Acta Psychiatrica Scandinavica

Acta Psychiatr Scand 2016: 134: 504–510

DOI: 10.1111/acps.12643

The International Mood Network (IMN) Nosology Project: differentiating borderline personality from bipolar illness

Vöhringer PA, Barroilhet SA, Alvear K, Medina S, Espinosa C, Alexandrovich K, Riumallo P, Leiva F, Hurtado ME, Cabrera J, Sullivan M, Holtzman N, Ghaemi SN. The International Mood Network (IMN) Nosology Project: differentiating borderline personality from bipolar illness

Objective: The differential diagnosis of bipolar illness vs. borderline personality is controversial. Both conditions manifest impulsive behavior, unstable interpersonal relationships, and mood symptoms. This study examines whether and which mood clinical features can differentiate between both conditions.
Method: A total of 260 patients (mean ± standard deviation age 41 ± 13 years, 68% female) attending to a mood clinic were examined for diagnosis of bipolar illness and borderline personality disorder using SCID-I, SCID-II, and clinical mood criteria extracted from Mood Disorder Questionnaire (MDQ). They were analyzed using diagnoses as dependent variables. Predictors of bipolar and borderline diagnoses were identified by multivariable logistic regressions, and predictive validity of models was assessed using ROC curve analysis.
Results: Bipolar illness was strongly predicted by elevated mood (OR = 4.02, 95% CI: 1.80–9.15), increased goal-directed activities (OR = 3.90, 95% CI: 1.73–8.96), and episodicity of mood symptoms (OR = 3.48, 95% CI 1.49–8.39). This triad model predicted bipolar illness with 88.7% sensitivity, 81.4% specificity, and obtained an auROC of 0.91 (95% CI: 0.76–0.96) and a positive predictive value of 85.1%. For borderline personality disorder, only female gender was a statistically significant predictor (OR = 3.41, 95% CI: 1.29–13.7), and the predictive model obtained an auROC of 0.67 (95% CI: 0.53–0.74).
Conclusion: In a mood disorder clinic setting, manic criteria and episodic mood course distinguished bipolar illness from borderline personality disorder.

P. A. Vöhringer[1,2,3,4], S. A. Barroilhet[3,5,6], K. Alvear[2,7], S. Medina[2], C. Espinosa[2], K. Alexandrovich[2], P. Riumallo[2], F. Leiva[2], M. E. Hurtado[2], J. Cabrera[2], M. Sullivan[3], N. Holtzman[3], S. N. Ghaemi[3]

[1]Unidad de Trastornos del Ánimo, Clínica Psiquiátrica Universitaria, Hospital Clínico Universidad de Chile, Facultad de Medicina Universidad de Chile, Santiago, [2]Clínica de Trastornos del Ánimo, Instituto Psiquiátrico "Dr. José Horwitz B", Santiago, Chile, [3]Mood Disorders Program, Tufts Medical Center, Boston, MA, USA, [4]Millenium Institute for Depression and Personality Research, Ministry of Economy, Chile, Macul, Santiago, [5]Escuela de Psicología, Universidad de los Andes, Santiago, [6]Unidad de Psiquiatría de Enlace, Clínica Psiquiátrica Universitaria, Hospital Clínico Universidad de Chile, Facultad de Medicina Universidad de Chile, Santiago and [7]Universidad Diego Portales, Santiago, Chile

Key words: bipolar illness; differential diagnosis; borderline personality disorder; misdiagnosis

Paul Vöhringer, Mood Disorders Program, Tufts Medical Center, 800 Washington Street #1007, Boston, MA 02111, USA. E-mails: PVohringer@tuftsmedicalcenter.org, pvohringer@gmail.com

Accepted for publication August 22, 2016

Significant outcomes

- Bipolar illness (BI) and borderline personality disorder (BPD) can be distinguished using clinical criteria in a mood clinical setting
- Elevated mood, increased goal-directed activities, and episodicity are the strongest predictors of BI in a mood setting
- Female gender is the only predictor of BPD in a mood setting.

