

## **A neural signature of touch aversion and interoception in Borderline Personality Disorder**

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Patients with Borderline Personality Disorder (BPD) suffer from severe social impairments and interpersonal problems. Social touch can provide comfort and facilitate the maintenance of social bonds, and preliminary evidence indicates a negative evaluation of social touch in patients with BPD. Skin-mediated signals have been conceptualized as a form of interoception and BPD has been associated with altered sensation and interpretation of inner bodily signals. However, the neural mechanisms underlying aberrant touch and interoceptive attention processing in BPD and their role for social impairments are still unclear. We recruited 55 BPD patients and 31 Healthy Controls (HC) and used functional magnetic resonance (fMRI) imaging to probe neural responses to slow (i.e. C-tactile (CT)-optimal) and fast (i.e. CT-suboptimal) touch before and after four weeks of inpatient Dialectical Behavior Therapy (DBT). Additionally, BPD patients underwent an fMRI paradigm to evaluate their interoceptive attention by focusing on either their heart or stomach. Results revealed a negative bias towards social touch in BPD patients before the DBT, evident in a significantly more negative attitude towards and reduced comfort zones of social touch. Despite significant improvements in overall BPD symptom load, dysfunctional social touch processing persisted after four weeks of DBT. Neural findings suggest that impairments in the insula-mediated integration of sensory and affective components of CT-optimal touch may constitute a biological signature of interpersonal problems in BPD. The interoception task will be used to interrogate the domain-specificity of these findings.