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# BORDERLINE PERSONALITY DISORDER – A NARRATIVE REVIEW

*ABSTRACT*

*Borderline Personality Disorder (BPD) is a syndrome associated with high levels of psychiatric comorbidity, service use and suicide mortality. The prevalence of BPD in the community is in the range of 1-3 %, but much higher in clinical samples. The aetiology of BPD is multifactorial, and although some form of trauma is common, the heritability is also significant. The diagnosis of personality disorders including BPD may be moving from categorical towards dimensional approaches. Regardless of diagnostic approach, dimensional assessment of BPD severity seems useful in many instances. On a symptomatic level, BPD patients have a strong tendency toward remission (not meeting diagnostic criteria) over several years, however, functional impairments are often quite persistent. The preferred treatment is psychotherapeutic, with evidence of efficacy available for many different manualized therapies.*

KEYWORDS: BORDERLINE PERSONALITY DISORDER, PERSONALITY DISORDER, NARRATIVE REVIEW, REVIEW, NOSOLOGY

## INTRODUCTION

Borderline personality disorder (BPD) is a common disorder, associated with significant levels of distress and dysfunction, a high risk of suicide, a high prevalence of psychiatric comorbidities, as well as increased use of both psychiatric and other healthcare services (1–3). The nosological status of personality disorders (PDs) in general, including BPD, has been in a state of slow flux from a categorical towards a more dimensional approach. In order to understand the current state of the field, and the implications of possible future changes in how (and, indeed, whether) BPD is diagnosed, a summary of central theoretical concepts is essential. After that, current and proposed nosological approaches, aetiology, prognosis, comorbidities and treatment approaches will be reviewed.

## CONCEPTS AND DEFINITIONS

The concept of *personality* is defined by dictionaries as, for instance, 'the type of person you are, shown by the way you behave, feel, and think' (4). A personality, then, is something enduring, characteristic of an individual, and has many aspects: emotional, behavioural and cognitive.

*Personality disorder* (PD) as a term implies that there is a significant degree of *pathology* in some important aspects of an individual's personality functioning. The attention of clinical psychiatrists and many psychologists studying and working in the clinical PD field has accordingly been focused on persons who seek help or otherwise come into clinical attention (or, in the case of antisocial PD, are in frequent contact with justice and penitentiary services). The term *pathology* indicates that something is not merely abnormal, but also causes clinically significant suffering or loss of functioning. The other two of the 'three P's' of PD diagnosis are *pervasivity* (relating to many or most aspects of a person's life) and *persistence* (lasting for a long time, or even permanent) (5). PDs should thus, according to psychiatric models, be abnormal and cause loss of functioning or suffering, be apparent in a wide range of areas (for instance, in most interpersonal relationships, both at the workplace and at home, during normal life circumstances as well as when under stress), and not be confined to discrete episodes or otherwise shorter time spans.

The term *borderline personality disorder* seems to imply that the personality is somehow situated on the border between two categories. From an etymological or historical perspective, these entities are psychoanalytical levels of personality organization: psychotic and neurotic, with implications for analysability (6). To non-psychoanalysts, this is perhaps primarily of historical interest, because, as a consequence of the widespread acceptance of an operationalized nosology with diagnostic criteria in psychiatry, BPD is now typically defined as a clinical syndrome like many others, without reference to the constructs of psychoanalytic theory. Indeed, ICD-10 used the term *emotionally unstable personality disorder*, which was divided into impulsive and borderline subtypes, for a disorder very similar to BPD. DSM-5 (and previously, DSM-IV) retains the borderline term without referencing its historical roots in any explicit way.

## DIAGNOSTIC APPROACHES

In DSM-5 and IV, BPD is defined as meeting the general PD criteria and five or more of the following criteria: 1) frantic efforts to avoid abandonment, 2) unstable interpersonal relationships with dramatic shifts between idealization and devaluation, 3) identity disturbance, 4) impulsivity in at least to potentially self-damaging areas, 5) recurrent suicidal behaviour, gestures or threats, or self-mutilating behaviour, 6) affective instability, 7) chronic feelings of emptiness, 8) inappropriate, intense anger, or difficulties controlling anger, and 9) transient stress-related psychotic or severe dissociative symptoms (7). The diagnosis is categorical – a patient either fulfils the criteria or they do not. The gold standard for diagnosis according to this DSM-5 model is the Structured Clinical Interview for DSM-5 Personality Disorders (SCID-5-PD), but other semi-structured diagnostic interviews are also available (5,8). DSM-5 organizes the PDs into *clusters* of disorders based on clinical presentation; BPD is placed in cluster B (the *dramatic* cluster) together with antisocial, histrionic and narcissistic PDs.

