Borderline personality disorder – a comprehensive review of diagnosis and clinical presentation, etiology, management, and current controversies

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Borderline personality disorder (BPD) was introduced in the DSM-III in 1980. From the DSM-III to the DSM-5, no major changes have occurred in its defining criteria. The disorder is characterized by instability of self-image, interpersonal relationships and affects. Further symptoms include impulsivity, intense anger, feelings of emptiness, strong abandonment fears, suicidal or self-mutilation behavior, and transient stress-related paranoid ideation or severe dissociative symptoms. There is evidence that BPD can be reliably diagnosed and differentiated from other mental disorders by semi-structured interviews. The disorder is associated with considerable functional impairment, intensive treatment utilization, and high societal costs. The risk of self-mutilation and suicide is high. In the general adult population, the lifetime prevalence of BPD has been reported to be from 0.7 to 2.7%, while its prevalence is about 10% in outpatient and 20% in inpatient psychiatric services. BPD is significantly associated with other mental disorders, including depressive disorders, substance use disorders, post-traumatic stress disorder, attention-deficit/hyperactivity disorder, bipolar disorder, bulimia nervosa, and other personality disorders. There is convincing evidence to suggest that the interaction between genetic factors and adverse childhood experiences plays a central role in the etiology of BPD. In spite of considerable research, the neurobiological underpinnings of the disorder remain to be clarified. Psychotherapy is the treatment of choice for BPD. Various techniques have been validated in randomized controlled trials (RCTs), including dialectical behavior therapy, mentalization-based therapy, transference-focused therapy, and schema therapy. No technique has proved to be superior to others. Compared to treatment as usual, psychotherapy has proved to be more efficacious, with effect sizes between 0.50 and 0.65 with regard to core BPD symptom severity. However, almost half of the patients do not respond sufficiently to psychotherapy, and further research in this area is warranted. It is not clear whether some patients may benefit more from one psychotherapeutic technique than from others. No evidence is available consistently showing that any psychoactive medication is efficacious for the core features of BPD. For discrete and severe comorbid anxiety or depressive symptoms or psychotic-like features, pharmacotherapy may be useful. Early diagnosis and treatment of BPD can reduce individual suffering and societal costs. However, more high-quality studies are required, in both adolescents and adults. This review provides a comprehensive update of the BPD diagnosis and clinical characterization, risk factors, neurobiology, cognition, and management. It also discusses the current controversies concerning the disorder, and highlights the areas in which further research is needed.

Key words: Borderline personality disorder, psychotherapy, dialectical behavior therapy, mentalization-based therapy, transference-focused therapy, schema therapy, suicidal behavior, adverse childhood experiences

The term “borderline” was introduced in the psychiatric literature by Stern[1] and Knight[2], to identify a patient group showing a level of functioning situated between neuroses and schizophrenic disorders. This patient group was not well defined. An important progress occurred with Kernberg´s introduction of the concept of borderline personality organization[3,4], marked by the use of primitive defense mechanisms such as splitting or projective identification, identity diffusion (shifting between all-good and all-bad) and severely disturbed object relationships[3]. Reality testing was largely intact, differentiating individuals with borderline personality organization from psychotic patients[3]. Another early contribution was provided by Grinker et al[5], who empirically identified four features of the “borderline syndrome”: anger, impaired close relationships, identity problems, and depressive loneliness.

In 1980, borderline personality disorder (BPD) was introduced in the DSM-III[6], based on a study by Spitzer et al[7], who drew both on research by Gunderson and colleagues[8,9] and on Kernberg´s concept of borderline personality organization[3], by including specific problems of identity and interpersonal relationships characterized by sudden shifts from one extreme to another (e.g., from all-good to all-bad or vice versa). This early research showed that BPD could be discriminated with sufficient accuracy from both schizophrenia and (neurotic) depression, as well as from other personality disorders[10,11].

In the following more than four decades, a plethora of research has been carried out on BPD, much more than on any other personality disorder. This research has focused on the diagnosis of BPD, its etiology (including genetics, neurobiology, and interactions between genetics/neurobiology and adverse childhood experiences), epidemiology, course and prognosis, cognition, and the effectiveness of pharmacotherapies and psychotherapies[12-18].

BPD remains a challenging disorder, from both research and clinical perspectives. At present, for example, there is still controversy concerning its conceptualization as either a specific personality disorder or a level of general impairment in personality functioning[19-21]. The treatment of BPD remains challenging as well. As to pharmacotherapy, there is no consistent evidence showing that any psychoactive medication is efficacious for the core features of the disorder[16]. Indeed, no medications have been approved by regulatory agencies for treating BPD[16,22]. According to the UK National Institute for Health and Care Excellence (NICE), pharmacotherapy should only be used to treat discrete and severe comorbid anxiety or depressive symptoms or psychotic-like features, or to manage acute crises, and should be administered for the shortest time possible[22]. Psychotherapy is the treatment of choice for BPD, with various techniques having proved to be efficacious in randomized controlled trials (RCTs)[14,17,22]. However, almost 50% of BPD patients do not respond sufficiently to psychotherapy[23], so that further research in this area is clearly warranted. Whether specialized methods of psychotherapy or more generalist approaches are required for the treatment of BPD is a debated issue[24-26].

