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Altered perception of appetitive and aversive somatosensory stimuli in borderline personality disorder

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Borderline personality disorder (BPD) is characterized by altered perception of affective stimuli, including pain. Little is known about positive somatosensation and the mechanisms behind altered pain perception. This thesis aimed to investigate altered affective somatosensation and the underlying mechanisms in BPD. Two studies each on participants with BPD and healthy controls (HC) were conducted.

In study 1, standardized pleasant touch was applied to the hands of 25 participants with BPD and 25 HC. Perception of touch was assessed via self-report and the affect-modulated startle response served as physiological correlate of the valence of touch perception. Body-related dissociative state, in terms of body ownership, was assessed before and after touch stimulation. We observed a significantly reduced perceived pleasantness of touch in BPD compared to HC. In BPD, a more negative touch perception was associated with a decrease in body ownership from pre to post stimulation. The results suggest that altered somatosensation in BPD is not limited to pain perception and a perception-specific effect of pleasant touch stimulation on dissociative state.

In study 2, temporal summation of pain was assessed in 24 BPD and 24 HC. Pain perception was assessed via self-report and the RIII-reflex served as measure of nociceptive processing on the spinal level. Dissociative state was assessed before and after pain stimulation. Heightened pain thresholds in BPD compared to HC were replicated. Unexpectedly temporal summation of pain unpleasantness was higher in BPD compared to HC, whereas temporal summation of pain intensity and the RIII reflex was not significantly different. Pain threshold and temporal summation of pain were not interrelated. There was a trend towards significance for a perception-specific effect of pain stimulation on dissociative state with higher temporal summation of pain being associated with decreased dissociative state. Different neural mechanisms might underlie reduced pain sensitivity in terms of heightened pain threshold and enhanced temporal summation of pain unpleasantness. Temporal summation of pain might be related to reduction in dissociation in response to painful stimulation.

Three different mechanisms are discussed to underlie altered affective somatosensation in BPD: (1) threat hypersensitivity (2) altered cognitive evaluation (3) negative self-image. It is suggested that altered affective somatosensory perception in BPD is related to self-functioning, and specifically altered pleasant touch perception might play an important role in disturbed interpersonal-functioning.