Neuroanatomical Markers of Social Hierarchy Recognition in Humans. a Combined Erp - Mri Study.

H. Santamaría-García[1]

[1]Biomedicine, Universitat Pompeu Fabra, Barcelona, Spain

Social hierarchy is an ubiquitous principle of social organization across animal species. Although some progress has been made to understand how humans infer hierarchical identity, the neuroanatomical basis for perceiving key social dimensions of others remains unexplored. Here, we combined Event Related Potentials and structural Magnetic Resonance Imaging to reveal the neuroanatomical substrates of early status recognition. We designed a covertly simulated hierarchical setting where participants performed a task either with a superior or with an inferior player. Participants showed higher amplitude in the N170 component when presented with a picture of a superior player compared to an inferior player. Crucially, the magnitude of this effect correlated with brain morphology of the posterior cingulate cortex, superior temporal gyrus, insula, fusiform gyrus and caudate nucleus. We conclude that early recognition of social hierarchies relies on the structural properties of a network involved in the automatic recognition of social identity which is involved in processing social cognition. Crucially, morpholgy of this network has been related to deficits in social cognition (in particular, processes as social recognition, emotional empathy processing, and mentalizing of other's intentions) in patients with autism spectrum disorders and fronto temporal dementia. Here, we revise the temporal dynamics of social recognition and its neuroanatomical markers and we discuss the implication of these results in the comprehension of the social processing in patients with mental disorders.