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Subtypes in borderline patients based on reactive and regulative temperament

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ABSTRACT

Considerable heterogeneity is observed among patients with a Borderline Personality Disorder (BPD). In the present study, we investigated whether we could identify and validate different personality subtypes in 150 BPD inpatients based on reactive and regulative temperament. We identified four BPD subtypes by means of cluster analysis on the Behavioral Inhibition and Behavioral Activation Scales (BISBAS) and the Effortful Control Scale (ECS): an Emotional/Disinhibited subtype (45%) scoring lowest on Effortful Control, an Inhibited subtype (24%) characterized by low levels of Behavioral Activation, a Low Anxiety subtype (21%) defined by low levels of Behavioral Inhibition, and a High Self-control subtype (10%) characterized by the highest score on effortful control. The four subtypes were validated by comparing them on clinical symptomatology, comorbid personality disorders, and coping. The current findings offer insight into meaningful differences among BPD patients based on temperamental features, which can offer guidelines for the treatment of BPD patients.

1. Introduction

The Borderline Personality Disorder (BPD) is the most prevalent personality disorder in clinical settings. Recently, the prevalence of BPD was estimated between 2% and 6% in community samples (Lang et al., 2012) and between 10% and 20% among inpatients and outpatients receiving treatment in mental health settings (Dubovsky & Kiefer, 2014). BPD is associated with significant psychosocial morbidity, reduced health-related quality of life and excess mortality (Zanarini, Jacoby, Frankenburg, Reich, & Fitzmaurice, 2009).

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; 2013), defines the main features of BPD as a pervasive pattern of instability in interpersonal relationships, self-image, and affect, as well as impulsive behaviors. At least five of the nine DSM-5 criteria must be met for a diagnosis of BPD. This allows for 256 different combinations of the criteria from which it is possible for achieving a diagnosis of BPD (Gunderson, 2010), creating a "broad, heterogeneous, and fuzzy BPD category" (Paris, 2007, p. 462).

Understanding heterogeneity in BPD may be important for enhancing the effectiveness of assessment and specific treatment approaches for patients with BPD (Kopala-Sibley, Zuroff, Russell, Moskowitz, & Paris, 2012). Multiple attempts have been made to clinically or empirically determine BPD subtypes. For example, "Q" factor analysis based on the co-occurring Axis II features in BPD patients revealed three subtypes, namely Cluster A (elevated paranoid and schizotypal features), Cluster B (elevated narcissistic and histrionic features) and Cluster C (elevated avoidant and obsessive-compulsive features) (Critchfield, Clarkin, Levy, & Kernberg, 2008). Worthwhile mentioning are also the studies in which BPD subtypes were identified using "Q" factor analysis based on clinicians' reports of the psychological characteristics of their BPD patients (Bradley, Conklin, & Westen, 2005; Conklin, Bradley, & Westen, 2006). Bradley et al. (2005) identified four coherent BPD subtypes among 55 female BPD patients, namely a 'high-functioning internalizing' subtype, a 'histrionic' subtype, a 'depressive internalizing' subtype, and an 'angry externalizing' subtype. Conklin et al. (2006) defined three BPD subtypes in 80 BPD adolescents, namely an 'internalizing-dysregulated' cluster characterized by intense emotional pain, engaging in self-harm and suicide attempts; an 'externalizing-dysregulated' cluster reacting to emotional pain with anger; and finally, a 'histrionic-impulsive' cluster with a mixture of intensive negative and positive emotions showing impulsive behaviors. Finally, Digre, Reece, Johnson, and Thomas (2009) assessed 74 BPD inpatients before and after six months of residential treatment. Applying a cluster analysis to various demographic, clinical, and psychological variables (such as attribution style), they identified three BPD subtypes, namely the 'withdrawn' internalizing', 'severely disturbed–internalizing' and 'anxious–externalizing' subtypes demonstrating different treatment trajectories.

In sum, there exists a growing body of evidence demonstrating the necessity to define and validate different subtypes of BPD patients to

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improve diagnosis and treatment. Therefore, the aim of the present study was to identify and validate BPD subtypes based on reactive and regulative temperament, since several authors have highlighted associations with temperament as promising avenues for understanding psychopathology (e.g., Nigg, 2006). Temperament can be defined as 'constitutionally based differences in reactivity and self-regulation, as observed in the domains of emotionality, motor activity, and attention' (Rothbart, Posner, & Kieras, 2006, p. 466). According the original Reinforcement Sensitivity Theory (RST; Gray, 1982) reactivity can be conceptualized as driven by two systems controlling behavioral activity, namely the Behavioral Inhibition System (BIS) and the Behavioral Approach System (BAS). The BIS is related to sensitivity to punishment, avoidance behavior and is the causal basis of anxiety. The BAS is related to sensitivity to reward and approach behavior and is the causal basis of impulsivity. In BPD samples, high levels of both BIS and BAS reactivity have been observed (e.g., Bijttebier, Beck, Claes, & Vandereycken, 2009).

Besides reactive temperament, regulative temperament (also called self-regulation or effortful control) also plays an important role in psychopathology. Effortful control (EC) enables people to modulate their reactivity (Nigg, 2006), since it consists of behavioral and attentional forms of self-control (Claes, Vertommen, Smits, & Bijttebier, 2009). Posner et al. (2002) found higher scores on negative affect (BIS) and lower scores on EC in BPD patients making that they are poorer in conflict resolution and cognitive control. Hoermann, Clarkin, Hull, and Levy (2005) investigated EC in BPD patients and identified three BPD subtypes with different levels of EC. Subtype 1 (high EC) exhibited the fewest problems in symptoms, interpersonal functioning, and personality organization, whereas Subtype 3 (low EC) was characterized by the most severe problems in these areas. Subtype 2 (high in some aspects of EC) scored between Subtypes 1 and 3.