Limitations

- Sample was obtained from a tertiary mood clinic, therefore enriched for mood symptoms.
- Based on a mood clinic sample, the above-mentioned clinical predictors may rule out borderline and not viceversa.
- These results cannot be generalized to personality disorder settings.

Introduction

In clinical practice, patients with maladjusted behavior, unstable interpersonal relationships, and intermittent affective symptoms are common and can be difficult to accurately diagnose (1–3). This difficulty in part arises because such symptoms can indicate the presence of either bipolar illness, borderline personality disorder, or both conditions concurrently (4).

Bipolar illness (BI) is a chronic and recurrent disease that often goes undiagnosed in primary care and psychiatric settings (5–8). The same has been claimed for borderline personality disorder (BPD) (9, 10). Both entities entail significant psychosocial morbidity, mortality, poor quality of life, and pose a heavy burden on health providers and relatives (10).

In one review, approximately one in every seven patients with BI also met diagnostic criteria for BPD (11). However, high comorbidity may not be true comorbidity given that these two conditions share overlapping phenomenological characteristics like mood instability, impulsiveness, and inappropriate anger (12–14).

This overlap of DSM criteria has produced clinical controversy. Some focus on the overlap and argue that one of the two syndromes is more important or more prominent than the other (15, 16). Others suggest that it is important to focus on clinical features that are different, rather than shared, between the two diagnoses (17).

We identified only one study that provided data that could identify symptoms differentiating the two conditions (18). In that report, BPD features of dissociative symptoms, fears of abandonment, identity disturbance, and parasuicidal behaviors did not occur in BI (19), although others have reported some evidence of self-harm in BI (20). A few other studies reported that mood instability in BI had a different character than mood instability in BPD (21–23), or that the former are less psychosocially influenced than the latter (3, 23–25). Direct comparisons of the two groups are infrequent, however (21, 26–30).

Aim of the study

Given the paucity of clinical research on this important diagnostic question, the International Mood Network Nosology Project aimed to directly compare borderline personality disorder and bipolar illness patients in a mood disorder clinic to identify which self-reported Mood Disorder Questionnaire criteria and clinical features predict bipolar illness and borderline personality disorder as assessed with Structured Clinical Interview for DSM-IV interview (31).

Methods

This cross-sectional study was carried out in a tertiary clinic specialized in mood disorders (MDC), after receiving institutional review board approval. This clinic attends nearly 500 patients, primarily those with BI. It receives nearly 200 new referrals annually.

Measures

Patients with BI and BPD were diagnosed using Structured Clinical Interview for DSM-IV Axis I Disorders: Clinical Version (SCID-I CV) (32) and Structured Clinical Interview for DSM-IV Axis II Disorders (SCID-II) (33) respectively. This method was used as a 'gold standard' to differentiate between BI and BPD. Although no psychiatric diagnostic method is flawless, SCID interviews are well-validated and often-used tools in psychiatric research (34, 35).

Additionally, the Mood Disorder Questionnaire (MDQ) (36) was used as a routine mood criteria assessment. The MDQ is a simple, brief questionnaire that identifies manic or hypomanic symptoms. In question 1 (Q1), participants are asked to respond 'yes' or 'no' to 13 items (Q1.x) designed to identify hypomanic/manic criteria as defined by the Diagnostic and Statistical Manual of the American Psychiatric Association, 4th version (DSM-IV) (12, 23) as well as from clinical experience. Question 2 (Q2) examines whether these symptoms were experienced concurrently. Question 3 (Q3) rates functional impairment due to these symptoms by asking subjects to rate the difficultly in completing various actions on a four-point scale. Question 4 (Q4) assesses history of BI in blood relatives. Finally, question 5 (Q5) asks about previous suspicion of BI by other health professionals. The Chilean Spanish version used in this study was previously validated by the study authors (37). Manic/hypomanic symptoms were retrieved from this questionnaire.