However, PD diagnoses as categorical entities have long been called into question, with many arguing that dimensional constructs would be more valid. Many influential researchers hold that, all people having personalities with differing traits, which can be described using different models, PDs reflect traits at the extreme edges of their (continuous) ranges leading to maladaptive behaviour (9). Differently put, the concern is that there is no qualitative difference between people with and without PDs, only a quantitative one. Furthermore, features of a personality disorder not reaching the diagnostic threshold, including even isolated symptoms of BPD, may also be associated with suffering or functional impairment (10). Other concerns regarding categorical diagnoses of PD in general, and the particular diagnoses present in DSM-5 in particular, include the internal heterogeneity (phenotypic and other) of the diagnoses (the fact that there are 256 different symptom combinations that could be diagnosed as BPD is a famous example), unclear boundaries between the specific diagnoses leading to high comorbidity and temporal instability in test–retest settings, and the fact that in many samples, a significant portion of patients are diagnosed with PD NOS (11). The current BPD concept has also been criticized for being inconsistent, as some of the diagnostic criteria indeed refer to personality traits, but others to problematic behaviour.

Although there are alternative models with relative advantages and disadvantages, the most widely used model of personality *traits* in the general population is the Five-Factor Model (FFM), which describes personality through the traits of *extraversion*, *openness*, *neuroticism*, *agreeableness* and *conscientiousness* (with their respective antipodes), which may be further subdivided into trait *facets* (12). The FFM traits are typically evaluated using the Revised NEO Personality Inventory or the abbreviated version NEO Five-Factor Inventory, which are both questionnaires. Significant, specific and characteristic correlations between the DSM-5 (and DSM-IV) PD diagnoses and FFM trait patterns have been found, for instance, BPD is characterized by high neuroticism, low agreeableness and low conscientiousness (13).

In addition to the main model of the DSM-5, an alternative diagnostic model of PDs is also included. This has been described as a hybrid model, using both categorical and dimensional aspects, with the dimensional elements being closely related to the FFM, but with some important differences, such as the inclusion of a *psychoticism* trait domain at the expense of the FFM openness trait (14). PD diagnosis according to this model may be made if there is evidence of impairment of personality functioning, and one or more pathological traits are present (additional criteria include the other two P's, that is pervasiveness and persistence) as well as usual exclusion criteria. The hybrid nature of the model manifests itself through the possibility to diagnose specific PDs, including BPD, as combinations of specific patterns of maladaptive traits – emotional lability

and suspiciousness seem to separate BPD from other PDs as well as healthy Controls (HCs) (15).

ICD-11 (16) differs from its predecessor ICD-10 and the main DSM-5 model in that it has adapted a primarily dimensional approach to PDs. In this diagnostic model, PDs are primarily diagnosed by their severity: mild, moderate or severe; additionally, there is a personality difficulty category not categorized as a disorder, but as a 'factor influencing health status'. In ICD-11, PDs may be further described through specification of related *trait domains*, which are described as being distributed in a continuum in the population. The model includes the following trait domains: negative affectivity, detachment, dissociality, disinhibition, anankastia and borderline pattern. The borderline pattern trait domain is explicitly mentioned as being included for reasons of clinical utility rather than theoretical consistency, and corresponds to a characteristic combination of three other traits: negative affectivity, disinhibition and dissociality.

A comparison of some of the features of the main diagnostic systems used or proposed for diagnostic purposes in PD is presented in *Table 1*.

The diagnosis of BPD is often based on clinical interviews, which are often seen as resource intensive. For this reason, questionnaire-based screening approaches have been developed. Of these, the most widely used is the McLean Screening Instrument for BPD, which has demonstrated acceptable specificity and sensitivity, although the optimal cut-off point for screening purposes has been debated (17).

Despite often quite persuasive arguments in favour of dimensional diagnostic models, and decades of research and debate, most clinical and research work still utilizes categorical diagnoses for PDs. The question of how well dimensional diagnostics would be accepted in clinical settings, where scarcity of time and resources, as well as the dichotomous nature of many treatment and insurance-related decisions made by clinicians, may favour categorical or hybrid diagnostic models, is unsettled (18,19). In fact, the discussion regarding the relative advantages and disadvantages of categorical and dimensional nosologies of PDs is far from new (20). It is not limited to BPD or even to PD, but potentially a concern of the whole psychiatric discipline, with propositions of new, more dimensional diagnostic

