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# Enhanced sensitivity and response bias for male anger in women with borderline personality disorder



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#### ABSTRACT

Interpersonal difficulties, which are characteristic of Borderline personality disorder (BPD), may be related to problems with social cognition. We explored facial emotion recognition in 44 women (15 with BPD, 15 healthy controls, and 14 with a history of childhood trauma but no BPD) examining the role of BPD and abuse history in the ability to detect fearful, angry and happy cues in emotional faces. In Task 1, participants viewed pictures of morphed faces containing different percentages of specific emotions and reported the emotion they saw. In Task 2, participants were asked to increase the intensity of a specific emotion on an initially neutral face until they could detect that emotion in the face. Across both tasks, BPD predicted the earlier detection of anger in male faces. BPD symptoms also predicted the misidentification of anger in male faces containing no anger cues. Although participants with BPD were slower to recognize happiness in male faces, their overall ability to recognize happiness was unimpaired. Abuse history did predict problems with happiness recognition. Finally, recognition of fear was unrelated to abuse history and BPD. Findings suggest that BPD is associated with a bias toward seeing anger in males and that this is independent of abuse history.

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#### 1. Introduction

Borderline personality disorder (BPD) is a severe form of psychopathology characterized by emotion dysregulation and problems with interpersonal functioning, as well as by chronic feelings of emptiness, impulsivity, and recurrent suicidal behavior. Although the etiological pathway of BPD is not well understood, negative experiences with caretakers are implicated in many theoretical models of the disorder (e.g., Bateman and Fonagy, 2003; Clarkin et al., 2007; Linehan, 1993). Adverse experiences in childhood may help explain why, compared to healthy controls, people with BPD have problems with attachment, are fearful of abandonment, and are less trusting of others (Hooley and Wilson Murphy, 2012; King-Casas et al., 2008; Levy, 2005; Unoka et al., 2009).

Models of social cognition suggest that prior expectations about other people and about relationships influence the perception of interpersonal situations (Gilbert and Malone, 1995). In the case of BPD the interaction of biological vulnerabilities and problems in early attachment relationships are thought to lead to the development of disturbances in the mental representations of the self and others (Clarkin et al., 2007; Fonagy and Luyten, 2009). For example, Nigg et al. have shown that the early memories of people with BPD

contain more malevolent representations of others than the early memories of controls do (Nigg et al., 1992). Difficult early relationships may lead to biases in social cognition in people with BPD. They may also compromise the accurate detection of important interpersonal cues.

The ability to correctly read cues about the emotional states of other people is an important skill. It is also essential for appropriate social functioning. If BPD is characterized by abandonment concerns, mistrust, and sensitivity to rejection (see Gunderson, 2007), we might expect that, relative to controls, people with this disorder might be especially quick to pick up on cues that signal negative emotional states in others. We might also expect that they might have some difficulties perceiving positive social cues. Impaired ability to detect or recognize the emotions of others could lead to failures to respond empathically. It could also result in severe relationship-damaging behaviors such as inappropriate anger or aggression, both of which are part of the clinical profile of BPD.

To date, studies of facial emotion recognition in BPD have yielded rather inconsistent findings (see Domes et al., 2009 for a review). In an early investigation, Levine et al. (1997) examined how well men and women with BPD were able to identify discrete emotional states. Participants viewed photographs of male and female targets displaying anger, disgust, fear, happiness, sadness, surprise, and neutral. Relative to healthy controls, participants with BPD had difficulty identifying expressions of fear, anger, and disgust.

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Efforts to replicate this initial finding have yielded mixed results, however. Although some investigators report that people with BPD generally perform more poorly than controls on tests of emotion recognition (Bland et al., 2004; Unoka et al., 2011) in other studies no differences in ability to recognize emotions in static photographs of emotional faces have been found (Dyck et al., 2009; Minzenberg et al., 2006; Wagner and Linehan, 1999). Indeed, rather than reporting impaired emotion recognition associated with BPD, Wagner and Linehan (1999) found that women with BPD (all of whom had experienced child sexual abuse) were more accurate in their recognition of fear than both healthy female controls and women who had experienced childhood sexual abuse but who did not have BPD. Women with BPD also showed a tendency to report seeing fear in slides that did not contain fear, suggesting a bias toward fear recognition, even in the absence of fear cues.

Of course, in the real world, emotional expressions are dynamic rather than static. Adopting a more naturalistic approach, Lynch et al. (2006) used morphed facial expressions that ranged from neutral to maximum intensity and found that participants with BPD (the majority of whom were female) correctly identified facial affect at an earlier stage than did healthy controls. However, using a similar paradigm, and using groups matched for IQ, Domes et al. (2008) found no evidence of differential sensitivity to specific emotions in women with BPD compared to healthy controls. More recently, Jovev et al. (2011) have also reported no differences in emotion sensitivity in young people with BPD features and healthy controls.