MDC investigators were trained to conduct the SCID-I CV to detect manic symptoms and diagnose BI, and SCID-II to diagnose personality disorders. Clinical interviews also identified other axis I disorders in addition to BI within the sample. Personality disorders diagnosis using clinical and SCID-II interviews were highly correlated between raters, with a kappa = 0.9. The same degree of correlation was obtained regarding axis I disorders other than BI, obtaining a high degree of inter-rater reliability of kappa = 0.8.

Subjects

The study sample consisted of 260 subjects recruited between April 2009 and December 2012. Of total sample, 177 (68%) were female, and mean age was 41 ± 14 years. Patients referred to MDC were consecutively asked about participation by an investigator upon arrival. The study was not otherwise advertised. All patients screened for the study agreed to participate and provided written consent.

The sample was divided, regarding their diagnosis, in four mutually exclusive groups: patients with BI, patients with BPD, patients that have both conditions (comorbidity), and patients that have neither.

Statistical analysis

Chi-square or Fisher's exact test was used to perform a bivariate analysis in order to select which clinical mood criteria could predict better the two main outcomes: bipolar illness diagnosis and borderline personality disorder diagnosis. Effect estimates were reported as odds ratios (OR) along with their 95% confidence intervals and *P*-values. Items that obtained *P*-values equal to or lower than 0.1 were then included in logistic regression modeling. Gender and age were also included as clinical covariates in the models. BI diagnosis was the outcome (dependent) variable in the first model and BPD diagnosis was the outcome variable in the second model. A stepwise/backward AIC criterion selection procedure plus clinical criteria were applied in order to decide which variables would be included in the final predictive models.

Predictive validity of the models: ROC analysis

Model discrimination was assessed by the auROC statistic given by a ROC curve. The auROC statistic, along with its 95% confidence interval, was used to ascertain discrimination capacity. Two models were assessed: The full one and 'the triad' one. The latter comprises the three stronger predictors from the full model. Hypothesis testing analyses between them were made using a chi-square test in order to detect whether a more parsimonious and easy-to-use model could be applied by clinicians. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and the proportion of correctly classified patients of the triad model were also reported.

Data were analyzed using R statistical package (38).

Results

Using SCID-I and SCID-II, 45% of the total sample was diagnosed exclusively with BI (type I or II), 20% with BPD, 9% with both, and 25% with neither.

As seen in Table 1, BI-only patients were 100% more episodic and 114% more familial than patients with BPD, while female gender was more common in BPD than in BI. Both conditions led to similar functional impairment.

Table 2 shows unadjusted bivariate analyses. Bolded clinical predictors were significant at $P < 0.1$. Those predictors meeting that criterion were entered into the multivariate regression models. Tables 3 and 4 show the final multivariate regression models for BI and BPD diagnoses respectively. Bipolar illness was strongly predicted by the MDQ's triad of elevated mood (Q1.1: 'you felt so good or so hyper that other people thought you were not your normal self or you were so hyper that you got into trouble?'), increased goal-directed activities (Q1.9: 'you were much more active or did many more things than usual?'), and episodicity of mood symptoms (Q2: 'If you

Table 1. Clinical and demographic description of subgroups, and comparison of bipolar illness and borderline personality disorder groups (no comorbidity)

	Total sample (*N* = 260)	Comorbidity bipolar illness and borderline personality (*N* = 24)	Neither (*N* = 66)	Bipolar illness (*N* = 118)	Borderline personality disorder (*N* = 52)	Effect estimate*
Age in years (mean ± SD)	41 ± 13.45	40 ± 13.92	43.3 ± 14.21	38 ± 13.19	42 ± 13.19	−3.59 (−7.92 to 0.74)
Gender (female)	177 (68%)	19 (79%)	46 (70%)	68 (58%)	46 (88%)	0.66 (0.07–0.28)
Family history of bipolar illness (Q4)	123 (47%)	12 (50%)	29 (43%)	68 (58%)	14 (27%)	2.14 (1.16–2.32)
Previous suspicion of bipolar illness (Q5)	178 (68%)	20 (83%)	28 (42%)	95 (81%)	35 (70%)	1.19 (0.02–2.90)
Significant impact in daily functioning of manic symptoms (Q3)	207 (80%)	23 (95%)	44 (67%)	96 (82%)	44 (85%)	0.96 (−0.01 to 2.63)
Manic symptoms occur episodically (Q2)	184 (71%)	17 (71%)	34 (51%)	108 (92%)	25 (48%)	2.00 (1.03–2.52)

