Shifting Perceptions:
The Effects of Subordinate-Level Training on Category Restructuring

Lawrance, A., Schultz-Coulon, J., Roads, B., Tanaka, J. — Different Minds Lab, Dept. of Psychology, University of Victoria, BC, Canada

University of Victoria — DIFFERENT MINDS LAB

PREREGISTERED

INTRODUCTION

Participants were **trained to identify four species of warbler birds.**

Objective: Determine if participants who exhibit better recognition abilities post-training also exhibit different category structures pre-training.

METHODOLOGY

Participants' (n = 76) **perceived category structure was assessed** before and after **subordinate-level perceptual training.**
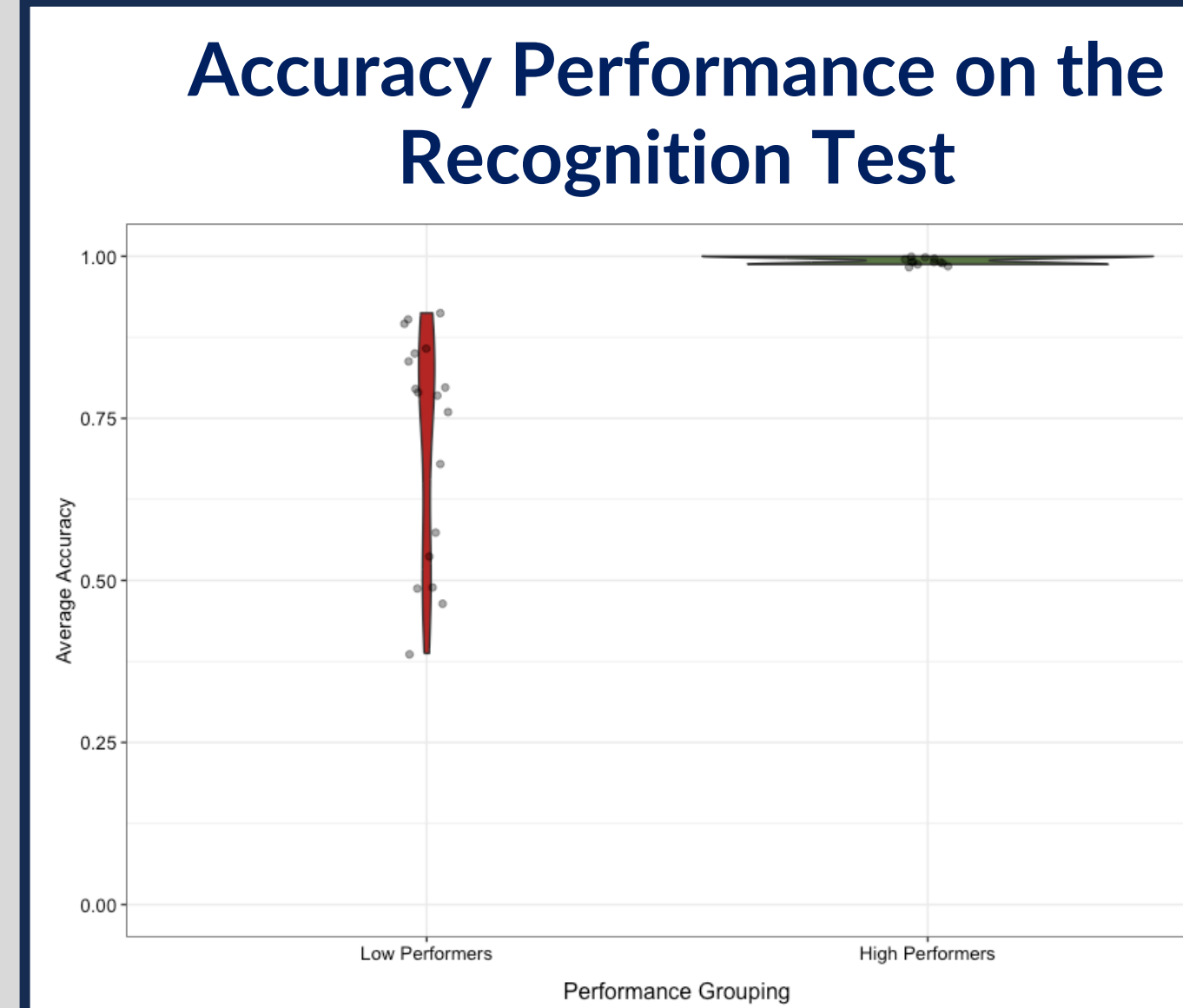
Session 1 — Assess Category Structure | Perceptual Training — 48hrs — Session 2 — Reassess Category Structure | Recognition Test — **High Performers** / **Low Performers**

