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# Exploratory factor analysis of borderline personality disorder criteria in hospitalized adolescents☆

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**Abstract**

**Objective:** The authors examined the factor structure of borderline personality disorder (BPD) in hospitalized adolescents and also sought to add to the theoretical and clinical understanding of any homogeneous components by determining whether they may be related to specific forms of Axis I pathology.

**Method:** Subjects were 123 adolescent inpatients, who were reliably assessed with structured diagnostic interviews for *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition* Axes I and II disorders. Exploratory factor analysis identified BPD components, and logistic regression analyses tested whether these components were predictive of specific Axis I disorders.

**Results:** Factor analysis revealed a 4-factor solution that accounted for 67.0% of the variance. Factor 1 ("suicidal threats or gestures" and "emptiness or boredom") predicted depressive disorders and alcohol use disorders. Factor 2 ("affective instability," "uncontrolled anger," and "identity disturbance") predicted anxiety disorders and oppositional defiant disorder. Factor 3 ("unstable relationships" and "abandonment fears") predicted only anxiety disorders. Factor 4 ("impulsiveness" and "identity disturbance") predicted conduct disorder and substance use disorders.

**Conclusions:** Exploratory factor analysis of BPD criteria in adolescent inpatients revealed 4 BPD factors that appear to differ from those reported for similar studies of adults. The factors represent components of self-negation, irritability, poorly modulated relationships, and impulsivity—each of which is associated with characteristic Axis I pathology. These findings shed light on the nature of BPD in adolescents and may also have implications for treatment.



## 1. Introduction

Much attention, over the past quarter century, has been focused on refining the "borderline" construct. Based in part on the work of Gunderson and Singer [1] and Spitzer et al [2], the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition* (*DSM-III*) [3] subdivided this area of psychopathology into borderline and schizotypal personality disorders. Despite this improvement—and despite subsequent adjustments to the diagnostic criteria in the *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition* (*DSM-III-R*) [4] and the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (*DSM-IV*) [5]—the borderline personality disorder (BPD) construct remains heterogeneous [6]. This heterogeneity is partly inherent in the polythetic nature of the diagnosis [7]. In addition, patients with BPD comprise a heterogeneous group, often manifesting a wide variety of comorbid Axes I and II disorders [8,9]. Indeed, some of these comorbidity patterns have been used to characterize the nature of BPD within certain populations or to suggest BPD subtypes. For example, various investigators have considered the interface of BPD with mood, anxiety, somatization, and substance use disorders [10-13].

Another approach to examining this clinical heterogeneity has been through factor analytic techniques. Factor analysis can empirically identify meaningful components or latent elements within a diagnostic construct. Five such studies, using *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*) criteria for BPD, have been

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reported [14-18]. All examined adult populations: one used *DSM-III* criteria in college students [14], 2 used *DSM-III-R* criteria in adult psychiatric inpatients [15,16], and 2 studied *DSM-IV* criteria in diverse groups of adult patients [17,18]. Although one set of findings [17] was consistent with a unidimensional construct, the other 4 studies suggested multiple dimensions. The analysis of Rosenberger and Miller [14] revealed 2 factors: the first including interpersonal and identity criteria and the second encompassing dysregulation of behavior and affect. The study of Clarkin et al [15] revealed 3 factors: interpersonal relationships and identity, affective dysregulation (including suicidality), and impulsivity. Using an adult inpatient group from the Yale Psychiatric Institute (YPI), Sanislow et al [16] also found 3 factors: disturbed relatedness, behavioral dysregulation, and affective dysregulation. Sanislow et al [18] subsequently validated this 3-factor model via confirmatory factor analysis, using *DSM-IV* criteria and a separate adult sample. Inasmuch as such factors may reflect core dimensions of borderline psychopathology, this type of analysis has important theoretical and clinical implications [7]. For instance, delineating homogeneous BPD components may elucidate the boundaries between BPD and comorbid conditions, clarify etiologic pathways, and provide more specific targets for treatment [18].

Although BPD has been studied far less in adolescents than in adults, the past decade has brought several empirical investigations of the BPD construct within this age group [19-21]. Our own reports from the YPI Adolescent Follow-up Study suggest that personality disorders in this population, including BPD, can be reliably diagnosed, occur frequently, and have concurrent validity, but have only modest predictive validity and stability over time [22-24]. These general findings for hospitalized adolescents are consistent with those of other studies involving community samples of adolescents [25,26] and are also consistent with overall findings from the adult literature [27]. Some findings, however, suggest that the BPD construct may represent a more diffuse range of psychopathology in adolescents than in adults. Specifically, compared with an analogous group of adult inpatients, we found that BPD in adolescents had a broader pattern of criterion overlap with other personality disorders [28], a broader pattern of Axis II diagnostic comorbidity [20], and greater variability in the diagnostic efficiency of its criteria [21]. Such findings highlight the need to explore BPD heterogeneity in adolescents and suggest the potential utility of factor analytic methods. To our knowledge, only 1 factor analysis of BPD in adolescents has previously been reported [29], although this study did not use *DSM* criteria. These investigators performed an exploratory factor analysis of borderline symptoms in a nonclinical adolescent sample and found 3 factors: one encompassing aspects of affective disturbance and psychoticlike experiences, another involving impulsive action, and a third comprised of various aggressive manifestations.

The aim of the present study was to explore the factor structure of the BPD criteria in hospitalized adolescents who had been reliably assessed with a semistructured interview for *DSM-III-R* personality disorders. We also sought to add to our theoretical and clinical understanding of any homogeneous components by determining whether they may be related to specific forms of Axis I pathology. This aspect of the study was prompted by research in adults suggesting that BPD has broad Axis I comorbidity (eg, see Refs. [9,12,13]), as well as by studies from our own group [30-32] and others [33,34] indicating that BPD in adolescents may be associated with various Axis I disorders, including depression, conduct disorder, and substance use disorders.

## 2. Method

### 2.1. Subjects

Subjects were 123 patients drawn from a series of 138 consecutive admissions to the Adolescent Inpatient Unit of the YPI, a private, not-for-profit, tertiary-care psychiatric facility. This consecutive series was drawn from a larger series of 165 inpatients, representing nearly all of the adolescent admissions to the hospital between 1986 and 1990. A detailed description of this heterogeneous group is given elsewhere [22]. For this study, we used all subjects from the consecutive series for whom there was complete BPD criterion data.

Of these 123 adolescents, 67 (54%) were boys, and 56 (46%) were girls. They ranged in age from 13 to 18 years (mean, 15.9; SD, 1.3). With regard to ethnicity, 104 were whites, 10 were African Americans, 4 were Asian Americans, and 5 were of other backgrounds. Subjects were predominantly of middle-class socioeconomic status. At admission, the group had a mean Global Assessment of Functioning score of 38.7 (SD, 6.4).

Review and approval were received from the institutional review board. After complete explanation of study procedures and before initiating the interviews, written informed consent was obtained from all subjects. For minors, assent was obtained from subjects, and consent was obtained from their parents or guardians. Subjects participated voluntarily, and participation in the study did not influence treatment.

Table 1
Frequencies of Axis I disorders and disorder groups in 123 adolescent inpatients

| | N | % |
|---|---|---|
| Major depression | 80 | 65 |
| Dysthymia | 37 | 30 |
| Anxiety disorders | 29 | 24 |
| Conduct disorders | 68 | 55 |
| Oppositional defiant disorder | 23 | 19 |
| Attention-deficit hyperactivity disorder | 36 | 29 |
| Alcohol use disorders | 58 | 47 |
| Drug use disorders | 49 | 40 |