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Exploring Category Structure in Children and Adults

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Abstract

Understanding how statistical regularities result in category learning requires access to the underlying psychological spaces in which these categories are represented. However, uncovering these spaces, especially in developmental settings, poses significant experimental and methodological challenges what are relevant dimensions on which these spaces are organized and how can we uncover them without prohibitively long or straining experiments?

Here, we propose a novel way of uncovering these spaces. We learn participants implicit similarity functions, instantiated as a neuronal network, by training on simple groupings of stimuli. In simulations, we show that our method can recover group-specific categorical structures. Furthermore, we show that young children quickly understand the grouping task, and spaces can be obtained in short, engaging experiments. Finally, we apply our method to uncover age-related differences in category representations. In an experiment contrasting 4-5, 6-7 year-olds, and adults, we find that the learned spaces exhibit age-specific feature biases.