



## Emotional, cognitive and physiological correlates of abuse-related stress in borderline and antisocial personality disorder

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### ARTICLE INFO

#### Article history:

Received 28 August 2008

Received in revised form

22 September 2009

Accepted 29 September 2009

#### Keywords:

Abuse-related stress induction

Traumatic stimuli

Direct assessment

Schema modes

Indirect assessment

Psychophysiology

Emotional reactivity

SC-IAT

### ABSTRACT

Childhood abuse is an important precursor of borderline personality disorder (BPD) and antisocial personality disorder (ASPD). The current study compared the emotional reactivity to abuse-related stress of these patients on a direct and an indirect level. Changes in self-reported affect and schema modes, psychophysiology and reaction time based cognitive associations were assessed following confrontation with an abuse-related film fragment in patients with BPD ( $n = 45$ ), ASPD ( $n = 21$ ), Cluster C personality disorder ( $n = 46$ ) and non-patient controls ( $n = 36$ ). Results indicated a hyperresponsivity of BPD-patients on self-reported negative affect and schema modes, on some psychophysiological indices and on implicit cognitive associations. The ASPD-group was comparable to the BPD group on implicit cognitions but did not show self-reported and physiological hyper-reactivity. These findings suggest that BPD and ASPD-patients are alike in their implicit cognitive abuse-related stress reactivity, but can be differentiated in their self-reported and physiological response patterns.

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### Introduction

One of the main common etiological precursors of borderline personality disorder (BPD) and antisocial personality disorder (ASPD) is childhood trauma. Both BPD and ASPD have been linked to a broad range of abusive events but sexual and emotional abuse seem to stand out in BPD-patient's history (Battle et al., 2004; Johnson, Cohen, Brown, Smailes, & Bernstein, 1999; Lobbestael, Arntz, & Bernstein, in press) and physical abuse in ASPD-patients (Bernstein, Stein, & Handelsman, 1998; Bierer et al., 2003; Lobbestael, Arntz, & Bernstein, in press; Lobbestael, Arntz, Harkema-Schouten, & Bernstein, 2009; Lobbestael, Arntz, Löbbs, & Cima, in press). Although quite a lot is known about maltreatment precursors of BPD and ASPD, the influence of abuse-related stressful stimuli on these patients has hardly been studied. Schmahl, Elzinga, et al. (2004) compared the physiological reactivity to abandonment and abuse-related scripts of BPD-patients with post-traumatic stress disorder patients but did not find any difference between these groups. Brain imaging studies indicated that over- versus under-reactivity in different areas of dorsolateral and medial prefrontal cortex correlated to traumatic memory in BPD-patients

(Schmahl, Vermetten et al., 2004), while abandonment memories caused a greater increase in bilateral dorsolateral prefrontal cortex activity in women with BPD compared to women without BPD (Schmahl et al., 2003). To our best knowledge, the impact of abuse-related stress on ASPD-patients has not been studied yet. In fact, little is known about the biological, emotional and cognitive sequelae of BPD and ASPD in general, including how these disorders differ from each other and from other forms of psychopathology. The current study tests whether salient and prolonged reminders of mixed childhood abuse are responsible for emotional, psychophysiological, and cognitive dysregulation in BPD and ASPD. Comparing abuse-related reactivity between BPD and ASPD-patients could contribute to the understanding of the differences between these two closely related personality disorders. Furthermore, the current study can contribute to the ongoing debate on whether BPD is characterized by a BPD-theme specific (i.e., abuse) emotional hyperresponsivity (Arntz, 2005). In addition, the use of prolonged presented abuse-related stimuli more closely resembles real-life encounters and therefore can provide a more realistic insight into emotional reactivity.

The aim of this study was to investigate the effects of abuse-related stimuli in BPD and ASPD-patients, both at a direct and an indirect level. On a direct level, the effect of abuse-related stress was evaluated by means of self-reported affect and schema modes. Schema modes originate from Schema Therapy (Young, Klosko, & Weishaar, 2003) and represent the momentary emotional and

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cognitive states and coping responses that are active at a given point in time. Modes can be seen as the different aspects of one's personality, and each individual has several modes. Schema modes can be triggered by emotional events and an individual may shift from one schema mode into another. This way, the schema mode concept describes the rapid shifting in emotion and behaviour demonstrated by patients suffering from severe personality disorders. Modes can be maladaptive or adaptive. The more severe the personality pathology, the stronger the presence of the maladaptive modes and the higher the number of modes a person has and the more mode switches occur. The maladaptive modes are divided into four categories; dysfunctional child modes that result out of unmet core childhood needs; dysfunctional coping modes that correspondent to an overuse of the fight, flight or freeze coping styles and dysfunctional parent modes that reflect negative behaviour of the patient's parent(s) towards the patient as a child that the patient has internalized. The adaptive modes reflect healthy thoughts, feelings and behaviours. A self-report study has demonstrated BPD to be characterized by 9 maladaptive modes, while ASPD was linked to the Enraged Child and the Bully and Attack modes (Lobbestael, van Vreeswijk, & Arntz, 2008). But, assessment by therapists suggests that more schema modes are prominent in ASPD-patients than they report themselves (Lobbestael, Arntz, Löbbs, et al., in press).

