



# Individuals with Borderline Personality Disorder manifest cognitive biases implicated in psychosis



Priya Puri<sup>a</sup>, Devvarta Kumar<sup>a,\*</sup>, Kesavan Muralidharan<sup>b</sup>, M. Thomas Kishore<sup>a</sup>

<sup>a</sup> Department of Clinical Psychology, National Institute of Mental Health and Neurosciences, Bengaluru 560029, India

<sup>b</sup> Department of Psychiatry, National Institute of Mental Health and Neurosciences, Bengaluru 560029, India

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## ABSTRACT

Individuals with Borderline Personality Disorder (BPD) frequently manifest psychotic symptoms. Certain cognitive biases have been implicated in the genesis and maintenance of psychotic symptoms. The present study aimed at exploring whether individuals with BPD manifest these cognitive biases. Twenty-eight individuals with BPD and 28 healthy participants were assessed on four sub-domains of the Davos Assessment of Cognitive Biases Scale, viz. jumping to conclusions, belief inflexibility, attention for threat and external attribution. The BPD group had significantly higher scores on all the four cognitive biases in comparison to the healthy controls. Thus, the findings of the present study indicate that individuals with BPD manifest cognitive biases implicated in psychosis more prominently than healthy individuals. These findings can be used to improve the existing psychotherapeutic techniques for BPD.

## 1. Introduction

Borderline Personality Disorder (BPD) is characterized by affect dysregulations, turbulent interpersonal relationships, fluctuations in the sense of self, high level of impulsivity and self-harm behaviors (American Psychiatric Association, 2013). Insight into the psychological mechanisms (for example, the cognitive, affective and behavioral factors) behind these disturbances is imperative for the development of effective psychotherapeutic interventions. To date, the research has focused mostly on the behavioral and affective disturbances underlying BPD psychopathology (Brown et al., 2002; Glenn and Klonsky, 2009; Putnam and Silk, 2005; Russell et al., 2007; Selby et al., 2009). There is a relative dearth of literature examining cognition of individuals with BPD. For example, cognitive distortions have a direct bearing on the thought processes of an individual, however, the only cognitive distortion that has received considerable attention in case of BPD is ‘dichotomous thinking’ (Arntz and ten Haaf, 2012; Napolitano and McKay, 2007; Veen and Arntz, 2000). Dichotomous thinking leads to processing of information in extremes, thus, causing difficulty for an individual in having a comprehensive view of an event (accepting both positive and negative aspects). It is postulated to underlie some of the behaviors of persons with BPD such as a sudden shift from an over-involved to completely rejecting attitude towards others. This is owing to their difficulty in integrating the positive and negative sides of others. However, it does not explain many other pathologies seen in this

disorder including the presence of psychotic symptoms. The centrality of psychotic symptoms in BPD can be understood from the fact that the diagnostic criteria for BPD given in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) mentions ‘transient, stress-related paranoid ideations’ as one of the symptoms of BPD (American Psychiatric Association, 2013). Studies show that individuals with BPD can have hallucinations and delusions (Barnow et al., 2010; Chopra and Beatson, 1986; Pearse et al., 2014; Schroeder et al., 2013; Yee et al., 2005) and, overall, 20–50% of them manifest these symptoms at some point of time (Schroeder et al., 2013).

Based on the empirical research, a few biases, such as jumping to conclusions (JTC) and bias against disconfirmatory evidence (BADE) have been called ‘reasoning biases’ and have been implicated in psychosis, especially delusions (Garety et al., 2001; So et al., 2012). They are called reasoning biases because they cloud the reasoning process of the individual and play a role in the genesis and maintenance of the psychotic symptoms. For example, one can form a belief about an individual hastily (JTC), mostly based on weak evidences. These beliefs and conclusions can be maintained by the tendency to reject all evidences that are contrary to those beliefs (BADE). The hastily formed opinion and rejection of all evidences that challenge the opinion can be liable for the genesis of paranoid ideations.

A study by Moritz et al. (2011) does point to the possibility of the presence of cognitive biases in individuals with BPD similar to the ones seen in psychosis. In this study, the authors assessed jumping to

\* Corresponding author.

E-mail address: [devvarta.k@nimhans.ac.in](mailto:devvarta.k@nimhans.ac.in) (D. Kumar).

conclusion (JTC), dichotomous thinking, emotion-based reasoning, catastrophising and attribution bias in individual with BPD. However, among the reasoning biases only JTC and attributional errors were studied. Another study by Catalan et al. (2015) examined the rate of JTC in BPD using beads task. Nineteen percent of their sample of individuals with BPD and 9% of the healthy controls manifested JTC. However, this study also did not explore other cognitive biases related to paranoid symptoms. Schilling et al. (2015) attempted to explore interpersonal attributions in individuals with BPD and found that they tend to manifest internal attributions for negative events and have difficulty in considering alternate explanations of an event. A study by Winter et al. (2015) also had similar findings wherein individuals with BPD manifested self-referential attributions for negative events.

In view of the role of certain cognitive biases in the genesis of psychotic symptoms and manifestation of psychotic symptoms by individuals with BPD, the present study aimed at exploring whether individuals with BPD manifest these biases. We hypothesized that individuals with BPD would manifest these biases more prominently than healthy individuals. Delving into the cognitive processes will help us gain a better understanding about the psychopathology of BPD as well as help in improving the therapies that target cognitions in this disorder.

