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Brief report

Temperamental differences between bipolar disorder, borderline personality disorder, and attention deficit/hyperactivity disorder: Some implications for their diagnostic validity

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ABSTRACT

Background: The relationship between borderline personality disorder (BPD), bipolar disorder (BD), and attention deficit/hyperactivity disorder (ADHD) requires further elucidation.
Methods: Seventy-four adult psychiatric in- and out-patients, each of them having received one of these diagnoses on clinical assessment, were interviewed and compared in terms of diagnostic overlap, age and sex distribution, comorbid substance, anxiety and eating disorders, and affective temperament.
Results: Diagnostic overlap within the three disorders was 54%. Comorbidity patterns and gender ratio did not differ. The disorders showed very similar levels of cyclothymia.
Limitations: Sample size was small and only a limited number of validators were tested.
Conclusions: The similar extent of cyclothymic temperament suggests mood lability as a common denominator of BPD, BD, and ADHD.

1. Introduction

An important part of establishing diagnostic validity for a disorder is to delineate it from similar diagnoses in nosological space (Robins and Guze, 1970), i.e. to establish *discriminant* validity. This is possible by comparing the candidate disorders by a number of external validators such as family history, sex distribution, onset and course, treatment response, and comorbidity.

Here we are concerned with the discrimination between a triplet of disorders that are frequently diagnosed and show considerable empirical overlap: borderline personality disorder (BPD), bipolar disorder (BD) and attention deficit/hyperactivity disorder (ADHD). This overlap consists of several aspects: first, these disorders are frequently co-morbid (Ferrer et al., 2010; Kessler et al., 2006; Perugi et al., 2013); second, they show a moderate overlap in diagnostic criteria (Milberger et al., 1995); third, in clinical practice, it is sometimes difficult to know which of the three disorders a patient's symptoms belong to (Nilsson et al., 2010; Skirrow et al., 2012). We report results from a patient study comparing these diagnoses in terms of diagnostic overlap, sex distribution, comorbidity, and affective temperaments.

2. Materials and methods

2.1. Patients

Consecutive referrals to the Psychiatric University Hospital (PUK) whose principal clinical ICD-10 diagnoses at admission were either BD, BPD, or ADHD were recruited for thorough diagnostic re-evaluation. As the number of adult patients with ADHD referred for a psychiatric hospitalization is limited, out-patients treated at the consultation service for ADHD were additionally recruited. Of 104 subjects initially asked for participation, 25 declined. Of the remaining 79 subjects, 5 did not meet the diagnostic criteria. The final sample consisted of 74 patients: 27 with BPD, 24 with BD (17 bipolar-I and 7 bipolar-II), and 23 with ADHD. Before participation in the study, all subjects received written study information and gave their written informed consent. The study was approved by the local ethics committee.

2.2. Psychometric and diagnostic re-evaluation

The levels of five temperaments ("depressive", "hyperthymic", "cyclothymic", "anxious", and "irritable") during the lifespan were assessed using the TEMPS-A (Akiskal et al., 2002) self-rating scale. The TEMPS-A asks for a patient's state during "most of their life". DSM-IV and ICD-10 criteria for ADHD, which are nearly identical, are geared towards children. They are limited to symptoms of

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inattention, hyperactivity and impulsivity. Additional criteria allowing for diagnosis of ADHD in adults have been established by Wender (1995) in the so-called Utah-criteria. They include additional subscales for affective lability, temperament, emotional excitability, and disorganization, and are operationalized in the clinician-administered Wender–Reimherr Interview (Rosler et al., 2008), which was the diagnostic tool used in the present study. In addition, the WURS-k (Retz-Junginger et al., 2003) and ADHS-SB (Rosler et al., 2004) self-rating scales, which incorporate both ICD-10 and DSM-IV criteria, were used for the retrospective assessment in adulthood of childhood ADHD and the current assessment of adult ADHD, respectively. BPD, BD and comorbid substance use, anxiety, and eating disorders were assessed by the respective sections of SCID-I/II (First et al., 1997, 2002). BD patients were interviewed during a euthymic state. Both initial and re-evaluated diagnoses were made by experienced clinicians.

2.3. Statistics

Between-group comparisons of frequencies were carried out using χ^2-tests; comparisons on continuous data used Mann–Whitney and Kruskal–Wallis tests. Temperaments were not only compared among groups defined by their primary diagnoses, but also among groups of "pure" cases without diagnostic overlap. There were 12 pure bipolar, 12 pure borderline, and 10 pure ADHD patients. Analyses were performed in SPSS 20 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.).

3. Results

Sociodemographic data are shown in Table 1. Bipolar patients were statistically significantly older than borderline and ADHD patients. No other differences were found.

