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Top-down effects of attention on the action observation network

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Abstract

Action perception plays a crucial role in human life and is significant both evolutionarily and socially. It is supported by the well-established action observation network (AON), which consists of three core nodes in the occipitotemporal, parietal, and pre-motor cortex of the human brain. In the present study, we investigated how top-down attention affects the AON using fMRI and representational similarity analysis. In the first session, human participants viewed short videos while they performed tasks in which they attended different features of actions in separate blocks, including the actor, the target, or the effector. In a second fMRI session, participants viewed the videos in a passive manner to be able to compare the neural representations in the AON across passive and active attention tasks. Our results show that attention to different features of observed actions modulates the nodes of the AON differently indicating their distinct roles in supporting action perception.