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Original article

Self-reported symptoms of schizotypal and borderline personality disorder in patients with mood disorders



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ABSTRACT

Background: Distinguishing between symptoms of schizotypal (SPD) and borderline personality disorders (BPD) is often difficult due to their partial overlap and frequent co-occurrence. We investigated correlations in self-reported symptoms of SPD and BPD in questionnaires at the levels of both total scores and individual items, examining overlapping dimensions.

Methods: Two questionnaires, the McLean Screening Instrument (MSI) for BPD and the Schizotypal Personality Questionnaire Brief (SPQ-B) for SPD, were filled in by patients with mood disorders ($n = 282$) from specialized psychiatric care in a study of the Helsinki University Psychiatric Consortium. Correlation coefficients between total scores and individual items of the MSI and SPQ-B were estimated. Multivariate regression analysis (MRA) was conducted to examine the relationships between SPQ-B and MSI.

Results: The Spearman's correlation between total scores of the MSI and SPQ-B was strong ($\rho = 0.616$, $P < 0.005$). Items of MSI reflecting disrupted relatedness and affective dysregulation correlated moderately (r_s varied between 0.2 and 0.4, $P < 0.005$) with items of SPQ. Items of MSI reflecting behavioural dysregulation correlated only weakly with items of SPQ. In MRA, depressive symptoms, sex and MSI were significant predictors of SPQ-B score, whereas symptoms of anxiety, age and SPQ-B were significant predictors of MSI score.

Conclusions: Items reflecting cognitive-perceptual distortions and affective symptoms of BPD appear to overlap with disorganized and cognitive-perceptual symptoms of SPD. Symptoms of depression may aggravate self-reported features of SPQ-B, and symptoms of anxiety features of MSI. Symptoms of behavioural dysregulation of BPD and interpersonal deficits of SPQ appear to be non-overlapping.

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1. Introduction

The relationship between borderline personality disorder (BPD) and schizotypal personality disorder (SPD) is complicated and has been a subject of debates for years [1–3]. In the Diagnostic and

Statistical Manual of Mental Disorder III-R (DSM-III-R), the broad construct “borderline disorders” was separated into BPD and SPD [4]. Genetic, neurobiological and phenomenological associations of SPD with schizophrenia-related psychopathology [5] and BPD with affective disorders underlined this distinction [2,6,7]. Nevertheless, numerous studies indicate that the disorders frequently co-occur and both are often co-morbid with affective disorders [8–12].

The essential features of SPD are reduced capacity for close relationships, cognitive or perceptual distortions and eccentricities of behaviour [13,14]. In contrast, patients with BPD suffer from instability of interpersonal relationships, self-image, and affects, and marked impulsivity [14]. However, despite apparently distinct features, differential diagnosis between BPD and SPD is often

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difficult due to commonly acknowledged partial phenomenological overlap of their symptoms and frequent co-occurrence of their dimensions [10,14–18]. The features of BPD and SPD are recognized to often co-exist also at a subclinical level in general populations [13,15,19]. Moreover, high co-occurrence of traits of both personality disorders have also been reported in mood disorder patients [20–22].

Many studies indicate significant negative effects of co-morbid personality disorder on course and emotional and social functioning of patients with mood disorders [22–24]. However, a factor potentially complicating measurement of personality traits is the influence of current depressive, anxiety and other such symptoms [25–28]; depressive symptoms, in particular, are known to often aggravate measures of neuroticism. This probably renders the reliability of self-reported features of personality disorders by patients with mood and anxiety disorders somewhat uncertain. Nonetheless, it is clinically important to recognize features of BPD and SPD in patients with mood disorders, and it is essential to distinguish them in patients with mood disorders because of noticeable differences in their management [29–31].

Overall, numerous studies have underlined the importance of detecting traits of SPD [32] and BPD [33]. Clinically relevant personality traits are usually evaluated by clinical interviewing [33], but use of self-reported scales may improve their recognition [34]. The McLean Screening Instrument (MSI) is a useful and valid screening tool created to detect dimensions of BPD [35,36]. MSI is based on self-reported symptoms, derived from DSM-IV diagnostic criteria of BPD. The Schizotypal Personality Questionnaire Brief (SPQ-B) is a useful instrument constructed to assess features of SPD, derived from DSM-III-R diagnostic criteria of BPD [37]. To our knowledge, this is the first study to examine the relationships of these questionnaires.