Table 1. A Comparison of Different Diagnostic Systems for Personality Disorders

| | **DSM-5 Main Model** | **DSM-5 Alternative Model** | **ICD-11** | **Five-Factor Model1** |
|---|---|---|---|---|
| Primarily | Categorical | Dimensional/ Hybrid | Dimensional | Dimensional (5 dimensions) |
| Traits/Trait domains | Not explicitly rated | **Dimensional** | Optional categorical rating (based on continuous distributions) | **Dimensional** |
| Impairment in personality functioning | Categorical | **Dimensional** | **Dimensional (4 or 5 severity steps)** | Not rated |
| Patterns of traits/trait domains/symptoms | **Categorical** | Optional categorical rating | Borderline pattern (optional) | Not rated |
| Current use (2024) | Clinical and research | Research | Emerging clinical and research | Research, including normative psychology research |

Note: The bolded category refers to the primary object of rating in the model
[1]Refers to the Five-Factor Model of Personality, not Widiger's proposed adaptation for personality disorders

models garnering considerable interest (21). Currently, categorical diagnosis is the rule, and dimensional diagnosis the exception, both in clinical and research settings. Whether the introduction of ICD-11, future DSM versions, or novel alternative approaches will change this fact remains to be seen. Perhaps the line between the two is not sharp but fuzzy – many diagnostic systems described as categorical in fact contain, or at least may contain, dimensional and nuanced assessment, and a dimensional diagnostic assessment could come to be used in a categorical way in many instances (such as making treatment decisions based on cut-off points on a scale). Essentially, Allen Frances' description of categorical and dimensional approaches as '*potentially complementary*' stands unrefuted.

## EPIDEMIOLOGY

The first large (n=2053) nationally representative study of PDs in the general population was conducted in Norway, and indicated that the prevalence of BPD was 0.7% (22), with a 2 to 1 female to male ratio, which was not statistically significant, however. A British two-phase study estimated the prevalence of BPD to be 0.7%, with higher prevalence among males than females which, again did not reach significance, and a Dutch study reported a prevalence rate of 1.1% (23). Wave 2 of the massive (n=34,653) NESARC epidemiological study in the United States presents an interesting methodological issue: at first, published results indicated a very high BPD prevalence of 5.6%, but a later re-analysis using stricter diagnostic criteria (specifically: requiring each criterion to be associated with significant distress or impairment in order to be rated as positive), found a much lower estimated prevalence of 2.7%, which is still high in international comparison, although fitting within the range of 0.3–3.0 % reported earlier in the National Comorbidity Survey Replication Study (24). This highlights the importance of how the pathology criterion is evaluated for the diagnostic evaluation of individuals in these surveys, but perhaps also in clinical reality.

The prevalence of BPD in psychiatric care seems an order of magnitude higher than in general populations, with a reported range of 9–43% (25), which is one of the reasons BPD is of particular concern to clinical psychiatrists.

## AETIOLOGY AND PATHOGENESIS

As a clinical syndrome, BPD is, as we have seen, both symptomatically and aetiologically heterogeneous, which influences not only which conclusions one may draw from studies of its aetiology and pathogenesis, but also what kind of studies can or should be conducted in the first place. Bearing these caveats in mind, there are some suggestive and interesting findings.

There is a remarkably high rate of reported abuse and neglect in the histories of BPD patients (26), and in prospective follow-up, later BPD was significantly more common in persons who had experienced abuse as children than in non-abused controls (27). Factors such as low socio-economic status, stressful life events during formative years and parental factors (e.g. poor parental mental health and a low warmth/punishing parenting style) have also been prospectively related to BPD risk (28). Attachment to primary caregivers has often been seen as central, but later findings indicate that classically conceptualized attachment as a precursor of PDs should be seen in the wider context of a child's relationships with their surroundings (29). There is some evidence that school-related adversity such as bullying may be of larger significance for PD (including BPD) risk than formerly thought, and that the significance of sexual abuse may be correspondingly smaller, when adjusted for by other environmental stressors in regression models (30). Finally, although trauma and early life adversity increase the risk of BPD, it is not a necessary condition, and BPD may even develop without significant identifiable trauma in susceptible individuals (2).

Genetic factors are also important for the emergence of BPD, with a recent large Swedish register-based study estimating the heritability of BPD to be 46% (31). Compared to many psychiatric disorders, there is less published data from GWASs in BPD (32). Genetic overlap with diverse psychiatric disorders (major depressive disorder or MDD, bipolar disorder or BD, and schizophrenia) has been reported in a (in current GWAS practice) smallish sample (33). Given the close link between certain FFM personality trait patterns and BPD, studies examining the genetic correlations between these are of great interest, and one such GWAS did find a correlation between BPD and neuroticism (and a 'suggestive' correlation with openness) (34). This finding fits well with twin study results showing high correlation between neuroticism and BPD, and with the finding that the genetic portion of BPD risk seems to be entirely explained by genetic influences on the FFM personality traits (35).

