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Distinct preference for spatial frequency content in ventral stream regions underlying the recognition of scenes, faces, bodies and other objects

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Abstract

The ventral visual pathway receives both inputs from parvocellular and magnocellular pathways, and combines information from distinct high and low spatial frequency channels (HSF and LSF). Using a random effects region of interest general linear model approach (n=21), we aimed to compare the selectivity to different spatial frequency channels in eight key areas involved in visual object recognition: FFA, OFA, and STS, for face processing; FBA, and EBA as body selective regions; (dorsal and ventral) LOC for object perception; PPA for processing information of places and VWFA as a region which responds to written verbal material. We found that face and body selective regions had significantly higher response to LSF, suggesting an important contribution of holistic processing favoring LSF channels, while other object responsive regions had a higher response to HSF, suggesting a more important role for detailed component processing. Both FBA and VWFA failed to reveal a preference to SF content. These findings apply in general to the preferred category, with the notable exception of PPA, which revealed a higher response to HSF for all categories of stimuli. Our results suggest that areas along the ventral stream have distinct spatial

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