*Relative risk for dichotomic variables or risk difference for continuous variables and 95% confidence intervals, comparing bipolar and borderline patients.

Table 2. Bivariate analysis of mood criteria comparing bipolar illness and borderline personality disorder (in decreasing order of effect size)

	Bipolar illness		Borderline personality	
Mood criteria (MDQ question.item)	Odds Ratio	95% CI	Odds Ratio	95% CI
More goal active (Q1.9)	**13.63**	**7.06–27.60**	0.85	0.26–2.63
More energy (Q1.8)	**10.91**	**5.81–21.28**	0.94	0.30–2.90
Elevated mood (Q1.1)	**9.59**	**5.15–18.46**	0.77	0.21–2.58
More talkative (Q1.5)	**8.93**	**4.81–17.15**	0.72	0.22–2.24
More social (Q1.10)	**7.58**	**3.87–15.74**	0.79	0.24–2.80
Episodicity (Q2)	**6.59**	**3.44–13.16**	0.85	0.26–2.63
More self-confidence (Q1.3)	**5.84**	**3.28–10.61**	0.81	0.26–2.47
More sexual (Q1.11)	**5.32**	**2.97–9.78**	0.69	0.22–2.17
Previous suspicion of bipolar illness (Q5)	**4.55**	**2.53–8.37**	1.33	0.39–4.30
Unusual behavior (Q1.12)	**3.38**	**1.98–5.86**	1.08	0.35–3.30
Less need for sleep (Q1.4)	**3.06**	**1.75–5.40**	0.28	0.05–1.14
Irritability (Q1.3)	**3.01**	**1.67–5.50**	0.90	0.03–1.55
Racing thoughts (Q1.6)	**2.94**	**1.53–5.83**	0.53	0.09–2.30
Spend more money (Q1.13)	**1.90**	**1.13–3.23**	1.44	0.13–1.37
Easy distraction (Q1.7)	1.39	0.76–2.53	1.25	0.33–4.39
Family history of bipolar illness (Q4)	**1.22**	**1.73–2.07**	1.04	0.28–12.47

CI, confidence intervals.
Bolded items have *P*-value ≤ 0.1 and were introduced into multivariate regression modeling.

Table 3. Multivariate logistic regression model of clinical predictors of diagnosis of bipolar illness*

Clinical features (MDQ question.item)	Estimate	Odds Ratio	95% CI
Elevated mood (Q1.1)	1.39120	4.02	1.80–9.15*
More goal active (Q1.9)	1.36208	3.90	1.73–8.96*
Episodicity (Q2)	1.24778	3.48	1.49–8.39*
More social (Q1.10)	1.08449	2.96	1.30–6.99*
Racing thoughts (Q1.6)	1.04769	2.85	1.28–6.53*
Less need for sleep (Q1.4)	1.01178	2.75	1.21–6.28*
More self-confidence (Q1.3)	0.88680	2.43	1.13–5.20*
Age	−0.00271	1.00	0.97–1.02
Gender	−0.55485	0.57	0.24–1.30

CI, confidence intervals.
*Adjusted model built using stepwise/backward with AIC criterion selecting variable process.