One influential model integrating environmental and congenital factors in the aetiology of BPD is Marsha Linehan's biosocial model, serving as the theoretical basis for Dialectical Behaviour Therapy (DBT) (36). In this model, BPD is primarily characterized by emotional dysregulation, leading to dysfunctional behaviour in challenging life situations. This phenotype is seen as the end product of an interaction between the biological and temperamental features of a child on the one hand and that child's environment on the other, which lead to severely emotionally invalidating experiences during the child's formative years. Trauma-related changes, such as hyperactivity and other disturbances in the HPA axis, neurotransmission and plasticity, opioid system functioning and epigenetic changes, may serve as biological substrata of the associated psychological phenomena (37).

Functional brain imaging findings in BPD indicate impairments in top-down regulation of emotion (paralleling the clinical emotional dysregulation symptoms), and structural findings include reduced volumes in the hippocampus and amygdala, structures involved in emotional processing and affected by HPA axis dysfunction (2,38). Other research modalities, including behavioural and physiological studies, also indicate that neurocognitive abnormalities, including a hyperreactive emotional state, especially when confronted with negative stimuli, are found in BPD (38).

Thus, BPD seems to be aetiologically as complex as any other psychiatric disorder, and attempts to pinpoint causality to any single cause (genetic, environmental or psychological) have not been successful. Many of the risk factors mentioned above are quite non-specific, in that they may increase the risk of many different psychiatric disorders. To what extent we may, in the future, be able to explain the precise dynamics of how certain combinations of risk factors may lead to aspects of BPD, and others to other psychopathology, or no major psychiatric problems at all, is an interesting question.

## COURSE AND OUTCOME

PDs, including BPD, are seen as long term, meaning that they are not episodic (though symptoms may fluctuate), and should be noticeable at the latest during young adulthood, although usually symptoms are already present during adolescence (7,16). In the earlier psychoanalytical formulations of borderline states, it was seen as a marker of poor prognosis, in the sense that patients were seen as having low, or even a total lack of analysability, that is, the potential to benefit from analysis, as compared to neurotic patients. In recent decades, this picture has evolved a great deal, perhaps due to factors such as changes in the conceptualization of BPD, the evolution and implementation of specific interventions, and more rigorous, prospective studies. Below, I will briefly review findings regarding BPD in adolescence before summarizing findings from the main long-term outcome studies (three North American, one European and one meta-analysis) of BPD in adults.

The clinical debut of BPD occurs in adolescence or early adulthood, and diagnosis before age 18 is seen as possible, valid and potentially important for lessening the risk of poor outcomes (39). Although BPD is not very stable as a categorical diagnosis in this patient group, it is predictive of later psychiatric disorders as well as suboptimal functional outcomes (40). One recent study of 97 Danish patients diagnosed with BPD during their adolescence found that, after 5 years, although BPD diagnostic criteria were met only in about a quarter of the patients, differing degrees of psychiatric morbidity was the norm (41). Of note, 16% of the sample met the diagnostic criteria for schizophrenia, and the proportion of participants not engaging in either work or education was four times as high as that of peers of the same age.

The longest time period available for BPD cohorts is 27 years (42). The patients in this study were recruited from general hospital patients presenting with BPD suggestive behaviour (such as suicide attempts), whose charts were retrospectively screened for presence of BPD using the Diagnostic Interview for Borderlines (DIB) (43), identifying 322 BPD cases. 165 of these individuals were located 15 years after the end of the selected recruitment period – at that time point 22 patients (6.8% of the original BPD sample) were deceased, 14 of them by suicide, and 100 patients consented to participate. At the 27-year time point, 81 patients were located, of which 8 were at that point deceased, 3 by suicide, which gives a cumulative suicide death rate of 10.7%. 64 patients consented to participate in this follow-up study and were investigated with interviews and questionnaires. Only a small subset of these (7.8%) still met BPD criteria, which was a decrease from 25% at the 15-year follow-up. Dimensional measures of BPD severity according to the DIB had decreased as well, both compared to baseline and the 15-year follow-up. Dysthymia was not uncommon (22%) but only 2 patients fulfilled MDD, and 3 substance use disorder, criteria. However, measures of functioning were still impaired, and had not significantly improved since the

last assessment 12 years earlier.