Perceptual Training

Incorrect!
The correct answer was <u>Magnolia</u>

Prairie | Townsend

"Add 1" category training

Completed training after reaching a 90% accuracy criterion.

Recognition Test

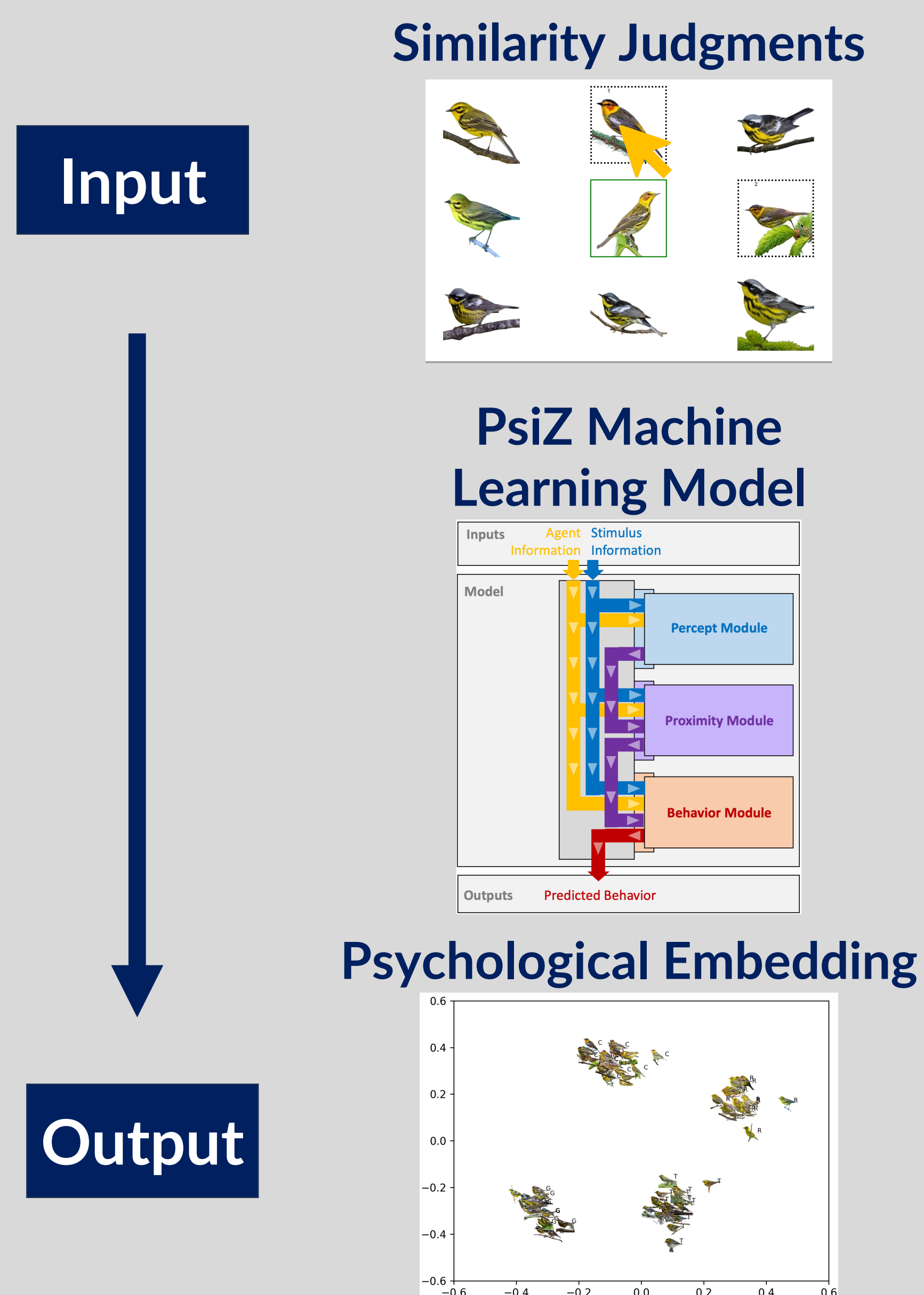Prairie | Townsend | Magnolia | Cape May

Task:
- Categorize images by species
- 80 trials with no feedback

Via a **quartile analysis**, **high** and **low performing participants** were identified according to **accuracy performance** on the **recognition test.**

Accuracy Performance on the Recognition Test

PsiZ: Category Structures

To assess **shifts in category structure** (i.e., category restructuring), we employed **PsiZ**—an open-source machine learning package that infers psychological embeddings (Roads & Love, 2020)

Input

Similarity Judgments

PsiZ Machine Learning Model

Inputs — Agent Information, Stimulus Information
Model — Percept Module, Proximity Module, Behavior Module
Outputs — Predicted Behavior

Psychological Embedding

Output

At the **beginning of each data collection session**, participants completed **80 similarity ranking trials**. On each trial, participants were asked to select, in order of similarity, the two most similar warblers.

