

Structural Correlates of Reduced Malicious Pleasure in Huntington's Disease

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Abstract : Schadenfreude refers to the perceiver's experience of pleasure at another's misfortune. This is a multidetermined emotion which can be evoked by hostile feelings and envy. The experience of Schadenfreude engages mechanisms implicated in diverse social cognitive processes. For instance, Schadenfreude involves heightened reward processing, accompanied by increased striatal engagement and it interacts with mentalizing and perspective-taking abilities. Patients with Huntington's disease (HD) exhibit reductions of Schadenfreude experience, suggesting a role of striatal degeneration in such an impairment. However, no study has directly assessed the relationship between regional brain atrophy in HD and reduced Schadenfreude. This study investigated whether gray matter (GM) atrophy in HD patients correlates with ratings of Schadenfreude. First, we compared the performance of 20 HD patients and 23 controls on an experimental task designed to trigger Schadenfreude and envy (another social emotion acting as a control condition). Second, we compared GM volume between groups. Third, we examined brain regions where atrophy might be associated with specific impairments in the patients. Results showed that while both groups showed similar ratings of envy, HD patients reported lower Schadenfreude. The latter pattern was related to atrophy in regions of the reward system (ventral striatum) and the mentalizing network (precuneus and superior parietal lobule). Our results shed light on the intertwining of reward and socioemotional processes in Schadenfreude, while offering novel evidence about their neural correlates. In addition, our results open the door to future studies investigating social emotion processing in other clinical populations characterized by striatal or mentalizing network impairments (e.g., Parkinson's disease, schizophrenia, autism spectrum disorders).

Keywords : envy, Gray matter atrophy, Huntington's disease, Schadenfreude, social emotions

Conference Title : ICSCAN 2017 : International Conference on Social, Cognitive and Affective Neuroscience

Conference Location : Havana, Cuba

Conference Dates : November 23-24, 2017