The McLean Study of Adult Development (MSAD) was a longitudinal study of outcomes and clinical course in BPD, which recruited psychiatric inpatients. Participants were interviewed with the SCID, the Diagnostic Interview for DSM-IV Personality Disorders, and the Revised DIB (44). Patients were reassessed at ten 2-year intervals with follow-up or change-sensitive versions of the originally administered instruments, for a total follow-up of 20 years, with remarkably low attrition. Over successive waves, the proportion of patients meeting remission increased steadily, and was 75% at 6 years, with recurrence being a rare phenomenon (6%). Many cognitive and behavioural symptoms declined very significantly during follow-up, especially striking is the decline in self-mutilation (80.7–28.4%) and manipulative suicide attempts (81.4–25.8%). Regarding functional outcomes, improvement was seen in many areas, but impairment, both absolutely and compared to other axis II patients, remained significant. These trends continued in later waves of the study, with only a minority (39%) of BPD patients having made an excellent recovery (defined as good functioning in the context of remission of BPD as well as any comorbid conditions) even after 20 years of follow-up (45). After 20 years, total suicide mortality among BPD patients was 5.9%, with no additional suicide deaths after the year 16 wave.

The Collaborative Longitudinal Personality Disorders Study (CLPS) was another informative and important study, in that it gave us directly comparative information about outcomes in BPD patients and other relevant diagnostic groups, recruited from treatment-seeking patients, in a sample containing both outpatients and inpatients (46). The CLPS prospectively followed 175 patients with BPD, 86 with schizotypal PD, 158 with avoidant PD, 154 with obsessive PD, and as a non-PD comparison group, 95 MDD patients. A 10-year follow-up-study, retaining two-thirds of the initial sample, but excluding all schizotypal PD patients, found that, whereas early remission of MDD was common, remission from BPD followed a more linear curve of steady progression, with 91% of BPD patients achieving a 2-month long, and 85% a year long, remission after 10 years (47). Relapse was uncommon for BPD, with only 11% of remitters experiencing one. Similar to other studies, however, functional and social impairment was resistant to recovery, with functional remission uncommon in the BPD cohort. On a DSM symptomatic level, all BPD symptoms followed similar curves for remission, with no major differences between symptoms thought to be more trait-like and those thought to be more state-like. An alternative model, using a factor analysis modelling variant called trait occasion modelling, which can disentangle trait-like (invariable over time) from state-like (variable over time, in this case over successive assessment waves) factors, found that the majority (55%) of BPD variability was not trait-like, but state-like (48). Additionally, the trait-like portion (which the authors termed '*borderline proneness*') had a high correlation with FFM traits previously linked to BPD. This would support a view of BPD as symptomatic behaviour (which may improve) imposed on a substratum of particular personality traits, which are more long-standing and may confer deficits in functioning even when behaviour indicative of the BPD clinical syndrome is no longer present.

The European study was conducted in Catalonia, Spain, and consisted of a 10-year follow-up of an outpatient cohort of 64 BPD patients initially recruited for a 12-week clinical trial of DBT and either placebo or olanzapine (49). After 10 years, 41 were reassessed, 5 had died by suicide, and the rest declining participation or not located. Remission from BPD had been achieved by a slight majority (55%), and dimensional measures of borderline severity had decreased significantly. Notably, the portion of the sample who reported having made a suicide attempt during the preceding 2 years before assessment decreased from 75.6% at baseline to 17.1% at 10 years. Of the personality traits, neuroticism/anxiety, impulsivity/sensation seeking, and aggression/hostility decreased from levels significantly higher than those in the demographically equivalent Spanish general population to levels similar to the general population, whereas activity and sociability, which had been lower than the general population at baseline, decreased even further from the norm. Many markers of function (social functioning, disability, employment rates) remained stable or deteriorated during follow-up. Compared to the three North American studies mentioned above, general trends were similar, but remission not as often achieved in this Spanish sample.

Finally, a review and meta-analysis (study n=11, patient n=837) reported on the outcomes of BPD in long-term follow-up (49). Follow-up in included studies varied from 5 to 14.4 years. Remission was achieved by a mean of 60% of patients, with high heterogeneity, and 4% of patients died by suicide. Regarding possible effects of treatment on prognosis, the meta-analysis did not find significant differences between trial and naturalistic study participants in long-term outcome. However, due to the very long term of many of these trials, adequate controlling for type (e.g. BPD specific vs TAU) or total treatment received during the whole follow-up period (that is, treatment after, or in

addition to, possible studied trial treatments) is likely to be very challenging, and indeed, was not reported in this study. In a strict sense then, the "naturalistic" course of (untreated) BPD is uncertain, since most studied populations receive some form of treatment. The meta-analysis showed a significant improvement in functioning during follow-up, but no comparisons of functioning between patients and the general populations were presented – in other words, although functioning improved significantly, the meta-analysis was not able to shed light on how often functional remission may have been achieved.

