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Human generalization of an alternating category structure

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Abstract

Leading models of human categorization posit that an observed stimulus is classified according to its similarity to stored reference points. In the present study, we investigate a category structure that elicits human generalization behavior not predicted by the reference point framework. In a supervised classification learning task, participants were presented with simple continuous-valued stimuli (one- or two-dimensional) based on an underlying category structure with a strict pattern of alternating regions assigned to each class (e.g., A A B B A A B B ? ?). The participants were then tested on new stimuli with dimension values beyond the range seen in training. A large portion of participants classified new items by extrapolating the alternation sequence they did not classify based on similarity to the nearby reference points. These results pose a challenge to reference point models and raise important issues about concept formation and generalization.