In our study, we aimed to investigate the relationships of self-reported features of SPD and BPD in patients with mood disorders. We hypothesized, that partial overlap of BPD and SPD constructs may be observed also on the level of self-reported traits of BPD and SPD. These characteristic overlapping and non-overlapping items could help clinicians to distinguish disorders clinically. Therefore, we examined correlations of total scores of MSI and SPQ-B, and factors that probably influence the prevalence of observed features of BPD and SPD. To pinpoint overlapping and non-overlapping symptoms of SPD and BPD, we conducted correlation analysis at the level of both scale dimensions and separate items.

2. Methods

The Helsinki University Psychiatric Consortium (HUPC) study design, setting and patient sampling processes are presented in more detail elsewhere [38], but are briefly outlined below.

2.1. The Helsinki University Psychiatric Consortium (HUPC)

This investigation is a part of the HUPC study, a collaborative research project between the Faculty of Medicine of the University of Helsinki; the Department of Mental Health and Substance Abuse Services of the National Institute for Health and Welfare; the Department of Social Services and Health Care, City of Helsinki; and the Department of Psychiatry, University of Helsinki and Helsinki University Hospital. The study protocol was approved by the Ethics Committee of Helsinki University Central Hospital.

2.2. Setting

The study was conducted in 10 community mental health centres, three psychiatric inpatient units and one day-hospital

offering specialized secondary public mental health services in the metropolitan area of Helsinki between 12.1.2011 and 20.12.2012.

2.3. Sampling

Inclusion criteria were patients' age of over 18 years and provision of informed consent. Patients with mental retardation, neurodegenerative disorders and insufficient Finnish language skills were excluded. Stratified patient sampling selection was performed by identifying all patients within a certain day or week in a unit or by randomly drawing eligible patients from patient lists. Patients treated for psychotic disorders, neuropsychiatric disorders, anxiety disorders, eating disorders, BPD, or substance use disorders as lifetime principal diagnosis were excluded from this study. Of the 902 eligible patients with mood, neurotic or personality disorders, 372 refused to participate and 216 were lost for other reasons.

2.4. Clinical diagnoses

The validity of the clinical diagnoses assigned by the attending physicians was critically evaluated by the authors (IB, KA, MK, BK) by re-examining all available information from patient records. Authors KA, IB and BK were residents of psychiatry trained in diagnostic evaluations; in any unclear cases, the senior psychiatrists (MK, EI, GJ, MH) were consulted. The validated clinical diagnoses were based on the ICD-10-DCR [39]. Lifetime principal diagnosis was assigned. Although there is no division of BD into types I (BD-I) and II (BD-II) in the ICD-10, we subtyped patients into these categories according to the DSM-IV [40]. This distinction is established clinical practice in Finland and included in the national BD treatment guidelines.

2.5. Description of patients

Altogether 282 patients participated in the study. Their mean age was 42.2 ± 13.1 years, and 209 (74.1%) were female. All patients were allocated into groups according to the lifetime clinical principal diagnosis (Table 1). Patients comprised those with depressive episode (F32–F33; unipolar depression [MDD] [$n = 183$; mean age 41.4 ± 13.3 years]), bipolar disorder (BD) (F31; $n = 99$, mean age

Table 1
Characteristics of SPQ-B and MSI responders ($n = 282$).

| | BD | | MDD | | Total | |
|--------------------------------|-------------|------|-------------|------|-----------|------|
| | <i>n</i> | % | <i>n</i> | % | <i>n</i> | % |
| <i>Number</i> | 99 | 35 | 183 | 65 | 282 | 100 |
| <i>Age (mean ± SD)</i> | 43.7 ± 12.7 | | 41.4 ± 13.3 | | 42.3 ± 13 | |
| <i>Sex (male)</i> | 36 | 36.3 | 42 | 22.9 | 78 | 27.7 |
| <i>Marital status</i> | | | | | | |
| Married | 20 | 20.2 | 39 | 21.3 | 59 | 21 |
| Cohabitation | 17 | 17.2 | 29 | 15.8 | 46 | 16.3 |
| Unmarried | 32 | 32.2 | 75 | 41 | 107 | 38.2 |
| Divorced | 29 | 29.3 | 35 | 19.1 | 64 | 22.7 |
| Widowed | 1 | 1 | 3 | 1.7 | 4 | 1.4 |
| <i>Work status</i> | | | | | | |
| Retired due to mental disorder | 37 | 37.4 | 23 | 12.5 | 60 | 21.2 |
| Unemployed | 10 | 10 | 18 | 9.8 | 28 | 9.9 |
| Sick leave | 22 | 22.2 | 64 | 35 | 86 | 30.5 |
| Retired for another reason | 1 | 1 | 8 | 4.4 | 9 | 3.2 |
| Student | 7 | 7.1 | 24 | 13.1 | 31 | 10.9 |
| Employed | 20 | 20.2 | 30 | 16.4 | 50 | 17.7 |
| Unemployed for another reason | 2 | 2.2 | 14 | 7.7 | 16 | 5.7 |

BD: Bipolar Disorder; MDD: Major Depressive Disorder; BPD: Borderline Personality Disorder; SPQ-B: Schizotypal Personality Questionnaire-Brief; MSI: McLean Screening Instrument.