In conclusion, despite some heterogeneity in methodology and definitions, and more significantly in setting, a quite consistent picture of BPD emerges: it seems BPD symptoms, as defined in the diagnostic manuals, tend to steadily improve over time, with a substantial majority reaching symptomatic remission (however that is defined) over a period of several years. In adolescents, BPD may be a non-specific marker of a high risk of later psychiatric morbidity. Functionality generally seems to improve, but much more slowly, and significant impairments remain common even after a decade or longer. Mortality, finally, is significant, and although suicide mortality is high, the majority of deaths are due to other causes (50).

## MEASUREMENT OF SEVERITY

Given that BPD may be more or less severe, instruments for quantifying this severity seem potentially useful. As we have seen from the outcome studies of BPD, many diagnostic interviews yield data which can be used for assessment of symptom severity and changes in severity over time. The total number of positive DSM criteria is one such marker. For example, in the CLPS study, it was reported that the mean number of positive BPD DSM criteria (or BPD symptoms) decreased from 6.7 to 4.3 after the first year of the study (47).

Although yielding valuable and reliable information, instruments such as counting the number of diagnostic criteria have some important limitations. Firstly, they are not very time sensitive, as they are mostly designed to capture long-term, persistent and pervasive symptoms, and thus not able to capture symptom variation over shorter time spans (e.g. several months). Secondly, the rating of a symptom as present or absent unavoidably involves significant judgement by the rating researcher as to which phenomena are judged to be significant enough to be rated as positive. Such subjectivity can to some extent be minimized through operationalization, training and instructive manuals, but probably never entirely eliminated. Thirdly, the discrete rating of continuous data leads to a loss of information and sensitivity.

The Borderline Personality Disorder Severity Index (BPDSI) was developed by Arntz and colleagues based on earlier work (51), and offers an instrument capable of finer resolution at temporal and precise symptomatic levels than diagnostic interviews. It measures the severity of the BPD symptoms of the DSM-5 over the preceding 3 months by assessing occurrence frequency (for 8 out of the 9 symptoms) and severity (the identity disturbance symptom) on an 11-point Likert-type scale (the 8 frequency-rated symptoms) and a 5-point Likert scale (the identity disturbance symptom), and yields a sum score of general severity of BPD, and subscores for the individual symptoms. The BPDSI has been shown to have high inter-rater reliability and construct validity, and has been translated into Finnish (52).

## PSYCHIATRIC COMORBIDITY

BPD is associated with significant psychiatric comorbidity, most often involving mood disorders, SUDs, anxiety disorders, post-traumatic stress disorder and eating disorders (53). Over time, in long-term follow-up, the prevalence of psychiatric comorbidities tend to decrease in patients diagnosed with BPD at the outset of the study – however, in the minority of BPD patients whose BPD does not remit, comorbidities are also significantly more persistent (53).

Almost all (96%) of BPD patients experience a mood disorder during their lifetimes, and over 90% either MDD or BD (53). To reframe it, about 10–30% of MDD patients, and around 20% of BD patients have comorbid BPD (54–56). A comparison of MDD patients (from the Vantaa Depression Study) and BD patients (from the Jorvi Bipolar Study) found significantly higher rates of BPD in the BD (22%) than in the MDD sample (12%) (57).

BPD features seem to be a prospective risk factor for the emergence of MDD in previously never depressed individuals (58). For patients with MDD, comorbid BPD is related to a higher risk of having a persisting form of depression and taking longer to achieve remission even in adjusted regression models (59,60). In the bipolar, borderline and depression (BiBoDep) cohort study, comparing depressed patients with and without comorbid BPD, we found that severity of BPD symptoms predicted a longer time to first

remission when controlled for by relevant covariates (61). A meta-analysis of treatment trials also indicated that BPD is a negative moderator of treatment response in MDD (62).

