Characterizing the Spatiotemporal Neural Representations of Perceived Similarity Using Implicit and Explicit Tasks.

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Introduction

Linking neural and behavioral activity is crucial for understanding and replicating the mechanisms behind visual stimulus recognition. Perceived similarity judgments have become increasingly popular in visual experiments, providing behavioral representations that strongly correlate with visual system activity [1,2]. Representational similarity analysis (RSA) facilitates identification of commonalities between neural and behavioral activity representations by comparing dissimilarity between all pairwise combinations of stimuli [3]. For large stimulus sets, the multiple arrangements (MA) task [4] has been instrumental in successfully relating explicit behavioral information about stimuli to representational geometries of brain activity patterns [5,6,7,8] in both space and time [5,7], owing to its efficiency in collecting pairwise similarity judgments. However, explicit similarity judgments may not fully reflect representational geometries across the entire visual cortex [9]. Here, we aim to investigate how implicit and explicit similarity judgments capture complementary aspects of brain-behavior relations. By relating data from three tasks with varying levels of processing to recorded neural responses, we explore how they associate with the spatial (fMRI) and temporal (EEG) unfolding of object representations encoded in the ventral stream.

Methods

Results

Discussion

References

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