The inconsistent findings of past studies may result from a variety of methodological factors. Differences in the type of stimuli used (static images versus morphed faces) and in the amount of time participants were given to make their responses may be important. The gender composition of the sample is also relevant. Some studies involved only women whereas others included both men and women. This is an issue because females tend to perform better than males on tests of affect recognition (McClure, 2000). In addition, most studies to date have not matched the BPD and control groups for cognitive ability using a measure of IQ (but see Domes et al., 2008).

Yet another potential confound is the influence of trauma history. Many individuals with BPD report a history of severe trauma (physical or sexual abuse) in childhood (e.g., Zanarini et al., 1997) and early maltreatment has been linked to the later development of BPD in prospective longitudinal studies (Johnson et al., 1999; Widom et al., 2009). Research examining emotion recognition in children who have experienced physical abuse or neglect suggests that early trauma exposure may disrupt neural pathways that facilitate emotion processing (Pollak et al., 2000). As a result, it is important to consider a history of childhood trauma when investigating emotion perception in BPD.

Despite the inconsistencies, evidence is growing that BPD may be associated with a response bias toward detecting negative emotions. In some secondary analyses, Domes et al. (2008) noted that patients with BPD over-reported anger when evaluating faces that contained ambiguous blends of anger and sadness or anger and happiness. They also reported that BPD participants showed a significant reduction in their emotion detection thresholds as the experiment progressed. This enhanced learning was not present in the controls. Using the Reading the Mind in the Eyes test (Baron-Cohen et al., 2001) Scott et al. (2011) have demonstrated that college students with more BPD traits were better than those with fewer BPD traits at detecting negative emotions. In contrast, there was no association between BPD traits and accuracy at detecting neutral or positive emotions. Moreover, across all trials, participants with more BPD traits showed a bias toward attributing negative emotions to non-negative social stimuli. This is consistent with findings of Dyck et al. (2009), who asked healthy controls and patients with BPD to make a rapid decision about whether a target face was angry, fearful or neutral. Under time pressure, patients with BPD were significantly worse than controls at identifying neutral faces, misinterpreting them instead as negative. However, when asked to complete a simple test of emotional recognition without any time limit they performed as well as controls in their ability to recognize happiness, fear, sadness, anger or no emotion in static facial expressions.

In the current study we used two dynamic facial affect recognition tasks to further explore emotional sensitivity in women with BPD. More specifically, we sought to examine the contribution of childhood trauma to emotion identification and recognition thresholds. Use of a comparison sample who did not have borderline personality disorder but who did have a history of abuse allows us to examine the independent contributions that BPD and childhood maltreatment might make to performance on emotion recognition tasks. Finally, we examined how responses to emotional information might be influenced by the gender of the target face. This is a factor that has not been a focus of attention in previous research. However, male faces showing different emotions may be perceived differently than female faces showing those same emotions. This might be especially true for people who have BPD or a history of trauma.

In light of the association between BPD and early childhood adversity, and the link between BPD and sensitivity to rejection (Gunderson, 2007; Staebler et al., 2010) we expected that the presence of more BPD traits would be associated with more aberrant processing of emotional cues presented in the faces of others. Our first hypothesis, based on previous research (Domes et al., 2008; Scott et al., 2011), was that people with BPD would demonstrate increased sensitivity to the presence of anger in others. Anger is a cue that signals a potential threat to a relationship. It may therefore be especially important for people with BPD because BPD is characterized by rejection sensitivity and abandonment concerns. We also predicted that having a past history of physical abuse would be associated with increased sensitivity to anger. This second hypothesis was based on previous research showing that abused children are able to detect anger at an earlier stage of its formation that than non-abused children are (Pollak et al., 2009). In other words, we predicted that both BPD and abuse history would make separate and independent contributions to anger sensitivity. We did not predict a bias toward fear in our sample because recent research suggests no differences between people with BPD and healthy controls in fear appraisal (Fertuck et al., 2013). Finally, based on earlier findings showing that people with BPD demonstrate a negative bias when evaluating benign social cues (see Dyck et al., 2009; Meyer et al., 2004; Scott et al., 2011) and perceive others more negatively (Arntz and Veen, 2001) our third hypothesis was that BPD would be associated with a bias toward detecting negative emotions in faces, even when no negative emotion was actually present. We did not make any formal predictions about how the gender of the target face might moderate these relationships. Nonetheless, we thought it likely that any emotion perception differences might be most marked when participants evaluated faces of the opposite sex.

#### 2. Method

#### 2.1. Participants

Forty-four women were recruited via Internet postings and flyers. An exclusively female sample was recruited to minimize heterogeneity in the data. Advertisements for the BPD group requested "moody" people with "stormy relationships" (see Korfine and Hooley, 2000, 2009). Advertisements for the Trauma group requested participants who experienced "abuse" in their childhood.

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