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Computational Analysis of Social Cues in the Response to Joint Attention, The More the Better

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Abstract

The Response to Joint Attention (RJA) allows coordinating attention with a partner by following social cues as indicated by the gaze, head turn or gestures. One developmental hypothesis suggests that this ability may initially rely on the perception of head motion and refines until responding to the final gaze direction. The autism spectrum disorders (ASD) present reduced joint attention behaviors, the development of which is the goal of many therapeutic interventions and could benefit from a precise knowledge of how social cues trigger (or fail to trigger) the RJA. In this study, we test the developmental hypothesis. We developed a computational model simulating gaze following tasks and explored the effect of differences in the amount of information and temporal dynamics of social and non-social cues. Our model is contrasted with previous empirical studies and it describes developmental trajectories of typical and atypical RJA.