DISCUSSION

Following training, **both groups exhibited significant shifts in their perceived category structure.**
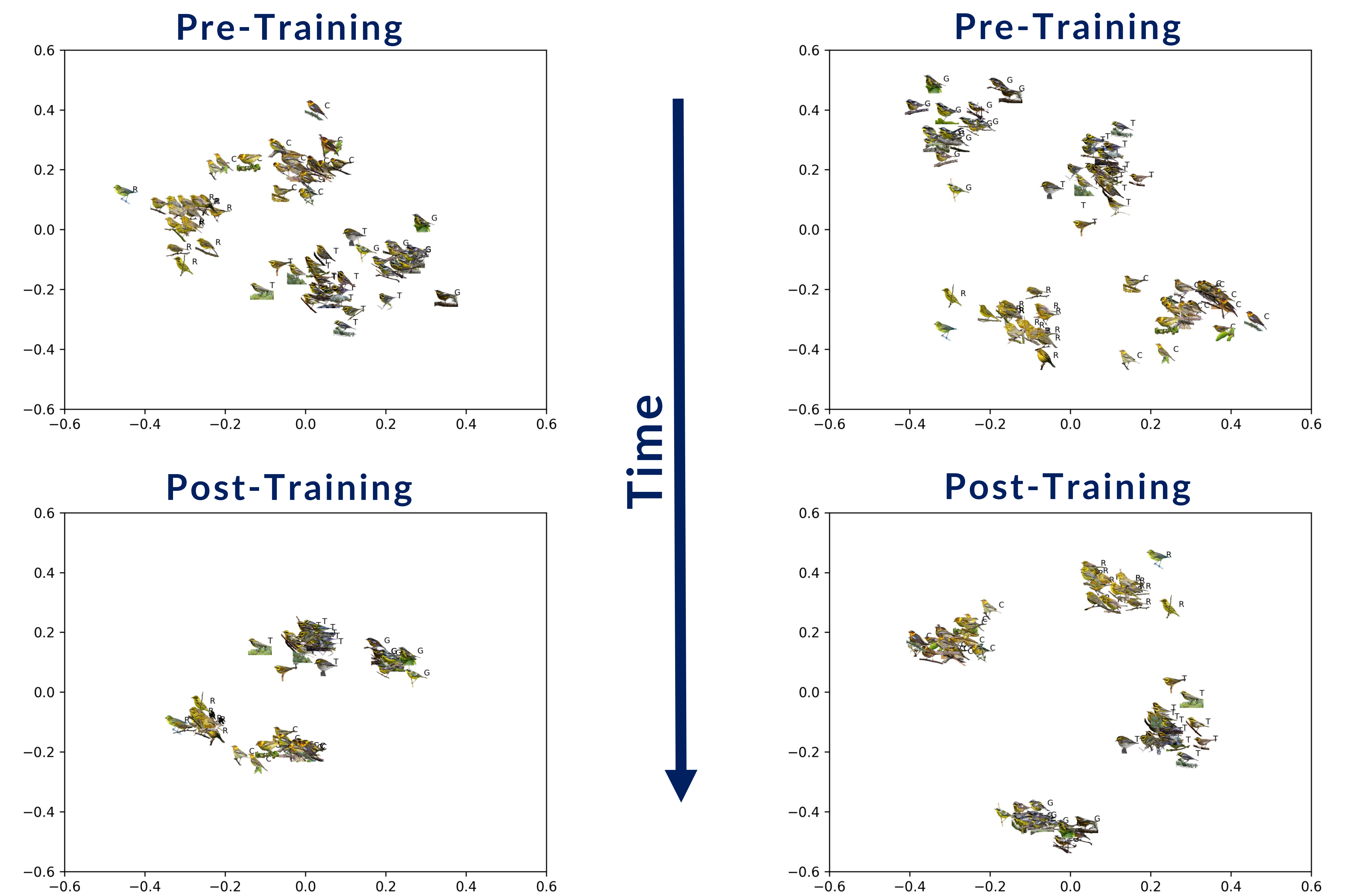
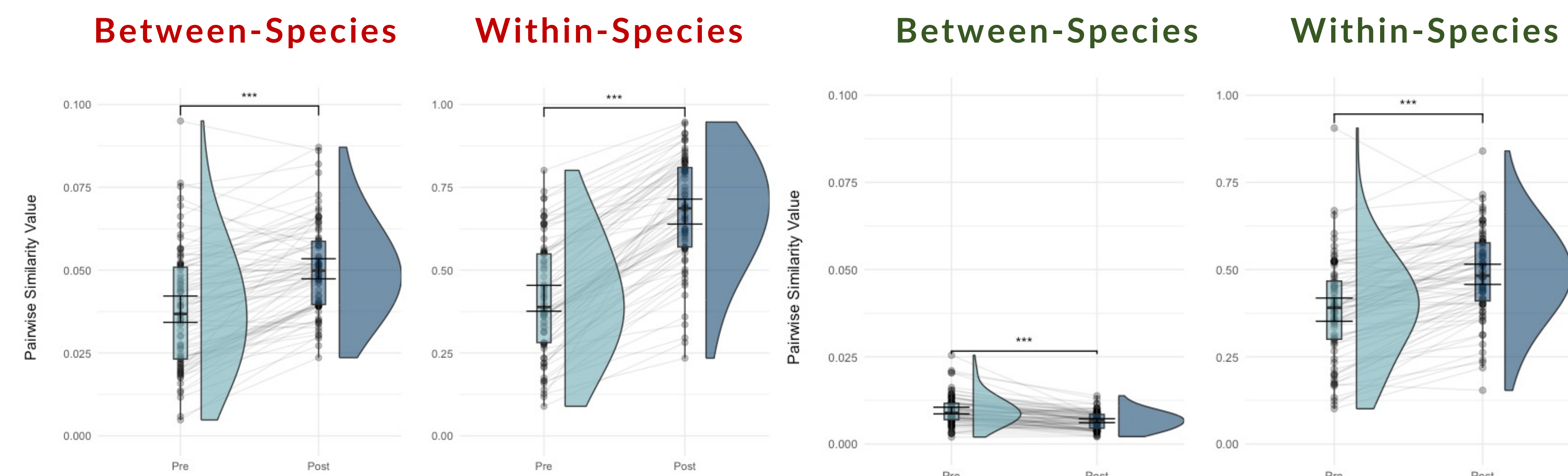**High-performing** participants appeared to **exhibit greater levels of perceptual sensitivity** pre-training.

Do participants differ in their category restructuring trajectories?

Low Performers | **High Performers**

Pre-Training (Low Performers)

Pre-Training (High Performers)

Time

Post-Training (Low Performers)

Post-Training (High Performers)

Quantifying Perceptual Shifts

Between-Species | **Within-Species** | **Between-Species** | **Within-Species**

Note. Dotted points represent each individual stimulus. Error bars plot 95% CIs on the mean. Higher values represent an increase in perceived similarity. *** = p < .001.