Table 4. Multivariate logistic regression model of predictors of diagnosis of borderline personality disorder*

Clinical features (MDQ question.item)	Estimate	Odds Ratio	95% CI
Gender	1.227094	3.41	1.29–13.70
Unusual behavior (Q1.12)	0.950204	2.58	0.73–10.05
Spend more money (Q1.13)	−1.250713	1.28	0.06–1.02
Family history of bipolar illness (Q4)	−1.688066	1.14	0.54–21.84
Age	−0.002703	0.99	0.94–1.05
More talkative (Q1.5)	−0.437456	0.64	0.17–2.24
Irritability (Q1.3)	−1.350531	0.25	0.02–1.59

CI, Confidence intervals.
*Adjusted model built using stepwise/backward AIC criterion selecting variable process.

checked YES to more than one of the above, have several of these ever happened during the same period of time?'). MDQ less strong predictors for BI were presence of racing thoughts (Q1.6: 'Thoughts raced through your head or you couldn't slow your mind down?'), less need for sleep (Q1.4: 'you got much less sleep than usual and found you didn't really miss it?'), and increased self-confidence (Q1.3: 'you felt much more self-confident than usual?'). For BPD, only female gender was a statistically significant predictor.

Figure 1 (predictive capacity of the bipolar illness triad multivariate model) shows the ROC curve for the triad model predicting BI. The auROC statistic for this model was 0.91 (95% CI: 0.76–0.96) while for the full model was 0.95 (95% CI: 0.80–0.97). When comparing both auROC, no statistical difference was found ($chi^2 = 2.36$, $P = 0.211$). The triad model predicted BI with 88.7% sensitivity and 81.4% specificity and showed a positive predictive value (PPV) of 85.1%, namely the triad model accurately diagnosed BI in that proportion of the sample. Negative predictive value (NPV) was 85.7%, namely patients that did not have the triad did not have BI 85.7% of times. When making differential diagnosis of BI and BPD in a mood disorder setting, the triad correctly classified 85.4% of BI patients from the sample. On the other hand, the BPD model obtained an auROC statistic of 0.67 (95% CI: 0.53–0.74).

Discussion

In the setting of a mood disorder specialty clinic, borderline personality and bipolar illness were distinguishable based on a clinical triad of elevated mood, increased goal-directed activity, and episodic course of illness. These results suggest that these two conditions, despite overlap in criteria and

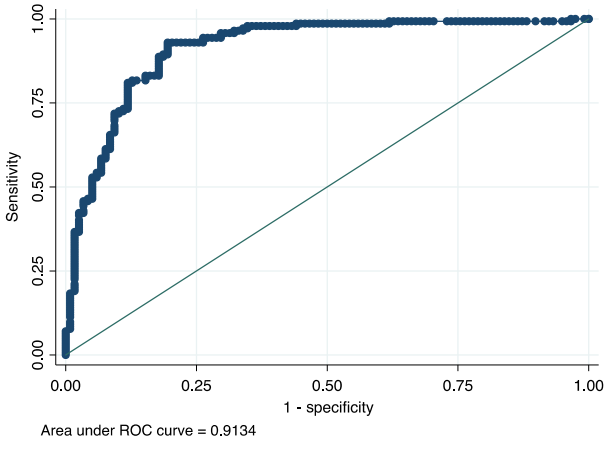

Fig. 1. Predictive capacity of the bipolar illness triad multivariate model.

reported common comorbidity, can be clinically distinguished in a mood disorder clinic. These findings may not generalize to other clinical settings where the prevalence of both conditions could be lower, as in primary care clinics (39). The proposed triad may be combined with other non-DSM factors which should be assessed for patients in whom bipolar illness is in the differential diagnosis.

These results can be related to the previous literature in a number of ways. Classic mania symptoms, like euphoric mood and decreased need for sleep, are not part of the diagnostic criteria of borderline personality or other conditions. As proposed in the DSM system, we confirmed that the identification of mania criteria and episodicity of mood symptoms are specific to bipolar illness, and can diagnose it positively.