Since affect assessment by means of self-report is vulnerable to bias due to lack of self-knowledge or avoidance of negative thoughts and feelings (Wilson & Dunn, 2004), and lying and conning are central diagnostic features of ASPD (APA, 2005), the use of indirect measures is advisable. Therefore, the current study incorporated two types of indirect measures to assess the impact of abuse-related stimuli; psychophysiological indices and a reaction time based paradigm to measure the implicit association between the self and abuse. The latter paradigm was operationalized with the Single Category Implicit Association Test (SC-IAT, Karpinski & Steinman, 2006), a variant of the classical Implicit Association Task (IAT, Greenwald, McGhee, & Schwartz, 1998) in which associations with single targets like the self-concept can be measured without the need for an opposite category.

In sum, the central question of this study was: Do BPD and ASPD-patients differ in their reaction to abuse-related stimuli on self-reported affect, self-reported schema modes, psychophysiological reactivity, and on implicit abuse-related self-image? We expected BPD-patients to display a stronger intensity of affective experiences in reaction to the abuse-related stimuli relative to control patients and non-patients. Due to similarities between BPD and ASPD (APA, 2005; Paris, 1997) and the common etiological influence of abuse, it was hypothesized that BPD and ASPD-patients would show a similar response pattern to abuse-related stimuli on levels the person cannot easily control. Since antisocials tend to underreport the impact of negative events, it was expected that the ASPD-group would indicate a lower increase in self-reported indices of negative affect and schema modes than the BPD group. In contrast, we expected a similar abuse-related reactivity in BPD and ASPD-patients at an indirect level (i.e., the physiological indices and the implicit association task). Additionally, this study assessed the severity of childhood trauma in BPD and ASPD-patients and tested the effect of trauma severity on the changes in the direct or indirect abuse-related reactivity. Finally, the level of psychopathy was assessed in the ASPD-group and the predictive value of psychopathy on abuse-related stress was tested. We compared, according to DSM-IV (APA, 2000), a BPD group, a ASPD-group (with varying degrees of psychopathy), and a Cluster C PD (CIC-PD) patient group, next to a non-patient control group (NpC). By using NpCs as a control group, it can be tested whether results indicate a general

Axis II response pattern, while inclusion of CIC-PD patients permits drawing PD cluster-specific conclusions.

## Method

### Participants

Data were analyzed from  $N = 147$  participants, divided into four groups: patients with BPD ( $n = 45$ ), patients with ASPD ( $n = 21$ ), patients with cluster C personality disorder (CIC-PD,  $n = 46$ ) and non-patient controls without psychopathology (NpC,  $n = 35$ ). Of the CIC-PD group, 32 patients had an avoidant PD, 6 a dependent PD, and 19 an obsessive-compulsive PD. Nine patients of this group suffered from two CIC-PDs, and one patient had all three CIC-PD diagnoses. Patients were recruited from clinical, ambulant and forensic institutes of mental health care within the Netherlands and Belgium. The patients of the clinics and prisons were contacted to participate in this study by their therapists who were informed about the in- and exclusion criteria of the patients targeted for this study. The therapists provided general verbal information and an information letter of this study to these patients and if the patients indicated that they were willing to participate, they were contacted by the experimenter. NpCs were recruited by means of advertisement in local papers.

General exclusion criteria were psychotic or bipolar disorder, age  $<18$  and  $>60$ , intoxication by alcohol or drugs during testing, IQ below 80 and not being a native speaker of Dutch. The non-BPD participants were not allowed to have more than two BPD criteria, and the non-ASPD participants were not allowed to have more than two ASPD criteria. The characteristics of the study groups are presented in Table 1.

Testing of between group differences revealed that the ASPD-group contained fewer women and the BPD group fewer men than the other groups and that the ASPD-group was significantly lower educated than the other groups. Further analyses of this study were corrected for gender, but not for education since a lower education level is inherent to ASPD (Robins, Tipp, & Pzybeck, 1991). The ASPD-group had a significantly smaller number of axis I disorders compared to the BPD and CIC-PD groups, but the patient groups did not differ with respect to number of axis II disorders. The ethical committee of the Academic Hospital of Maastricht (the Netherlands) approved this study. Before starting the study, all participants gave written informed consent. The same study group was used for the study 'Effects of induced anger in patients with antisocial personality disorder' (Lobbestael, Arntz, Cima, & Chakhssi, 2009). Data were described in two different manuscripts because of different research questions. Collection of the data for the two studies was performed in different sessions.

### Materials

#### Screening

Axis I and II diagnoses were made using the DSM-IV criteria with the Dutch versions of the Structured Clinical Interview for DSM-IV Axis I disorders (SCID I, First, Spitzer, Gibbon, & Williams, 1997; van Groenestijn, Akkerhuis, Kupka, Schneider, & Nolen, 1999) and the Structured Clinical Interview for DSM-IV Axis II disorders (SCID II, First, Spitzer, Gibbon, Williams, & Benjamin, 1994; Weertman, Arntz, & Kerkhofs, 2000). Diagnoses were made by the first author or graduate students who underwent an intensive training program. Of the current sample, 97 SCID interviews were rated twice, yielding high inter-rater reliability values for SCID I (Kappa values between .98 and 1.00) and SCID II (ICCs between .88 and .99). Psychopathy was assessed using the Psychopathy Checklist-revised (PCL-r, Hare, 2003) supplemented by collateral data

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