To our knowledge, the present study is the first to delineate different subtypes of BPD patients based on reactive (BISBAS) and regulative (EC) temperament. The second aim was to validate the subtypes by comparing them in terms of clinical symptoms, comorbid personality disorder features, and coping strategies. Although this study was exploratory in nature, several hypotheses were developed based on aforementioned theory. First, we hypothesized three or four BPD subtypes based on combinations of temperamental features: a more internalizing subtype as defined by Bradley et al. (2005) and Conklin et al. (2006) which could be linked to high BIS, low BAS and low EC; a more externalizing subtype which could be linked to high BAS and a resilient subtype identified as the 'high-functioning' subtype by Bradley et al. (2005), demonstrating high EC. Nevertheless, these delineations were tentative and we remained open to additional subtypes. Second, we hypothesized that the subtypes would differ in clinical symptoms, comorbid personality disorders, and coping. We hypothesized that the resilient subtype would exhibit the lowest levels of symptoms and the highest levels of adaptive coping strategies. The internalizing subtype would show more internalizing symptoms, cluster C personality traits and avoidant coping. The externalizing subtype would demonstrate more externalizing symptoms, cluster B traits, and low levels of active problem solving.

2. Methods

2.1. Participants and procedure

A total of 150 BPD inpatients were recruited from two psychiatric units, both specialized in Dialectic Behavior Therapy. Four patients were excluded on the basis of missing data and statistical outliers, resulting in a final sample of 146 BPD patients, whom 125 (85.6%) were female and 21 male (14.4%). The mean age of the sample was 29.28 years ($SD = 8.36$, range 18 to 65). Almost 14% of the BPD patients (13.7%, $n = 20$) followed lower secondary education; 63% ($n = 92$) higher secondary education, 19.2% ($n = 28$) high school, and 4.1% ($n = 6$) university. Most of the BPD patients (69.9%, $n = 102$) were single, 17.8% ($n = 26$) were living together/married, or 12.3% ($n = 18$) were divorced. A total of 82.2% of the patients used medication (64.4% antidepressants, 39.3% antipsychotics, 11.1% anxiolytics and 9.6% mood stabilizers).

All admitted patients, between May 2014 and November 2015, were invited to participate in the study. After providing written informed consent, patients were assessed by the first author. All subjects who met the BPD diagnosis as assessed by means of the SCID-II were included in the study. Patients were excluded from the study if they showed signs of mental retardation, symptoms of a psychotic disorder, or current substance dependence. Patients were allowed to be under pharmacological treatment. The study was developed in accordance with the Declaration of Helsinki and approved by the local research and participating hospitals ethics committees. Participants did not receive any remuneration.

2.2. Measures

The Borderline Personality Disorder and other Personality disorders were assessed by means of the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997; Dutch translation by Weertman, Arntz, & Kerkhofs, 2000). Interrater reliability of the SCID-II ranges from 0.90 to 0.98 for dimensional judgements and internal consistency coefficients range from 0.71 to 0.94 (Maffei et al., 1997).

Reactive temperament was assessed by means of the Behavioral Inhibition/Behavioral Activation System Scales (BIS/BAS; Carver & White, 1994; translated into Dutch by Franken, Muris, & Rassin, 2005). The BIS/BAS scales consist of 24-items, rated on a 4-point Likert scale, of which seven items assess BIS reactivity ($\alpha = 0.75$ in the present study), reflecting sensitivity to punishment, and 13 items assess BAS reactivity ($\alpha = 0.75$ in the present study), reflecting sensitivity to potentially rewarding outcome.

Regulative temperament was assessed by means of the 19-item Effortful Control Scale (ECS) from the short form of the Adult Temperament Questionnaire (ATQ; Evans & Rothbart, 2007). Participants rated their general ability to exert attentional and behavioral control on a seven-point Likert scale. The ECS total score demonstrated acceptable internal consistency in the present sample ($\alpha = 0.78$).

Clinical symptomatology was assessed by means of the Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983; translated into Dutch by De Beurs, 2005) consisting of 53 items, rated on a 4-point Likert scale, and 9 symptom scales, being somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism. The test has demonstrated good psychometric properties, showing satisfactory indexes of internal consistency and test-retest reliability (Derogatis, 1993). The BSI scales demonstrated acceptable internal consistency in the present sample (except for psychoticism, $\alpha = 0.49$), ranging from $\alpha = 0.72$ (paranoid thinking) to $\alpha = 0.86$ (depression).

Personality disorders were assessed by means of the assessment of DSM-IV personality disorders (ADP-IV; Schotte & De Doncker, 1994), a 94-item Dutch self-report questionnaire used to assess the presence and severity of symptoms related to the 10 personality disorders defined in the DSM-IV-TR. Items on the ADP-IV are rated first for the degree to which they apply to the respondent (1 = 'totally disagree' to 7 = 'totally agree'). For items that are rated as relevant at a moderate or higher level (score 5 till 7), participants also rated the degree to which that trait results in problems or distress for the respondent or others (1 = 'not at all', 3 = 'most certainly'). Dimensional scores were computed by summing the trait scores on the individual items for each PD scale. The alpha coefficients in the present study ranged from $\alpha = 0.61$ (schizoid PD) to $\alpha = 0.85$ (paranoid PD). Schotte et al. (2004) found kappa coefficients suggesting good levels of concordance between borderline diagnoses obtained with SCID-II and ADP-IV.

To assess coping strategies, we used the Utrecht Coping List (UCL; Schreurs, van de Willige, Brosschot, Tellegen, & Graus, 1993), consisting