43.7 ± 12.7 years). Among patients with BD, 36 (36.3%) had type I, 55 (55.5%) type II and 8 (8%) unspecified type. In terms of age and gender, sample distribution did not differ from patients with the same diagnoses treated in 2011 and 2012 in psychiatric care organizations.

2.6. McLean Screening Instrument (MSI)

The MSI is a ten-item questionnaire designed according to DSM-IV diagnostic criteria to screen for BPD [35]. It has been translated into Finnish and validated in Finland [36]. Each item requires a “yes/no” response. Each positive item indicates the presence of BPD symptoms. Previous research has suggested that a useful clinical cut-off score in predicting BPD among adults is seven or more [35]. Kuder-Richardson 20 (KR-20) coefficient for MSI was 0.747. According to previous factor analysis of DSM-IV criteria of BPD [41], we allocated items into three groups: “disrupted relatedness” (including items “troubled relationships”, “identity disturbance”, “feeling of emptiness”, “distrustfulness” and “dissociative symptoms”), “behavioural dysregulation” (i.e. “impulsivity” and “suicidal behaviour”) and “affective dysregulation” (i.e. “mood instability”, “increased anger” and “avoidance of abandonment”).

2.7. Schizotypal Personality Questionnaire-Brief form (SPQ-B)

The SPQ-B is a 22-item self-report instrument derived from the 74-item SPQ-B questionnaire designed according to DSM-III-R diagnostic criteria for SPD [37]. Each positive item indicates the presence of SPD symptoms. Items were created to measure three dimensions of SPD: 8 items for cognitive-perceptual (i.e. ideas of reference, odd beliefs, magical thinking, unusual perceptual experiences, suspiciousness and paranoid ideation), 8 items for interpersonal (i.e. suspiciousness, inappropriate or constricted affect, lack of close friends and excessive anxiety) and 6 items for disorganization (i.e. odd thinking/speech and odd or eccentric behaviour/appearance) [42]. Previous research has shown 17 to be a feasible cut-off score [43]. KR-20 coefficient for SPQ-B total score was 0.857 and separately for cognitive-perceptual 0.651, for interpersonal 0.807 and for disorganization 0.735.

2.8. Other scales

The Beck Depressive Inventory (BDI) [44] is a self-report instrument designed to assess and detect the severity of current depressive symptoms in clinical, medical, and community settings. It contains 21 descriptive statements regarding depressive symptoms frequently reported by individuals diagnosed with depression. Each of the items contains a 4-point severity-rating scale. It was validated in Finland [45], Cronbach's alpha for BDI total score was 0.919. The Overall Anxiety Severity and Impairment Scale (OASIS) [46] is a brief, 5-item self-report questionnaire to assess frequency, severity and impairment associated with anxiety. The questionnaire includes five questions regarding the frequency and severity of anxiety symptoms as well as anxiety-related avoidance behaviour and decreased functioning at home/work/school and in social life. Responses range from zero to four. A recommended cut-off score for screening of anxiety disorder is 8 [47]. Chronbach's alpha for OASIS in the total sample was 0.80.

2.9. Statistical analysis

The correlation analysis was executed between scales' total scores, their factors and items. Spearman's correlation coefficient was estimated between continuous variables. The phi-coefficient was calculated for binary variables and the point biserial

coefficient for dichotomous and continuous variables. A correlation from 0.8 to 1 was considered as “very strong”, from 0.6 to 0.79 as “strong”, from 0.40 to 0.59 as “moderate”, from 0.20 to 0.39 as “weak” and less than 0.2 as “very weak” [48]. The MANOVA test was used to detect the effect of age and gender on the MSI and SPQ-B scores. A separate ANOVA was conducted for each dependent variable (MSI and SPQ-B score) at an alpha level of 0.025. In hierarchical multivariate regression (HMR) analysis with dependent variables total scores of MSI the following predictors were used model 1 (age, sex), model 2 (OASIS, BDI) and models 3 (SPQ-B score). In the HMR with dependent variable SPQ-B model 1 (age, sex), model 2 (OASIS, BDI) and model 3 (MSI) score were used. The correlation analysis, MANOVA and HMR were conducted by using SPSS version 22.0 [49].

