

**DEBRIEFING STATEMENT**  
**PRINCETON UNIVERSITY**  
**Department of Psychology**  
**PLEASE KEEP THIS SHEET FOR YOUR RECORDS**

TITLE OF RESEARCH: Competition-dependent learning of faces via real-time fMRI

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Thank you very much for your participation. By conducting this study, we hope to learn more about the mechanisms underlying memory processing. We are interested in using behavioral and functional magnetic resonance imaging (fMRI) experiments to measure how memories change dynamically alongside competing (aka, perceptually similar) representations. You completed the behavioral version of this experiment, which will be used to inform our subsequent neuroimaging experiments.

According to the non-monotonic plasticity hypothesis (Lewis-Peacock & Norman, 2014), if you retrieve a target memory and its competing memory is moderately activated in response, then this competing memory representation is made more distinct in order to potentially reduce competition with the target memory in the future. However, if high activation is elicited, then this can instead make the competing memory representation become more similar to the target memory. By targeting moderate activation of a certain face representation, we can try to repel your memory for a face away from its competing, similar-looking “doppelganger” face. If successful, the two memorized faces should become more distinctly represented in your brain and therefore lead to an easier time learning new associations, such as the object associations you learned near the end of the experiment.

If you’d like to hear more, please do not hesitate to ask any questions, or to contact us at one of the above email addresses. The same goes if you’d also like to be contacted about future experiments.

**Thank you again for participating!**

Relevant work:

Favila, S. E., Chanales, A. J., & Kuhl, B. A. (2016). Experience-dependent hippocampal pattern differentiation prevents interference during subsequent learning. *Nature Communications*, 7(1), 1-10. <https://doi.org/10.1038/ncomms11066>

Lewis-Peacock, J. A., & Norman, K. A. (2014). Competition between items in working memory leads to forgetting. *Nature Communications*, 5(1), 1-10. <https://doi.org/10.1038/ncomms6768>

Wanjia, G., Favila, S.E., Kim, G. *et al.* Abrupt hippocampal remapping signals resolution of memory interference. *Nature Communications*. 12, 4816 (2021). <https://doi.org/10.1038/s41467-021-25126-0>

**This study has been approved by the Institutional Review Board for Human Subjects**