The association between borderline personality traits and emotional modulation of physiological responses to noxious stimuli

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Introduction

Research has shown that borderline personality traits are associated with emotional dysregulation and abnormal physiological reactivity in experimental paradigms of emotional processing. These traits are also associated with differing responses to painful stimuli. Given that emotional processes are known to modulate pain, such that negative emotions enhance and positive emotions inhibit pain perception, it is possible that borderline traits modulate the relationship between emotion and pain.

Objective

The current study sought to determine whether individuals high and low in borderline traits differ in how emotional pictures modulate pain responses.

Participants

- 152 healthy participants were included
- Participants were split into 3 groups based on scores on the borderline scale of the Personality Assessment Inventory (PAI).
- Participants scoring in the upper and lower tertiles were selected:
  - Upper tertile (65% women, 35% men)
  - Lower tertile (59% women, 41% men)

Procedure

- Participants watched a series of emotionally-charged pictures while receiving painful electric stimuli to the ankle.
- Responses to the stimuli were recorded, including: nociceptive flexion reflex (NFR) magnitude, subjective pain ratings, heart rate acceleration, skin conductance response, and blink response.
- Emotional responses to the pictures were recorded, including: subjective valence and arousal, and skin conductance.

Results: Valence & Arousal Ratings

- No significant interaction (p = .24)
- Main effect for picture content (p < .001): Mutilation pictures rated significantly less pleasant than neutral, family, and adventure pictures.
- No significant interaction (p = .32)
- Main effect for picture content (p < .001): Neutral pictures rated less arousing than both unpleasant and pleasant pictures

Conclusions

Individuals high and low in borderline traits differed in certain physiological reactions to the picture contents. Specifically, differences existed in pain-evoked HR acceleration picture-evoked SCR. There were no differences in NFR magnitude, pain-evoked BR, or subjective ratings of pictures or stimulations. These results provide no evidence of differential nociceptive processing or emotional modulation of pain. Further research should be conducted in clinical populations to determine whether differences emerge between borderline patients and non-clinical controls.