3. Results

3.1. SPQ-B and MSI scores

No significant differences emerged in the results of screening by MSI and SPQ-B between the diagnostic groups (Table 2). However, 41.5% ($n = 117$) of patients with mood disorders scored positively on the MSI and only 11% ($n = 30$) scored positively on the SPQ-B. A strong significant correlation ($\rho = 0.616$, $P < 0.005$) was found between the SPQ-B and MSI total scores. The prevalence of items of both scales is reported in supplement Tables 1 and 2.

3.2. Factor-by-factor correlations

The MSI dimension “disrupted relatedness” correlated moderately (ρ ranged from 0.501 to 0.537; $P < 0.05$) with all three factors of the SPQ-B. The MSI dimension “affective dysregulation” correlated moderately with “disorganized” and “cognitive-perceptual” factors of the SPQ-B ($\rho = 0.440$ and 0.408 , respectively; $P < 0.05$). The MSI items “behavioural dysregulation” correlated

Table 2
Results of SPQ and MSI screening questionnaires in patients ($n = 282$).

| | | MDD | BD | Total | P^* |
|--------------------------|------------|-----------|-----------|------------|-------|
| SPQ-B Total scores | Mean ± SD | 9.6 ± 5.2 | 9.3 ± 5.4 | 9.5 ± 5.3 | 0.714 |
| | Median | 9 | 8 | 9 | |
| | Percentile | | | | |
| | 10 | 2 | 2 | 2 | |
| | 25 | 6 | 5 | 5 | |
| | 75 | 14 | 14 | 14 | |
| MSI Total scores | Mean ± SD | 5.5 ± 2.7 | 6.0 ± 2.5 | 5.6 ± 2.6 | 0.134 |
| | Median | 6 | 6 | 6 | |
| | Percentile | | | | |
| | 10 | 2 | 2 | 2 | |
| | 25 | 3 | 4 | 4 | |
| | 75 | 8 | 8 | 8 | |
| SPQ-B screen positive | n (%) | 18 (10) | 12 (13) | 30 (11) | 0.363 |
| SPQ-B screen negative | n (%) | 167 (90) | 81 (87) | 252 (90) | 0.363 |
| MSI screen positive | n (%) | 73 (40) | 44 (45) | 117 (41.5) | 0.152 |
| MSI screen negative | n (%) | 112 (60) | 53 (55) | 165 (58.5) | 0.152 |

BD: Bipolar Disorder; MDD: Major Depressive Disorder; SD: Standard Deviation; SPQ-B: Schizotypal Personality Questionnaire-Brief; MSI: McLean Screening Instrument.

* P -values reflect differences between group of patients with bipolar disorder and groups of patients with major depressive disorder.

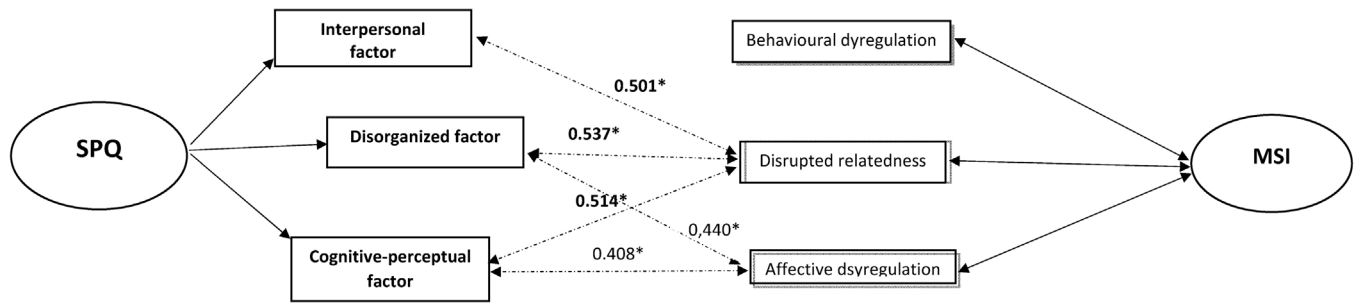


Fig. 1. Dimension-by-dimension correlations (Spearman's coefficient) between SPQ-B and MSI. Dashed arrows indicate correlated factors, numbers above arrows indicate rho-values (* $P < 0.05$). SPQ-B: Schizotypal Personality Questionnaire-Brief; MSI: McLean Screening Instrument.

only weakly ($\rho = 0.2$; $P < 0.05$) with the “interpersonal” factor of the SPQ-B (Fig. 1).

