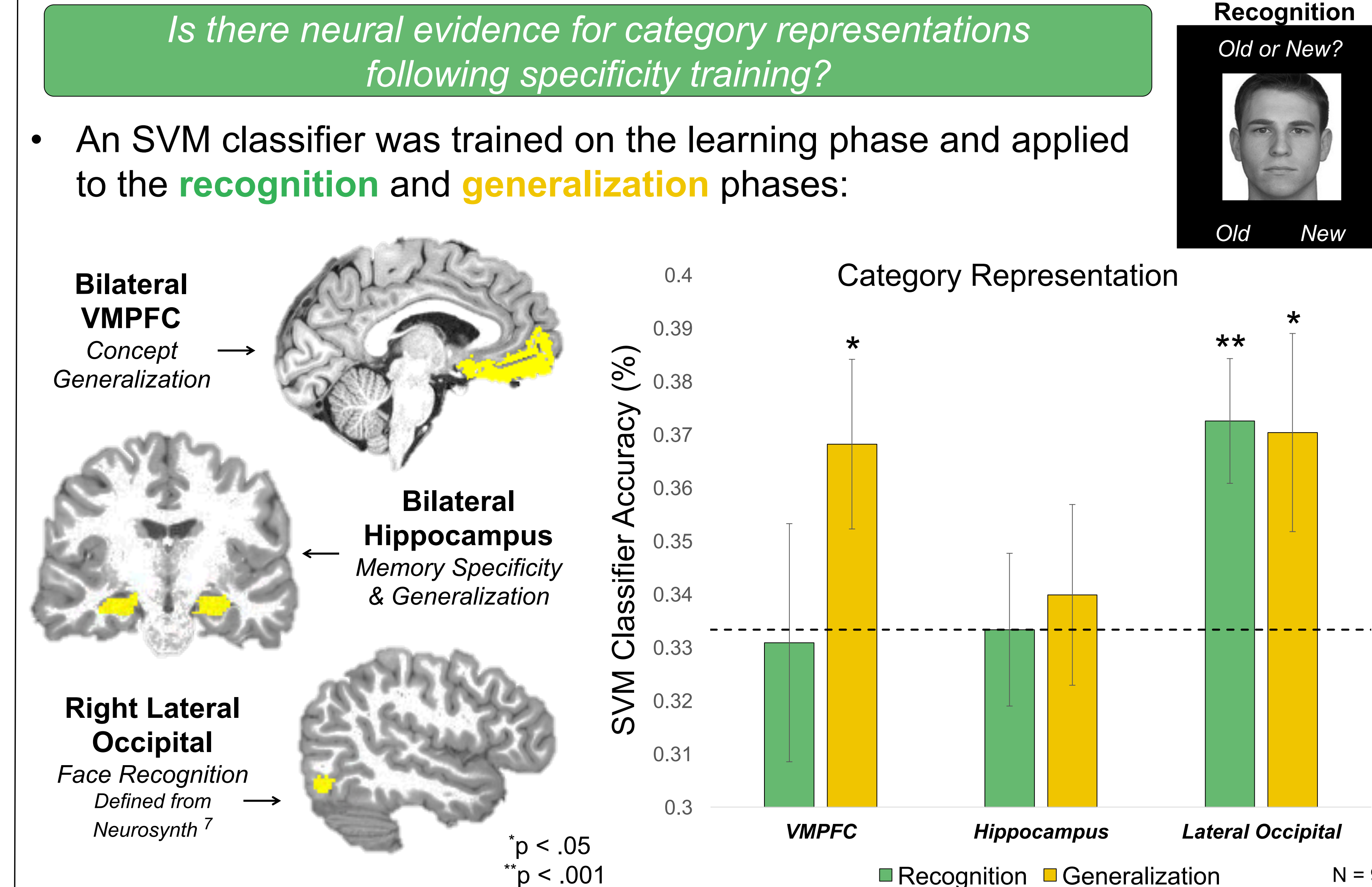
Generalization Results



Perceptual Similarity Tracks Generalization



Preliminary fMRI – specificity training



- Irrespective of learning goals:
 - perceived similarity of faces is affected by category information
 - the degree of category effect on perception predicts generalization success
- Preliminary fMRI suggests category information is always present in face identity regions but in VMPFC only when required by task demands

References

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¹ Posner, M.I. & Keele, S.W. (1968). Journal of Experimental Psychology, 77(3), 353-363. ² Clarke, A., Pell, P.J., Ranganath, C., & Tyler, L.K. (2016). Journal of Cognitive Neuroscience, 28(7), 1010–1023. ³ Goldstone, R.I. & Steyvers, M. (2001). Journal of Experimental Psychology: General, 130(1), 116-139. ⁴ Zeithamova, D., Maddox, W.T., & Schnyer, D.M. (2008). The Journal of Neuroscience, 28(49), 13194-13201. ⁵ Zeithamova, D., Dominick, A.L., & Preson, A.R. (2012). Neuron, 75(1), 168-179. ⁶ Warren, D.E., Jones, S.H., Duff, M.C., & Tranel, D. (2014). The Journal of Neuroscience, 34(22), 7677–7682. ⁷ Yarkoni, T., Poldrack, R., Nichols, T., Van Essen, D. & Wager, T.D. (2011). Nature Methods, 8, 665-670.