Two Neural Mechanisms Underlie the Perceptual Decision Bias towards Faces

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Presentation Abstract Summary Perceptual choice is influenced not only by the stimulus evidence in the decision alternatives, but also by the propensity to choose one alternative over another. In the drift-diffusion model, such bias can be expressed either as a change in drift rate or a change in starting point of the decision process. Here, using simultaneous EEG and fMRI, we investigated the neural substrate underlying the face decision bias as a function of stimulus evidence (phase coherence) during a three-choice (Face vs. Car vs. House) visual categorization task. Firstly, we showed that the change in drift rate best explained the behavioral differences between faces and cars of the high coherence trials whereas the change in starting point best captured those of the low coherence trials. Secondly, we capitalized on the EEG single-trial variability to temporally identify brain regions modulated by the two sets of bias parameters in the fMRI analysis. Imaging results showed that bias in drift rate correlated only with an early sensory network while bias in starting point activated an early sensory network as well as a late decision related network.

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drift-diffusion model

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