Prof. Jeffrey Starns, PhD   
Editor-in-Chief for *Journal of Experimental Psychology: Learning, Memory, and Cognition*  
28/08/2025

Dear Dr. Starns:

We would like to submit our manuscript, " Human Category Learning in Reversal Tasks: Dynamic Learning Rates Help Overcome Catastrophic Interference in Connectionist Networks”, for consideration for peer review and publication in the *Journal of Experimental Psychology: Learning, Memory, and Cognition*.

This manuscript presents our investigation into the cognitive phenomenon of "common coding", where agents group physically distinct stimuli that share a common predictive value. We examined this using a category reversal learning task in three human behavioral experiments and an artificial neural network model.

The key findings of our study are:

* Behavioral Evidence for Common Coding: In two experiments, participants learned a Total reversal task significantly faster than a Partial reversal task. This supports our hypothesis that within-category grouping, or common coding, takes place during initial learning.
* Perceptual Independence: We conducted a third experiment that showed no significant differences in the perceived similarities of our fractal exemplars, suggesting that the observed learning effects were not due to inherent perceptual features of the stimuli.
* Computational Modeling: We successfully modeled the human behavioral results using a three-layer neural network with dynamic learning rates. This model, which incorporates principles from associative learning theory, demonstrates how catastrophic interference can be avoided and how the network can efficiently learn new mappings while preserving previously learned category representations.

The novelty and significance of our work lie in its integrated approach, which combines robust human behavioral data with a computational model that provides a mechanistic explanation for the observed common coding effect. Our findings contribute to the growing body of evidence supporting the relevance of associative mechanisms in category formation and associative learning, and they offer a solution to the "catastrophic interference" problem in neural networks by applying principles from the animal learning literature.

This manuscript has not been previously published and is not under consideration elsewhere. All study procedures were approved by the Institutional Review Board at our respective institutions, and all participants provided written informed consent.

Thank you for your consideration.

Sincerely,

Santiago Castiello PhD & Andrew Delamater PhD