There is evidence that, similarly to MDD, BPD increases the risk of developing BD, and symptoms of BPD increase the prevalence and risk of suicide attempts in BD patients in both retrospective and prospective settings (56,63). Indeed, in the BiBoDep study, we found that 90% of BD patients with comorbid BPD reported an earlier suicide attempt (64). BD and BPD have several symptoms in common, e.g. impulsivity, occasional agitation, irritability and anger, prominent dysphoria and suicidality, which may lead to clinically similar presentations in acute or semi-acute settings. However, some features, distinguishable in long-term follow-up, but not necessarily during an acute MDE, seem to distinguish BD from BPD, i.e. the episodic course of the illness and the symptom of elevated mood (65). Other explanations for the frequent co-occurrence of BD and BPD include overlap of genetic risk factors (33), diagnostic error (related to symptomatic overlap and the vagaries of retrospective diagnoses) (66), healthcare system- and reimbursement-related issues, and either disorder serving as a partly causal risk factor for the other (67,68). In the CLPS, while there was clear evidence that BPD influenced the course of MDD and vice versa, the evidence of influence on illness course between BPD and BD was much weaker, with the courses of BD type I being independent from that of BPD, and BD type II only somewhat increasing the remission latency in BPD (but not vice versa) (69). This supports the notion that the BPD/BD comorbidity may have features of what has been called 'true' comorbidity, that is, these disorders may represent entities to some degree independent of each other, rather than the BPD/BD comorbidity being merely an artefact of our diagnostic systems.

We found (in the BiBoDep cohort) that over the course of a MDE, dimensionally measured BPD symptoms tended to alleviate over 6 months in both BPD and non-BPD patients (70). However, BPD symptoms covaried with depression severity in BPD and BD, but not in MDE patients. This interesting finding, if replicated in further studies, may indicate that the precise relationship between BPD and mood disorders could differ across patient groups.

BPD and the mood disorders are thus frequently comorbid disorders, and although the precise taxonomic relationship between them is not, at present, entirely clear, they influence the symptomatology, diagnostics and outcomes of one another. In mood disorders, BPD confers additional risk of suicidal behaviour, and BD patients with comorbid BPD may be at a strikingly high risk of making suicide attempts.

Although psychotic illness, such as schizophrenia, and BPD share genetic risk, many environmental risk factors (e.g., traumatic experiences and childhood adversity), psychotic symptoms and even a conceptual history, comorbidity rates between these diagnoses are seldom reported. This may be an artifact of clinical diagnostic practice (in which schizophrenia is often used as a hierarchically superior diagnosis, explaining many other symptoms a patient may have), different and largely non-overlapping research traditions, and the exclusion criteria used in many cohort studies of BPD. However, although there are both similarities and differences between the psychotic symptoms BPD and schizophrenia patients experience, there are no exclusion criteria absolutely precluding this comorbidity in DSM-5 or ICD-11, and the two may and do co-occur (71). Furthermore, BPD in adolescence may indicate a high risk of later schizophrenia (41).

Finally, attention deficit hyperactivity disorder (ADHD) and BPD share important symptom domains (such as impulsivity and emotional dysregulation), and having ADHD may increase later risk of later BPD markedly (adjusted odds ratio 19.4) (72). Treatment studies are few, and evidence at this point inconclusive, but an interesting recent pharmacoepidemiological study indicated that stimulant medication use may be associated with a decreased risk of adverse outcomes in BPD patients (73).

## TREATMENT

In BPD psychotherapeutic treatment is recommended as first-line therapy, with pharmacological augmentation reserved for special indications (74,75). In clinical practice, BPD patients are not always treated according to guidelines, with irrational polypharmacy not based in evidence and frequent hospitalizations of short duration, and without BPD-specific therapeutic elements, as a frequently seen scenario.

It seems likely that treatment of BPD by expert teams confers benefits compared to treatment as usual regardless of the specific training of the experts providing the treatment (52). Furthermore, many psychotherapeutic interventions have been studied in, and even developed for, BPD. According to a meta-analysis of trials of psychotherapy for BPD (study n=33, participant n=2256), the studied interventions were efficacious for outcomes pertinent in the care of BPD

patients, such as self-harm and BPD symptoms, with a mean effect size of 0.35 (76). Other meta-analyses, including a Cochrane review, have similar findings, and indicate that these specialized therapies confer additional advantages also compared to community experts, although additional, larger and methodologically more rigorous trials are still needed (77,78). The evidence is more robust for stand-alone than for add-on interventions (of which fewer trials are available). In longer follow-up, the stand-alone interventions showed significant efficacy, but add-on trials did not, and significant heterogeneity issues were apparent.

The most investigated psychotherapeutic intervention for BPD is DBT, developed by Marsha Linehan, and adaptations thereof (79). DBT was originally developed for BPD patients with recurrent and/or severe suicidal behaviour, which it was designed to reduce. The dialectic in the therapy refers to one between patient and therapist, but also to the tension inherent in many of BPD-related behaviours, which may serve important functions for the patient, such as mood regulation or emotional validation, while simultaneously also being maladaptive and having prominent negative consequences, such as leading to interpersonal difficulties and increasing risk of suicide death. The therapeutic approach is one balancing a validating and supporting engagement with the patient, with the teaching of new skills and increasing the self-reflective capacity of the patients. In the original DBT model, this is accomplished through a multi-pronged approach, with individual and group sessions, skills training, and the possibility to flexibly reach out to the therapist. The efficacy of DBT in reducing suicidal behaviour has been replicated in several studies (76).

