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Proceedings of the Annual Meeting of the Cognitive Science Society

Title

The Statistical Properties of Color and Shape of Objects in Visual Categorization

Authors

Flores-Coronado, Marco A.
Tovar, Angel Eugenio
Andrade, David Morales

The Statistical Properties of Color and Shape of Objects in Visual Categorization

Marco Flores-Coronado
UAEM, Cuernavaca, Mexico

Angel Eugenio Tovar
UNAM, Mexico City, Coyoacan, Mexico

David Andrade
UNAM, Ciudad de México, Mexico

Abstract

We perceive and categorize the world constrained by the restrictions of our sensory and neural systems. Additionally, naming modulates how we categorize the things we see. Here we explore a third influence on visual categorization, we study how the perceived statistical regularities of shapes and colors modulate our experience in categorizing objects. We conducted our analyses in artificial systems. We used computer vision to process pictures of real objects, and artificial neural networks to categorize them. We found that the statistical regularities of different object sets produced either shape or color biases, depending on the nature of the set. Our statistical-based categorization approach presents complementary mechanisms of categorization biases, relevant for a more comprehensive understanding of the linguistic shape bias, the color bias of food, and it let us hypothesize why categorization may vary across populations.