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Alexithymic Traits and Facial Emotion Recognition in Borderline Personality Disorder

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Alexithymia has been described as a difficulty in recognizing and expressing emotions, distinguishing between emotions and somatic sensations, a limited imaginative capacity, and a literal, externally oriented style of thinking [1, 2]. Although the concept of alexithymia was originally introduced to describe the difficulties of psychosomatic patients [3], numerous studies have provided evidence for high alexithymic traits in psychiatric conditions, including borderline personality disorder (BPD) [4–6].

BPD is characterized by a pervasive pattern of instability in affect regulation, impulse control, interpersonal relationships and self-image [7]. It has been proposed that difficulties decoding others' facial expressions may contribute to the emotion regulation difficulties that BPD patients report in the context of social interactions. Although some studies show biased or impaired facial emotion recognition in BPD [8–11], other studies report contradictory findings [12–14]. This inconsistency suggests that other variables may modulate the association between BPD and emotion recognition. Since correlations between alexithymia and emotion recognition deficits have been reported in healthy participants as well as psychiatric patients [15–17], alexithymic traits might be among these variables.

Thus, in the present study, we investigated whether alexithymic traits account for a substantial part of the variance in facial emotion recognition performance observed in BPD patients.

We recruited 19 female in-patients from the Department of Psychiatry of the University of Rostock (age: 26.5 ± 8.1 ; education [years in school]: 10.6 ± 1.5 ; IQ [Wechsler-Adult-Intelligence-Scale, short version]: 114.3 ± 19.0) who met criteria for BPD as validated with a German translation of the International Personality Disorder Examination for DSM-IV (IPDE) [18]. Eight patients were taking SSRIs, 16 reported a history of physical/sexual abuse, and 8 met criteria for post-traumatic stress disorder. We also recruited a control group of 25 women through on-campus announcements (age: 26.0 ± 4.5 , education: 11.3 ± 1.6 , IQ: 114.7 ± 15.4) who did not report any physical or mental illness. The

study was approved by the institutional review board of the University of Rostock, Germany. All participants provided written informed consent before participation.

Alexithymic traits were assessed using the 20-item German version of the Toronto-Alexithymia Scale TAS-20 [19, 20] consisting of three factors: difficulties identifying feelings (DIF), difficulties describing feelings (DDF), and externally oriented thinking (EOT). In addition, we assessed symptom severity with the Beck-Depression-Inventory BDI [21] and the 95-item Borderline Symptom List BSL-95 [22]. Facial emotion recognition was measured with a dynamic facial morph task [9]. The task consisted of 3 blocks of 36 randomized trials, each showing a dynamic facial expression changing from neutral into one of six basic facial expressions: anger, fear, disgust, happiness, sadness, and surprise. Photographs of 3 men and 3 women from the Pictures of Facial Affect [23] were morphed from 0% (neutral) to 100% of a particular emotion in 5% steps resulting in series of 21 stimuli, which were sequentially presented for 800 ms each. Participants pressed a response button as soon as they recognized a specific emotion. Thereafter, they reported which emotion they had recognized (forced-choice among the six emotions). We recorded recognition threshold (intensity of emotional expression in percent at which the presentation was stopped) and error rates (number of errors in the forced choice) and tested group differences with two separate MANOVAs. Linear associations between alexithymic traits and emotion recognition were tested using Pearson's correlations. Significance level was $p < 0.05$.