The clinical implication of these results is that if these criteria are present, then bipolar illness is likely to be present, and borderline personality is less likely to be present. Additionally, this can be reinforced by the excellent predictive capacity (0.91) and PPV of the mood clinical triad (85.1%). In contrast, mood criteria did not specifically help in predicting borderline personality. Only female gender was associated with the latter. Again this can further be supported by the poor discriminative capacity of the BPD predictive model (0.67). Specific borderline personality criteria were not assessed in this study but obviously have been well demonstrated elsewhere to identify borderline personality (40) even in samples with mood disorders (18, 19). As this was a mood disorder specialty clinic setting, the patient population was not enriched for borderline personality, but it was enriched for mood illnesses. Thus, the absence of diagnostic criteria for predicting borderline personality likely relates to the fact that this sample was not obtained in a setting where such patients were referred. Although current conceptions in psychiatric nosology are heading to dimensional models of disease rather than categorical ones, our daily clinical work places us in need of operational clinical criteria to work with. The triad may be useful in this respect.

It is noteworthy that while there were notable subgroups of patients with bipolar illness only (45%) vs. borderline personality only (20%), fewer subjects had the comorbidity of both (9%), in contrast to other clinical samples where higher comorbidities are reported (around 20%) (11, 41). Referral bias (higher age, mood disorder specialty clinic setting) might explain the low comorbidity in this sample. This factor relates to the larger question of generalizability. These results mainly apply to ruling out borderline personality in a mood disorder sample, rather than vice versa. It is also notable that subtype of bipolar disorder (type I or type II) was not assessed, which prevents making differential assessments on the topic of type II bipolar illness vs. borderline personality. Other important clinical features that also were not collected include baseline depressive symptomatology, years of being ill, age of onset, and number of previous mood episodes. The lack of these clinical features limits the generalizability of the results. While assessing personality in patients in an acute mood state is controversial, some studies using SCID-II methodology have shown stability when assessing mood state patients (42) in contrast with other personality assessment tools (43, 44).

Overall, this study aimed for practitioners' clinical usefulness. In that regard, episodicity is probably the only one BI predictor that does not directly rely on mood. Therefore, it might be considered a more accurate predictor (17, 45). However, severe mixed states, as well as affective temperaments (such as cyclothymic and hyperthymia), have little to no episodicity, with nearly constant mood symptoms and no 'well intervals' to define 'episodes' (46). Our clinical observation of mood patients goes in the same direction. Mood assessment depends on the observer and therefore is more likely to be subject to clinical bias. The triad found in this study provides additional data to tie diagnoses to objective findings; but clinical judgment will still be required in interpreting them.

Funding

This study was supported by the Fund for Innovation and Competitiveness (FIC) of the Chilean Ministry of Economy, Development and Tourism, through the Millennium Scientific Initiative, Grant Number IS130005.

References

1. Blacker D, Tsuang MT. Contested boundaries of bipolar disorder and the limits of categorical diagnosis in psychiatry. Am J Psychiatry 1992;**149**:1473–1483.
2. Tyrer SP, Brittlebank AD. Misdiagnosis of bipolar affective disorder as personality disorder. Can J Psychiatry 1993;**38**:587–589.
3. Zimmerman M, Morgan TA. Problematic boundaries in the diagnosis of bipolar disorder: the interface with borderline personality disorder. Curr Psychiatr Rep 2013;**15**:422.
4. Zimmerman M, Galione JN, Ruggero CJ et al. Screening for bipolar disorder and finding borderline personality disorder. J Clin Psychiatry 2010;**71**:1212–1217.
5. Ghaemi SN, Sachs GS, Chiou AM, Pandurangi AK, Goodwin K. Is bipolar disorder still underdiagnosed? Are antidepressants overutilized? J Affect Disord 1999;**52**:135–144.
6. Hirschfeld RM, Lewis L, Vornik LA. Perceptions and impact of bipolar disorder: how far have we really come? Results of the national depressive and manic-depressive association 2000 survey of individuals with bipolar disorder. J Clin Psychiatry 2003;**64**:161–174.