For both groups defined by primary and by pure diagnoses, irritable and anxious temperaments were the lowest in bipolar patients. Hyperthymic temperament showed a trend towards lower values in borderline patients in the primary groups, which became significant in the pure groups. Similarly, depressive temperament showed a trend to be the highest in borderline patients in the primary groups, which became significant in the pure groups. Results are summarized in Table 2.

The pattern of comorbidities among the three diagnoses BPD, BD, and ADHD is shown in Table 3. All in all, 54% (40/74) of patients were co-morbid with at least one other disorder within the triplet of target diagnoses. No statistically significant differences in comorbidity with substance use, anxiety, or eating disorders emerged.

Table 1
Sociodemographic data.

Primary diagnosis	BPD	BD	ADHD	*p*
N (%)	27	24	23	
Women	20 (74)	16 (67)	15 (65)	.76
Age [mean (SD) years]	32.8 (8.8)	41.8 (12.9)	31.3 (10.3)	.01
Living alone	20 (74)	17 (71)	17 (74)	.96
Employed	13 (52)	11 (46)	15 (68)	.35

Table 2
Affective temperament.

Primary diagnosis	BPD	BD	ADHD	*p*
N	27	24	23	
TEMPS-A	Mean (SD)	Mean (SD)	Mean (SD)	
Depressive	12.2 (3.6)	9.8 (3.6)	10.9 (4.4)	.12
Cyclothymic	13.0 (3.6)	11.9 (4.7)	12.7 (4.9)	.72
Hyperthymic	8.5 (4.1)	10.8 (4.8)	10.2 (4.7)	.13
Irritable	10.5 (4.3)[a]	7.5 (5.1)	10.0 (4.7)	.017
Anxious	14.9 (4.5)	11.3 (5.9)[b]	15.2 (5.1)	.016
Pure diagnosis	BPD	BD	ADHD	*p*
N	12	12	10	
TEMPS-A	Mean (SD)	Mean (SD)	Mean (SD)	
Depressive	12.4 (3.7)[c,d]	8.7 (2.8)	7.7 (3.6)	.007
Cyclothymic	10.7 (3.0)	9.7 (4.9)	9.6 (5.0)	.66
Hyperthymic	6.6 (3.7)[e]	10.0 (4.7)	10.9 (4.1)	.031
Irritable	9.1 (3.0)[f]	5.0 (3.6)	7.9 (3.2)	.035
Anxious	14.2 (4.1)[g]	8.6 (5.4)[h]	12.3 (5.1)	.006

BPD=Borderline personality disorder, BD=Bipolar disorder, ADHD=Attention deficit/hyperactivity disorder.

[a] $p < .02$ vs. BD, Mann–Whitney U test.
[b] $p < .02$ vs. ADHD, Mann–Whitney U test.
[c] $p < .02$ vs. BD, Mann–Whitney U test.
[d] $p < .003$ vs. ADHD, Mann–Whitney U test.
[e] $p < .007$ vs. ADHD, Mann–Whitney U test.
[f] $p < .02$ vs. BD, Mann–Whitney U test.
[g] $p < .001$ vs. BD, Mann–Whitney U test.
[h] $p < .05$ vs. ADHD, Mann–Whitney U test.

Table 3
Comorbidity.

Primary diagnosis	BPD	BD	ADHD	*P*
N (%)	27	24	23	
BPD	–	6 (25)	7 (30)	–
BD	6 (22)	–	8 (35)	–
ADHD	7 (26)	4 (17)	–	–
Both[a]	2 (7)	2 (8)	2 (9)	–
Total	15 (56)	12 (50)	13 (57)	–
Substance use	20 (74)	12 (50)	12 (52)	.15
Anxiety disorders	25 (93)	21 (87)	20(87)	.77
Eating disorders	12 (44)	8 (33)	8 (35)	.67

BPD=Borderline personality disorder, BD=Bipolar disorder, ADHD=Attention deficit/hyperactivity disorder.

[a] Both comorbid diagnoses present: for BPD this means BD and ADHD were also present; for BD it means that BPD and ADHD were also present; for ADHD it means both BPD and BD were also present.

4. Discussion

In a mixed sample of 74 in- and out-patients with primary diagnoses of BPD, BD, and ADHD, there was considerable diagnostic overlap. At least half of the members of each disorder met criteria for at least one of the other disorders. Consistent with this, comorbidity rates for substance use, anxiety disorders and eating disorder were very similar and not statistically significantly different among the groups. Levels of affective temperament were partly similar among groups, with some notable differences: BPD patients stood out by low levels of hyperthymia and by high depressiveness, and BD patients stood out by low levels of anxious and irritable-explosive temperament. These differences were all statistically significant in the pure groups. A cyclothymic temperament, however, was expressed on a similar and high level by BP, BPD, and ADHD.

Due to the limited number of validators, this study could not demonstrate with certainty that the three disorders are different, let alone definitely the same. However, the findings point to areas of overlap and difference that should be investigated further in larger studies.