There were significant differences between the two groups in depressive symptoms (BDI: BPD 33.4 ± 10.2 ; controls 7.0 ± 5.7 ; $t[42] = 10.8$; $p < 0.001$, Cohen's $d = 3.19$), severity of borderline symptoms (BSL-total: BPD 182.2 ± 46.4 ; controls 52.2 ± 26.0 ; $t[42] = 11.8$; $p < 0.001$; $d = 3.45$) and alexithymic traits (TAS-DIF: BPD 21.8 ± 6.0 ; controls 11.4 ± 4.8 ; $t[42] = 6.4$; $p < 0.001$; $d = 1.91$; TAS-DDF: BPD 19.2 ± 4.8 ; controls 10.7 ± 3.7 ; $t[42] = 6.6$; $p < 0.001$; $d = 1.98$; TAS-EOT: BPD 21.0 ± 4.3 ; controls 18.2 ± 4.0 ; $t[42] = 2.2$; $p = 0.032$; $d = 0.67$). The groups did not differ in overall emotion recognition threshold (multivariate: $F[6,37] = 0.5$; $p = 0.78$) or for specific emotions (all univariate $F[1,42] < 1.0$; all $p > 0.10$). Patients with BPD made more errors overall ($F[6,37] = 4.9$; $p < 0.002$; partial eta squared $\eta^2_{\text{par}} = 0.45$), an effect that was mainly driven by higher error rates for BPD patients for fearful ($F[1,42] = 3.3$; $p = 0.075$; $\eta^2_{\text{par}} = 0.07$) and surprised expressions ($F[1,42] = 13.2$; $p < 0.002$; $\eta^2_{\text{par}} = 0.24$). Analyzing the associations between the TAS-20 factor scores and recognition threshold in the BPD group, we found a significant correlation between the DIF and recognition threshold ($r = 0.46$; $p < 0.05$; DDF: $r = 0.10$; EOT: $r = 0.23$). No such correlation was found for the control group (all $r < 0.10$; all $p > 0.10$) or the whole sample (all $r < 0.25$; all $p > 0.10$). Follow-up analyses on specific emotional expressions revealed significant correlations between the TAS-DIF and detection threshold for fearful ($r = 0.55$; $p < 0.016$) as well as surprised