3.3. Item-by-factor correlations

The MSI items “increased anger”, “distrustfulness” and “identity disturbance” correlated moderately with all three factors of the SPQ-B. The r_{pb} -value varied from 0.3 to 0.5 ($P > 0.005$). The MSI items “mood instability” and “dissociative symptoms” correlated moderately ($P > 0.05$) with the “disorganized” and “cognitive-perceptual” factors of the SPQ-B. However, other items of the MSI did not correlate with factors of the SPQ-B or correlated only weakly (r_{pb} varied from 0.1 to 0.2; $P < 0.05$) (Fig. 2).

3.4. Item-by-item correlations

The MSI items “increased anger”, “feeling of emptiness”, “distrustfulness”, “dissociative symptoms”, “mood instability” and “identity disturbance” had moderate correlations with specific items of the SPQ-B ($P > 0.05$), whereas the items “troubled relationships”, “suicidal behaviour”, “impulsivity” and “fear of abandonment” did not correlate with SPQ-B items. The items

“astrology; seeing the future; UFO”, “people find me aloof and distant”, “tend to keep in the background” and “special signs for you” of the SPQ-B did not correlate with MSI items at all (Table 3).

3.5. Multivariate analysis of variance

There were not significant differences between males and females neither on the MSI score $F(1, 292) = 1.38$, $P = 0.242$, partial $\eta^2 = 0.005$; nor on the SPQ-B score $F(1, 292) = 1.87$, $P = 0.172$, partial $\eta^2 = 0.006$. There were not significant differences in terms of age neither on the MSI score $F(49, 244) = 1.48$, $P = 0.029$, partial $\eta^2 = 0.229$ nor on the SPQ-B score $F(49, 244) = 0.94$, $P = 0.585$, partial $\eta^2 = 0.159$.

3.6. Multivariate hierarchical regression analysis

With dependent variable MSI scores models 1 (age and sex) $R^2 = 0.085$, $F(2, 278) = 12.8$, $P < 0.001$; adjusted $R^2 = 0.078$, only variable age had significant weights ($\beta = -0.058$). The addition of BDI and OASIS (Model 2–age, sex, OASIS, BDI) led to a statistically significant increase in R^2 of 0.177, $F(4, 276) = 24.4$, $P < 0.001$ with significant weights of age, OASIS and BDI ($\beta = -0.051$; 0.165 and

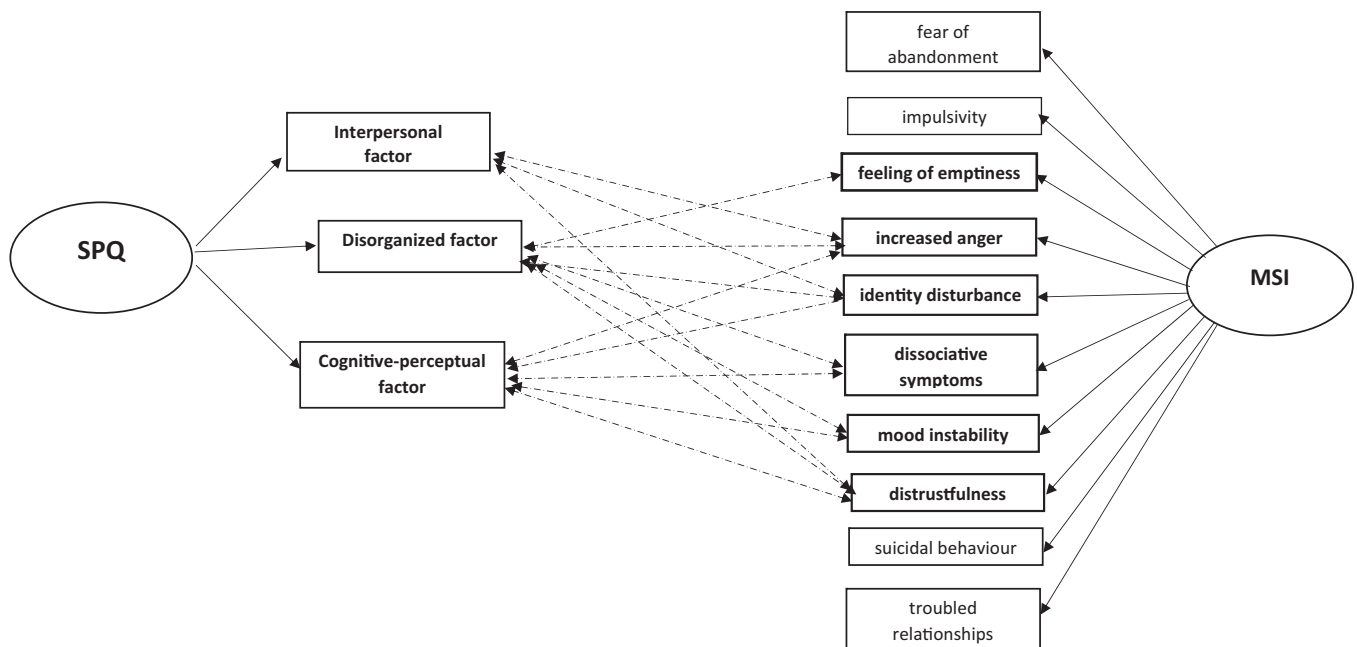


Fig. 2. Item-by-dimension correlations (point biserial coefficient) between MSI and SPQ-B. Dashed arrows indicate correlations between factors of SPQ-b with items of MSI; r_{pb} not shown. SPQ-B: Schizotypal Personality Questionnaire-Brief; MSI: McLean Screening Instrument.