## 2. Methods

### 2.1. Sample

Individuals with Borderline Personality Disorder (BPD group) were recruited from the National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru, India, a tertiary care psychiatry hospital. Comorbid substance dependence, clinical history suggestive of sub-normal intelligence, history of significant head injury or organic personality change, presence of psychotic symptoms, having undergone systematic psychotherapy for BPD in the past or currently undergoing psychotherapy were exclusion criteria for the BPD group. For the BPD group a total of 40 participants were approached out of which 12 could not be recruited (two refused to give consent, two had sub-normal intelligence, two underwent structured psychotherapy in the past, three could not be included due to diagnostic confusion, and three dropped out after giving consent). The healthy control group was recruited from the community and consisted of individuals having no lifetime psychiatric disorder. Inclusion criteria for healthy controls were a score of five or less on the Modified Mini Screen (MMS; New York Office of Alcoholism and Substance Abuse Services, 2002) and not qualifying for any personality disorder on Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II; First et al. 1997). For the control group, a total of 35 participants were approached, out of which seven could not be recruited in the study (three were found to have sub-syndromal Axis I disorder on the screening tools, and four refused to give consent).

The final sample comprised 28 individuals (2 males and 26 females) with Borderline Personality Disorder (BPD group) diagnosed as per the DSM-V criteria and 28 healthy controls (4 males and 24 females). The average age of the BPD group was 24.54 years ( $SD = 0.63$ ) and the healthy controls was 26.11 years ( $SD = 0.60$ ) ( $t = 1.81, p = 0.08$ ). The BPD group had 14.86 ( $SD = 2.32$ ) and healthy control group had 17.32 ( $SD = 2.16$ ) years of education. The two groups differed in terms of years of education ( $t = 4.11, p < 0.001$ ). Among the BPD group, six participants had comorbid major depression, two had bipolar disorder with current episode of depression, two had somatoform disorders, one had histrionic personality disorder, one had depression with impulse control disorder, while one had depression with dissociative disorder. None of them were currently psychotic or had a history of psychotic episode. Eight participants were not receiving any psychotropic medication, whereas, rest were either on antidepressants alone (9 participants) or on a combination of antidepressants and anxiolytic and/or

mood stabilizers (11 participants).

### 2.2. Tools

#### 2.2.1. Modified Mini Screen (MMS; New York Office of Alcoholism and Substance Abuse Services, 2002):

The MMS is a 22-item scale designed to identify persons in need of assessment in the domains of mood disorders, anxiety disorders, and psychotic disorders. In the present study it was used as a screening tool to screen out individuals from the control group who had a likelihood of having an axis I psychiatric condition of DSM-IV. Only individuals who obtained a score of five or less on MMS were recruited in the control group.

#### 2.2.2. Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II; First et al., 1997):

This tool has two parts: a screening tool (SCID-II Personality Questionnaire; SCID-II PQ) and an interview schedule. For the BPD group, this tool was used to confirm the diagnosis of BPD and to check for the presence of any comorbid personality disorders. In the control group, SCID II was used as a screening tool to exclude individuals having any personality disorder.

#### 2.2.3. Beck Depression Inventory- 2nd edition (BDI-II; Beck et al., 1996):

It is a 21-item self-administered inventory. It was used in the study to assess the level of depression in the BPD group as comorbid depression is commonly seen in individuals with BPD. It was also administered on individuals in the control group.

#### 2.2.4. Borderline personality questionnaire (BPQ; Poreh et al., 2006):

This is an 80-item self-report tool used to assess borderline personality traits based on the DSM-IV criteria including separate sub-scales for each criterion. It has nine sub-scales: impulsivity, affective instability, abandonment, relationships, self-image, suicide/self-mutilation, emptiness, intense anger and quasi-psychotic states. For the present study, scores on all sub-scales of BPQ were summated to give a single score which is henceforth referred to as the BPQ-total score. This tool has high test-retest reliability ( $ICC = 0.92$ ), high internal consistency ( $\alpha = 0.92$ ) (Chanen et al., 2008) and high convergent validity (0.85) (Poreh et al., 2006).

#### 2.2.5. Davos Assessment of Cognitive Biases Scale (DACOBS; van der Gaag et al., 2013):

This is a 42-item self-report Likert type scale which has seven sub-scales. It has four sub-scales to measure cognitive biases related to psychosis [jumping to conclusions (JTC), belief inflexibility bias (BIB), attention for threat bias (ATB), and external attribution bias (EAB)], two cognitive limitations sub-scales (social cognition problems and subjective cognitive problems) and one sub-scale to measure safety behaviors. Each of the items is answered on a 7-points scale (1 = strongly disagree, 7 = strongly agree). There are six items for every individual domain and each domain is scored by summing up the responses given on each of the items of that domain. The test has good internal consistency with Cronbach alphas ranging from 0.64 to 0.90 (for subscales). The split-half reliability of this tool ranges from 0.70 to 0.92, while its test-retest reliability ranges from 0.72 to 0.92. The convergent validity of the tool ranges from 0.36 to 0.63 (van der Gaag et al., 2013).

Since the present study aimed at examining the cognitive biases related to psychosis and not the cognitive limitations or safety behaviors among individuals with BPD, only the four subscales assessing the cognitive biases in psychosis (JTC, BIB, ATB and EAB) were administered. The JTC subscale assesses one's tendency to jump onto a conclusion prematurely without evaluating all probabilities; BIB subscale evaluates the unwillingness to consider other alternatives which prevents the reappraisal of situations; ATB subscale evaluates tendency to

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