7. Hirschfeld RM. Bipolar spectrum disorder: improving its recognition and diagnosis. J Clin Psychiatry 2001;**62**(Suppl 14):5–9.
8. Vicente B, Kohn R, Rioseco P, Saldivia S, Levav I, Torres S. Lifetime and 12-month prevalence of DSM-III-R disorders in the Chile psychiatric prevalence study. Am J Psychiatry 2006;**163**:1362–1370.
9. Paris J, Gunderson J, Weinberg I. The interface between borderline personality disorder and bipolar spectrum disorders. Compr Psychiatry 2007;**48**:145–154.
10. Zimmerman M. Improving the recognition of borderline personality disorder in a bipolar world. J Pers Disord 2016;**30**:320–335.
11. Brieger P, Ehrt U, Marneros A. Frequency of comorbid personality disorders in bipolar and unipolar affective disorders. Compr Psychiatry 2003;**44**:28–34.
12. Gunderson JG, Phillips KA. A current view of the interface between borderline personality disorder and depression. Am J Psychiatry 1991;**148**:967–975.
13. Benazzi F. Borderline personality-bipolar spectrum relationship. Prog Neuropsychopharmacol Biol Psychiatry 2006;**30**:68–74.
14. Ghaemi SN, Dalley S, Catania C, Barroilhet S. Bipolar or borderline: a clinical overview. Acta Psychiatr Scand 2014;**130**:99–108.
15. Gunderson EW, Coffin PO, Chang N, Polydorou S, Levin FR. The interface between substance abuse and chronic pain management in primary care: a curriculum for medical residents. Subst Abus 2009;**30**:253–260.
16. Akiskal HS. Demystifying borderline personality: critique of the concept and unorthodox reflections on its natural kinship with the bipolar spectrum. Acta Psychiatr Scand 2004;**110**:401–407.
17. Ghaemi SN, Barroilhet S. Bipolar illness versus borderline personality: red skies versus red apples. In: Choi-Kain L, Gunderson J, eds. Borderline personality and mood disorders: comorbidity and controversy. New York, Heidelberg, Dordrecht, London: Springer, 2015: 97–115.
18. Perugi G, Angst J, Azorin JM et al. The bipolar-borderline personality disorders connection in major depressive patients. Acta Psychiatr Scand 2013;**128**:376–383.
19. Barroilhet S, Vohringer PA, Ghaemi SN. Borderline versus bipolar: differences matter. Acta Psychiatr Scand 2013;**128**:385–386.
20. Inder ML, Crowe MT, Luty SE et al. Prospective rates of suicide attempts and nonsuicidal self-injury by young people with bipolar disorder participating in a psychotherapy study. Aust N Z J Psychiatry 2016;**50**:167–173.
21. Henry C, Mitropoulou V, New AS, Koenigsberg HW, Silverman J, Siever LJ. Affective instability and impulsivity in borderline personality and bipolar II disorders: similarities and differences. J Psychiatr Res 2001;**35**:307–312.
22. Reich DB, Zanarini MC, Fitzmaurice G. Affective lability in bipolar disorder and borderline personality disorder. Compr Psychiatry 2012;**53**:230–237.
23. Koenigsberg HW. Affective instability: toward an integration of neuroscience and psychological perspectives. J Pers Disord 2010;**24**:60–82.
24. Russell JJ, Moskowitz DS, Zuroff DC, Sookman D, Paris J. Stability and variability of affective experience and interpersonal behavior in borderline personality disorder. J Abnorm Psychol 2007;**116**:578–588.
25. Gunderson JG, Lyons-Ruth K. BPD's interpersonal hypersensitivity phenotype: a gene-environment-developmental model. J Pers Disord 2008;**22**:22–41.
26. Benazzi F. A relationship between bipolar II disorder and borderline personality disorder? Prog Neuropsychopharmacol Biol Psychiatry 2008;**32**:1022–1029.