Table 3
Item-by-item correlations (phi-coefficient) between SPQ-B and MSI in patients with mood disorders ($n=282$).

| SPQ-B | MSI | | | | | | | | | |
|---------------------------------------|------------------------|--------------------|-------------|------------------|-----------------|-----------------|-----------------------|----------------------|----------------------|---------------------|
| | Troubled relationships | Suicidal behaviour | Impulsivity | Mood instability | Increased anger | Distrustfulness | Dissociative symptoms | Feeling of emptiness | Identity disturbance | Fear of abandonment |
| People find me aloof and distant | 0.093 | 0.069 | -0.011 | 0.013 | 0.106 | 0.180** | 0.058 | 0.217** | 0.102 | 0.020 |
| Sense some person or force | -0.068 | 0.029 | 0.113 | 0.107 | 0.081 | 0.163** | 0.277** | 0.094 | 0.068 | 0.124* |
| Unusual mannerisms and habits | 0.140* | 0.192** | 0.191** | 0.281** | 0.249** | 0.187** | 0.214** | 0.152** | 0.189** | 0.141* |
| People can tell what you are thinking | 0.056 | 0.037 | 0.067 | 0.133* | 0.178* | 0.131* | 0.232** | 0.084 | 0.158** | 0.152** |
| Noticed special things for you | -0.033 | 0.080 | 0.061 | 0.086 | 0.186 | 0.155* | 0.163** | 0.049 | 0.139** | 0.175* |
| People think I am very bizarre | 0.134* | 0.085** | 0.185** | 0.272** | 0.250** | 0.211* | 0.260** | 0.278** | 0.338** | 0.139** |
| On my guard even with friends | 0.183** | 0.085 | 0.160** | 0.305** | 0.258** | 0.412** | 0.284** | 0.282** | 0.399** | 0.175** |
| People find me vague and elusive | 0.084 | 0.100 | 0.135** | 0.209** | 0.210** | 0.336** | 0.174** | 0.230** | 0.308** | 0.067 |
| Often pick up hidden threats | 0.139** | 0.163* | 0.153** | 0.160* | 0.218** | 0.290* | 0.262* | 0.249** | 0.339** | 0.185** |
| People are taking notice of me | 0.082 | 0.220** | 0.185** | 0.248** | 0.298** | 0.367** | 0.243** | 0.227** | 0.317** | 0.101 |
| Discomfort with unfamiliar people | 0.222** | 0.156** | 0.127** | 0.179** | 0.238** | 0.286** | 0.233** | 0.268** | 0.290** | 0.112 |
| Astrology; seeing the future; UFOs | 0.020 | -0.025 | 0.054 | 0.106 | 0.064 | 0.035 | 0.138 | -0.04 | 0.033 | 0.094 |
| I use words in unusual ways | 0.091 | 0.131** | 0.261** | 0.276** | 0.158** | 0.167** | 0.176** | 0.133** | 0.210** | 0.116 |
| Not let people know about you | 0.136* | 0.023 | 0.119 | 0.139* | 0.250* | 0.343** | 0.147* | 0.174** | 0.221** | 0.028 |
| Tend to keep in the background | 0.109 | 0.037 | -0.015 | 0.022 | 0.186** | 0.168** | 0.099* | 0.154** | 0.221** | -0.050 |
| Suddenly distracted by distant sounds | 0.142** | 0.100 | 0.190** | 0.187** | 0.230** | 0.255** | 0.276** | 0.184** | 0.239** | 0.092 |
| Stop people from taking advantage | 0.149* | 0.190** | 0.183** | 0.267** | 0.256** | 0.319** | 0.256** | 0.266** | 0.381** | 0.183** |
| Unable to get close | 0.192** | 0.087* | 0.049 | 0.134* | 0.118** | 0.186* | 0.088 | 0.161* | 0.303 | 0.108* |
| I am an odd, unusual person | 0.184** | 0.193** | 0.165** | 0.291** | 0.260** | 0.228** | 0.355** | 0.223 | 0.437** | 0.114** |
| It is hard to communicate clearly | 0.073 | 0.126** | 0.163** | 0.192** | 0.220** | 0.278** | 0.157** | 0.276** | 0.388** | 0.055 |
| Very uneasy talking to other people | 0.146** | 0.176** | 0.095 | 0.113 | 0.265** | 0.299** | 0.197** | 0.202** | 0.307** | 0.057 |
| I tend to keep feelings to myself | 0.089* | 0.073 | 0.010 | 0.060 | 0.109* | 0.175* | 0.119* | 0.143* | 0.187* | 0.012 |

