Prof. Antonia Hamilon, PhD   
Editor for *Quarterly* *Journal of Experimental Psychology*  
20/09/2025

Dear Dr. Hamilton:

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 *Quarterly* *Journal of Experimental Psychology*.

This manuscript presents our investigation into the cognitive phenomenon of "common coding", where participants group together physically distinct stimuli that share a common associate. We examined this using a category reversal learning task in three human behavioral experiments and with artificial neural network modeling. 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 applied multidimensional scaling methods in a third (control) study assessing the role of perceptual similarities among our fractal stimuli, and those results suggested that our observed learning effects with these stimuli were not due to any inherent differences in perceptual properties 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 lies in its integrated approach, which combines robust human behavioral data (analogous to earlier animal findings) with a computational model that provides a mechanistic explanation for the observed common coding effect in category learning. 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.

We would like to suggest Prof. Charlotte Bonardi to act as Associate Editor because her prior research with this topic and her expertise in associative learning theories applied to human cognition. As reviewers we suggest:

* Prof. Thomas Zentall ([zentall@email.uky.edu](mailto:zentall@email.uky.edu))
* Prof. Edward Wasserman ([ed-wasserman@uiowa.edu](mailto:ed-wasserman@uiowa.edu))
* Prof. Robert Honey ([Honey@cardiff.ac.uk](mailto:Honey@cardiff.ac.uk))
* Prof. Dominic Dwyer ([dwyerdm@cardiff.ac.uk](mailto:dwyerdm@cardiff.ac.uk))

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