Social cognition

Social cognition refers to those mental capacities that are assumed necessary to function adequately in the social world and pertains more specifically to the ability to recognize, manipulate and respond to socially relevant information.

The role of the cerebellum in social cognition has only been rarely explored. In a study, Beuriat et al. tested whether the cerebellum is necessary for cognitive and affective Theory of Mind performance. They investigated adults with traumatic brain injury (n = 193) and healthy controls (n = 52) using voxel-based lesion-symptom mapping (VLSM) and by measuring the impact on functional connectivity. First, they observed that damage to the cerebellum affected pure Cognitive ToM processing. Further, they found a lateralization effect for the role of the cerebellum in cognitive ToM with participants with left cerebellar injury performing worse than those with right cerebellar injury. Both VLSM and standard statistical analysis provided evidence that left cerebellar Crus I and lobule VI contributed to ToM processing. Lastly, we found that disconnection of the left thalamic projection and the left frontostriatal fasciculus was associated with poor cognitive ToM performance. Our study is the first to reveal direct causal neuropsychological evidence for a role of the cerebellum in some but not all types of ToM, processing. It reinforces the idea that social cognition relies on a complex network functionally connected through white matter pathways that include the cerebellum. It supports evidence that the neural networks underpinning the different types of ToM can be differentiated [1]

[1]
Beuriat PA, Cohen-Zimerman S, Smith GNL, Krueger F, Gordon B, Grafman J. Evidence of the role of the cerebellum in cognitive theory of mind using voxel-based lesion mapping. Sci Rep. 2022 Mar 23;12(1):4999. doi: 10.1038/s41598-022-09104-0. PMID: 35322157.