Bold text indicates $r_{\phi} \geq 0.20$. SPQ-B: Schizotypal Personality Questionnaire-Brief; MSI: McLean Screening Instrument.

* $P < 0.05$.

** $P < 0.005$.

0.070, respectively). The addition of SPQ-B (Model 3–age, sex, OASIS, BDI, SPQ-B) led to a statistically significant increase in R^2 of 0.191, $F(5, 275) = 45.4$, $P < 0.001$ with significant weights of age, OASIS, SPQ-B ($\beta = -0.039$; 0.102; 0.263, respectively).

With dependent variable SPQ-B scores models 1 (age and sex) $R^2 = 0.027$, $F(2, 278) = 3.9$, $P < 0.001$; adjusted $R^2 = 0.020$, only variable age had significant weights ($\beta = -0.062$). The addition of BDI and OASIS (Model 2–age, sex, OASIS, BDI) led to a statistically significant increase in R^2 of 0.269, $F(4, 276) = 29.1$, $P < 0.001$ with significant weights of age, sex OASIS and BDI ($\beta = -0.044$; -1.55; 0.240 and 0.199, respectively). The addition of MSI (Model 3–age, sex, OASIS, BDI, MSI) led to a statistically significant increase in R^2 of 0.182, $F(5, 275) = 50.4$, $P < 0.001$ with significant weights of sex, BDI, MSI ($\beta = -1.6$; 0.131; 0.983, respectively).

3.7. Correlation analysis between scores SPQ-B and BDI scores

A significant moderate correlation ($\rho = 0.498$; $P < 0.005$) was present between total scores of SPQ-B and BDI. In score-by-item correlations, “on my guard even with friends”, “people are taking

notice of you”, “often pick up hidden threats”, “tend to keep feelings to myself”, “very uneasy talking to people” and “tend to keep in the background” correlated moderately with total scores of BDI (r_{pb} varied from 0.403 to 0.495; $P < 0.005$).

4. Discussion

We found self-reported symptoms of BPD and SPD to be prevalent among patients with mood disorders treated in psychiatric specialized units. We also demonstrated a strong correlation between total scores of self-reported SPD symptoms on the Schizotypal Personality Questionnaire-Brief (SPQ-B) and those of BPD on the MSI. Moreover, we investigated overlapping and non-overlapping self-reported features of BPD and SPD at the level of both dimensions and separate items of the MSI and SPQ-B.

To our knowledge, this is the first study examining features and phenomenological overlap between SPD and BPD based on the self-report screening instruments MSI and SPQ-B in mood disorder patients. A strength of our study was in the relatively large number

of mood disorder patients recruited from specialized psychiatric care. Moreover, extensive data of self-reported symptoms of BPD and SPD were collected. There were also several limitations.

- the response rate was 35%, likely due to the survey being conducted in busy routine service facilities. Nevertheless, the analysis of representativeness indicated no significant differences in terms of age or sex between our cohort and the whole population of patients treated in the years 2011 and 2012;
- only patients with mood disorders were included in our study, which may limit the generalizability of our findings;
- the clinical diagnoses were not verified with structured clinical diagnostic interview instruments. However, all patients had been diagnosed with mood disorders in psychiatric settings specialized in their treatment, and all available diagnostic information was re-evaluated by the authors. Furthermore, the focus of this study was on responses to the MSI and SPQ-B questionnaires, not diagnoses of mood disorders, BPD or SPD *per se*;
- the focus of study was on self-reported symptoms, which can be influenced by impairments in patients' self-reflection and cognition; no scales of desirability or infrequency were used;
- the study was observational, and possible influences of treatment could not be controlled.

Overall, self-reported features of BPD and SPD in patients with mood disorders were prevalent. However, prevalence of features of BPD was more noticeable than features of SPD in mood disorder patients. In comparison with previous studies using the SPQ-B and MSI in student and adolescent populations, patients with mood disorders received a similar mean total score of SPQ-B [42,50], but a higher mean MSI [51,52]. Thus, self-reported features of BPD appear to be more prevalent in patients with mood disorders than in student populations, whereas no differences in self-reported features of SPD exist between mood disorder patients and student populations.