27. Wilson ST, Stanley B, Oquendo MA, Goldberg P, Zalsman G, Mann JJ. Comparing impulsiveness, hostility, and depression in borderline personality disorder and bipolar II disorder. J Clin Psychiatry 2007;**68**:1533–1539.
28. Zimmerman M, Martinez JH, Morgan TA, Young D, Chelminski I, Dalrymple K. Distinguishing bipolar II depression from major depressive disorder with comorbid borderline personality disorder: demographic, clinical, and family history differences. J Clin Psychiatry 2013;**74**:880–886.
29. Galione J, Zimmerman M. A comparison of depressed patients with and without borderline personality disorder: implications for interpreting studies of the validity of the bipolar spectrum. J Pers Disord 2010;**24**:763–772.
30. Berrocal C, Ruiz Moreno MA, Rando MA, Benvenuti A, Cassano GB. Borderline personality disorder and mood spectrum. Psychiatry Res 2008;**159**:300–307.
31. First MB, Gibbon M, Spitzer RL, Williams JBW, Benjamin LS. Structured clinical interview for DSM-IV axis II personality disorders, (SCID-II). Washington, DC: American Psychiatric Press, Inc. 1997.
32. Spitzer RL, Williams JBW, Gibbon M, First MB. Structured clinical interview for DSM-III-R, patient edition/non-patient edition (SCID-P/SCID-NP). Washington, DC: American Psychiatric Press, Inc, 1990.
33. Spitzer RL, Williams JBW, Gibbon M, First MB. Structured clinican interview for DSM-III-R axis II disorders (SCID-II). Washington, DC: American Psychiatric Press, Inc, 1990.
34. Segal DL, Hersen M, Van Hasselt VB. Reliability of the structured clinical interview for DSM-III-R: an evaluative review. Compr Psychiatry 1994;**35**:316–327.
35. Williams JB, Gibbon M, First MB et al. The structured clinical interview for DSM-III-R (SCID). II. Multisite test-retest reliability. Arch Gen Psychiatry 1992;**49**:630–636.
36. Hirschfeld RM, Williams JB, Spitzer RL et al. Development and validation of a screening instrument for bipolar spectrum disorder: the Mood Disorder Questionnaire. Am J Psychiatry 2000;**157**:1873–1875.
37. Vöhringer P, Alvear K, Medina S, Espinosa C, Cabrera J. Validation study of Mood Disorder Questionnaire (MDQ), in a Chilean outpatient sample. Rev Gaceta de Psiq Univ 2008;**5**:339–344.
38. R Core Team. R: a language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing, 2010.
39. Phelps J, Ghaemi SN. The mistaken claim of bipolar 'overdiagnosis': solving the false positives problem for DSM-5/ICD-11. Acta Psychiatr Scand 2012;**126**:395–401.
40. Gunderson JG. Borderline personality disorder: ontogeny of a diagnosis. Am J Psychiatry 2009;**166**:530–539.
41. McCormick B, Blum N, Hansel R et al. Relationship of sex to symptom severity, psychiatric comorbidity, and health care utilization in 163 subjects with borderline personality disorder. Compr Psychiatry 2007;**48**:406–412.
42. Ouimette PC, Klein DN. Test-retest stability, mood-state dependence, and informant-subject concordance of the SCID-Axis II Questionnaire in a nonclinical sample. J Pers Disord 1995;**9**:105–111.
43. Wetzler S. The million clinical multiaxial inventory (MCMI): a review. J Pers Assess 1990;**55**:445–464.

44. Wasek T, Endicott J. Assessing personality: effects of the depressive state on trait measurement. Am J Psychiatry 1983;**140**:695–699.
45. Antoniadis D, Samakouri M, Livaditis M. The association of bipolar spectrum disorders and borderline personality disorder. Psychiatr Q 2012;**83**:449–465.
46. Mackinnon DF, Pies R. Affective instability as rapid cycling: theoretical and clinical implications for borderline personality and bipolar spectrum disorders. Bipolar Disord 2006;**8**:1–14.