While DBT is essentially an integrative form of therapy, it shares many aspects with cognitive behavioural therapy. However, psychotherapeutic treatment grounded in a more psychoanalytical approach, more specifically the attachment theory of John Bowlby (29,80), has also been adapted for use in BPD. Currently the most prominent of these is Mentalization-Based Therapy (MBT), developed by Peter Fonagy (81), which is based on a conceptualization of BPD as primarily a diminished capacity in mentalizing, i.e. understanding the mental state of oneself and other people. These difficulties in mentalizing are theorized to develop in vulnerable individuals as sequelae of disorganized attachment and traumatic experiences in childhood. The goal of MBT after initial stabilization of affective states is to support and restore the capacity for mentalization, which is particularly fragile in stressful situations in persons with BPD. It takes a pragmatic and integrative approach to this task, allowing therapists to use the tools which may already be available to them to accomplish it. Consequently, MBT does not require very extensive training (at least, in mental health professionals with adequate previous clinical training and experience) to administer, which, indeed, was one of the stated goals for developing it. Meta-analyses indicate that MBT reduces BPD symptoms when compared to control conditions, but more rigorous studies are needed to ascertain this effect and elucidate the mechanisms of change in MBT (76,82). Another psychoanalytically-based BPD-specific psychotherapy with RCT-level evidence of efficacy against BPD symptoms is the Transference-Focused Therapy of Otto Kernberg (83).

Finally, the schema therapy of Jeffrey Young (previous student of Aaron Beck) is a specific form of psychotherapy for BPD, theoretically grounded in the principles of CBT (84). According to Young, PD patients have especially rigid and problematic cognitive patterns, termed early maladaptive schemas, resulting from a misalignment of the particular needs of a child, and what their environment and significant caregivers were able to offer, early in the child's development. Patients may present with frequent and sometimes dramatic shifts between certain combinations of schemas and behaviours, termed schema modes. Young characterized five schema modes which may be prominent in persons with BPD: the hurt child, the angry or impulsive child, the punitive parent, the detached protector and the healthy adult mode, which can be mapped onto the DSM-5 symptoms of BPD. The goal of Schema Therapy treatment then, is to help the patient gain self-awareness regarding early maladaptive schemas and problematic schema modes they may experience, exploring how to cope with the distressing and problematic experiences and behaviours that may be caused by them, and learning new skills, more adaptive in adult life (increasing the role of the Healthy Adult schema mode). Schema therapy seems more effective than transference-focused therapy (85) and, as an add-on, group therapy has conferred further benefits when compared to treatment as usual in some studies (86), but not all (87). A three-armed RCT comparing: 1) combined individual and group schema therapy, 2) primarily group schema therapy, and 3) treatment as usual, and using the BPDSI as the main outcome measure, indicated the superiority of the combined schema therapy modality over primarily group-based schema therapy, and the superiority of both schema therapy forms over treatment as usual (88).

As for pharmacological interventions, a recent study indicated that research is quite limited when compared to

the widespread use of medications for these patients (89). Overall, the evidence level was low for both primary and secondary outcomes for all studied classes of medications, including antipsychotics, mood stabilisers (anticonvulsants), antidepressants and dietary supplements, whereas information regarding potential side effects specifically in BPD was very scarce. Further research of adequate quality was deemed needed to better elucidate the harms and benefits of psychopharmacological treatment in the BPD population.

## CONCLUSIONS

Although often seen as theoretically problematic, the BPD syndrome is quite recognizable to practicing psychiatrists, and its clinical usefulness has thus far preserved its place in diagnostic systems. Categorical diagnosis has pragmatic advantages, but dimensional assessment of borderline symptoms may confer added knowledge about relevant end points such as suicidality and prognosis of mood disorder comorbidities. The aetiology of BPD is complex, and it seems advisable to approach causal questions with an open mind, especially on an individual level. Persons with BPD sometimes encounter therapeutic pessimism, but studies indicate that the symptoms which lead to, in some cases, quite frequent contact with healthcare services tend to remit with time and are also amenable to change aided by several different therapeutic approaches. Although polypharmacy is common in BPD, the evidence for efficacy of psychotropic medications is not very robust.

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