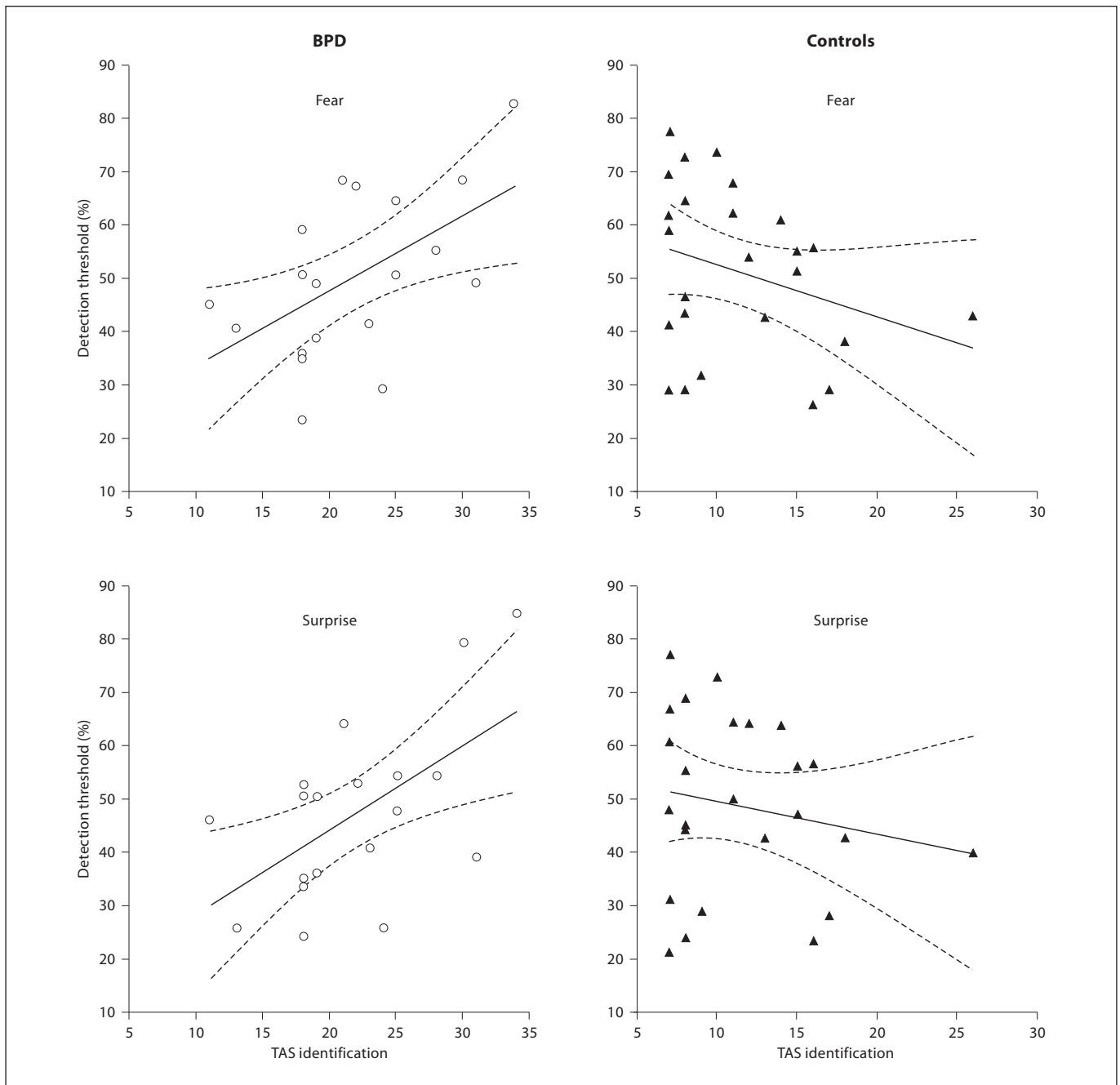


Fig. 1. Scatterplots of the association between facial emotion recognition threshold (for fearful and surprised faces) and the TAS-20 factor 'difficulty identifying feelings' (DIF) for BPD patients and controls. Linear regression curves are given as straight lines; broken lines represent the 95% CI.

faces ($r = 0.57$; $p < 0.011$) in the BPD group; these differed significantly from the correlations found in the control group (fearful: $r = -0.30$, Fisher's $z = 2.82$, $p = 0.0048$; surprised: $r = -0.18$, $z = 2.52$, $p = 0.012$) (fig. 1). Correlations in the BPD group between TAS-DIF and overall recognition threshold, as well as for fearful and surprised faces, remained marginally significant (overall: $r =$

0.44 ; $p < 0.08$; fear: $r = 0.45$; $p < 0.07$; surprise: $r = 0.49$; $p < 0.05$) even after controlling for depressive and borderline symptoms.

To our knowledge, this is the first study on the association between alexithymic traits and facial emotion recognition in patients with BPD. The present results show that self-reported difficulties in identifying and distinguishing one's own emotions

and feelings predict facial emotion recognition in BPD. This association between this specific facet of alexithymia and facial emotion recognition was pronounced for fearful and surprised facial expressions, and independent of illness severity. Since fear and surprise are the two facial expressions that adults find most difficult to distinguish [24], the two expressions might have been the most difficult categories in the present experiment and thus the most sensitive.

Despite some limitations of the present initial study (small sample size, exclusion of male participants, lack of a clinical control group), the results highlight the modulatory role of alexithymic traits on social cognitive functions, such as emotion recognition. Although the results suggest a deficit in emotional sensitivity in BPD patients with alexithymic traits, they could also reflect a deficit in recognition accuracy in terms of a speed-accuracy tradeoff.

It is well known that patients with BPD often have difficulties with introspection and in describing their emotional states; they also often report high levels of diffuse strain. BPD patients which have difficulties in identifying their own emotions seem to be more likely to show deficits in facial emotion recognition, which in turn might lead to misinterpretations of social signals and thereby contribute to dysfunctional emotional arousal and stress in social situations. In line with previous studies [25, 26], our results further underline the value of assessing alexithymic traits in the context of the treatment of BPD, and suggest that alexithymic BPD patients might benefit from a facial emotion recognition training.

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