The significant overlap between symptoms of BPD and SPD at both clinical and subclinical levels has been the topic of numerous discussions after their separation in the DSM-III-R [1,3,17,18,53–56]. We found strong correlations between total scores of the screening instruments SPQ-B and MSI, indicating considerable overlap in self-reported features of BPD and SPD. Moreover, we indicated overlapping and non-overlapping items and their clusters. Specifically, the MSI items of “identity disturbance”, “distrustfulness” and “increased anger” correlated with all dimensions of the SPQ-B. Additionally, the MSI items of “dissociative symptoms”, “mood instability” and “feeling of emptiness” correlated moderately with disorganized and cognitive-perceptual dimensions of the SPQ-B. By contrast, the MSI items reflecting behavioural dysregulation (i.e. “suicidal behaviour” and “impulsivity”) and “fear of abandonment” correlated only weakly or did not correlate at all. At the same time, SPQ-B items “astrology, seeing the future, UFO”, “people find me aloof and distant”, “tend to keep in the background” and “special signs for you” did not correlate with MSI items.

Cognitive-perceptual distortions are one of the core features of SPD [14,57]. However, they can also be observed in patients with BPD [14]. Transient psychotic-like and dissociative symptoms related to affective shifts (such as intense anger, anxiety and disappointment) associated with the fear of abandonment and interpersonal disputes are frequent in BPD also [31,58–60]. We suggest that the partial overlap of symptoms of BPD and SPD may underlie the high correlation between such self-reported features of BPD as “mood instability”, “increased anger”, “distrustfulness” “identity disturbance” and “dissociative symptoms” and some

specific symptoms of SPD. However, paranoid ideations, illusions and dissociative symptoms in patients with BPD are usually transient and triggered by extreme stress in response to a real or imagined abandonment. In contrast, cognitive-perceptual distortions in patients with SPD are more enduring and less associated with pronounced affective symptoms [14]. However, neither of the two questionnaires contains information on duration of symptoms or role of triggering factors for dissociative symptoms. As a result, patients with different types of cognitive-perceptual distortions may answer “yes” to specific questions on both questionnaires, potentially leading to false interpretations of BPD or SPD. Therefore, comprehensive clinical interviews are indispensable for diagnosis.

The result of screening instruments is based on the patient's own estimation of the presence or absence of symptoms. Different factors may influence a patient's ability to answer to the scale's questions, including previously described impairments in social cognition [61,62], autobiographical memory disruptions [63], current mood, and co-morbid anxiety disorders, among others. In our study, we revealed a significant effect of anxiety symptoms on MSI score and, conversely, depressive symptoms significantly predicted SPQ-B score. Moreover, we showed that SPQ-B items reflecting cognitive-perceptual and interpersonal groups of symptoms of SPD particularly correlated with depressive symptoms. This may indicate that higher severity of current symptoms of depression may complicate distinguishing between self-reported features of SPD in patients with mood disorders.

Despite this overlap, other items appear to contain more specific features of each disorder. For instance, symptoms of BPD reflecting behavioural dysregulation (i.e. “impulsivity” and “suicidal behaviour”) and some symptoms of disrupted relatedness (i.e. “fear of abandonment”, “troubled relationships” and “feeling of emptiness”) and such symptoms of SPD as “astrology, seeing the future, UFO”, “people find me aloof and distant” and “tend to keep in the background” appeared to be non-overlapping and are therefore more specific for the core nature of psychopathology of both disorders. Non-overlapping features may be essential in differentiating symptoms of BPD and SPD. Using the self-report questionnaires MSI and SPQ-B, it is likely important to evaluate how a patient's answers are distributed between overlapping and non-overlapping symptoms of BPD and SPD. This can support clinicians in a more accurate comprehensive clinical interview intended to distinguishing between BPD and SPD.

5. Conclusions

A partial overlap in the psychopathology of BPD and SPD can be observed at the level of self-reported features. Particularly, items reflecting cognitive-perceptual distortions and affective symptoms of BPD appear to overlap with some symptoms of SPD, making it difficult to distinguish between the two disorders. However, items reflecting behavioural dysregulation in patients with BPD and those reflecting social detachment and perceptual alterations in patients with SPD appear to be more specific to each personality disorder. Nevertheless, symptoms of co-morbid depression may aggravate the self-reported features of SPD, and likewise, symptoms of anxiety the self-reported features of BPD. A more detailed clinical interview is needed to differentiate the symptoms of each disorder.

Disclosure of interest

The authors declare that they have no competing interest.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.eurpsy.2015.12.006>.

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