This paper provides a comprehensive review of BPD diagnosis and clinical characterization, course, epidemiology, risk factors, neurobiology, social cognition and neurocognition, and management. Current controversies (e.g., categorical vs. dimensional approaches to diagnosis; specific vs. generalist psychotherapy interventions) are also discussed, and major areas in which further research is warranted are highlighted.

DIAGNOSIS AND CLINICAL CHARACTERIZATION

The DSM-5 characterizes BPD as a pervasive pattern of instability of interpersonal relationships, self-image and affects, and marked impulsivity, emerging by early adulthood and present in a variety of contexts, as indicated by five or more of a set of nine criteria[27] (see Table 1).

The DSM-5 alternative dimensional model requires for BPD the presence of moderate or greater impairment in personality functioning, manifested by difficulties in at least two of the following areas: an unstable self-image (identity); unstable goals and values (self-direction); compromised ability to recognize the feelings and needs of others (empathy); and intense, unstable and conflicted close relationships (intimacy). In addition, four or more of the seven following personality traits are required (at least one of which must be impulsivity, risk taking or hostility): emotional lability, anxiousness, separation insecurity, depressivity, impulsivity, risk taking, and hostility. Impairments in personality functioning and pathological personality traits are required to be relatively pervasive and stable[27] (see Table 2).

An important aspect omitted in the DSM-5 criteria for BPD is regression proneness (i.e., showing emotions or behaviors not adequate to age) in unstructured situations, one of the reasons for many of the treatment problems occurring with the disorder[28]. Regression proneness has been empirically demonstrated by use of unstructured psychological tests such as the Rorschach or the Thematic Apperception Test (TAT)[29-32]. In these tests, patients with BPD tend to show bizarre-idiosyncratic primary process thinking, usually associated with the activation of low-level defense mechanisms and object relations[31-33].

In the ICD-11, the categorical system of personality disorders has been replaced by a dimensional approach similar to the DSM-5 alternative model[34]. Of the DSM-5 personality disorders, only BPD remains distinct and unique, by use of the “borderline pattern specifier”. In the ICD-11, a diagnostician’s task is to rate the severity level of personality dysfunction as “mild”, “moderate” or “severe”. In addition, the patient may be described on five domains (negative affectivity, detachment, dissociality, disinhibition, and anankastia). While in the clinical setting most patients with BPD can be expected to be classified as having a severe personality disorder, the ICD-11 allows to rate BPD patients in whom some areas of

personality functioning are relatively less affected as suffering from a moderate personality disorder[35].

The ICD-11 borderline pattern specifier may be applied in the presence of at least five of the following requirements: a) frantic efforts to avoid real or imagined abandonment; b) unstable and intense interpersonal relationships, which may be characterized by vacillations between idealization and devaluation; c) identity disturbance, manifested in unstable self-image; d) a tendency to act rashly in states of high negative affect, leading to potentially self-damaging behaviors; e) recurrent episodes of self-harm; f) emotional instability due to marked reactivity of mood; g) chronic feelings of emptiness; h) inappropriate intense anger or difficulty controlling anger; and i) transient dissociative symptoms or psychotic-like features. Further manifestations which may be present include a view of the self as inadequate; an experience of the self as profoundly different and isolated from other people; and proneness to rejection hypersensitivity (see Table 3).

Proposals to describe BPD by the five-factor model of personality[36] characterize it by high levels of both neuroticism (anxiousness, angry hostility, depressiveness, impulsiveness, vulnerability) and openness (high openness to feelings and actions), and by low levels of both agreeableness (low compliance) and conscientiousness (low deliberation)[37,38]. Another approach to define and conceptualize BPD focuses on major dimensions of psychopathology: most researchers agree that the dimensions which capture the essence of the disorder are emotional dysregulation, impulsivity and behavioural dysregulation, and interpersonal hypersensitivity[38].

With nine DSM-5 criteria and a threshold for diagnosis of five positive criteria, there are 256 theoretically possible ways to meet the criteria for BPD[39]. Thus, despite conceptual coherence[40], BPD appears to be a heterogeneous diagnostic category which may include patient subtypes[41]. A cluster analysis, for example, found three clusters: a large one with “core” BPD symptoms; an extravert/externalizing one characterized by high levels of histrionic, narcissistic and antisocial features; and a small one of patients with marked schizotypal and paranoid features[42].

Although still utilized with caution, the diagnosis of BPD in adolescents is no longer controversial. Early detection of BPD (or subthreshold features of the disorder) facilitates a timely treatment of these young patients, reducing individual suffering and societal costs[43]. In the past, several arguments were used against BPD diagnosis prior to the age of 18, including the not uncommon occurrence of affective instability and irritation regarding self-image in adolescents, and the potential harm due to stigmatization. Today, there is a consensus regarding the potential appropriateness and usefulness of BPD diagnosis in the youth. This is also reflected by the latest developments in the ICD-11 and DSM-5[27,34], where the age threshold for the diagnosis has been omitted. The diagnosis of BPD can be regarded as being

as reliable and valid in adolescence as in adulthood[44,45]. A community-based study conducted in the US found a point prevalence for adolescents at around 1% and a cumulative prevalence of 3% up to the age of 22[46]. As in adults, prevalence rates in outpatient and inpatient psychiatric settings are considerably higher[47,48].

In older patients with BPD, symptoms shift to more depression, emptiness and somatic complaints[49,50]. Emotional dysregulation, unstable interpersonal relationships, anger and attachment insecurity persist, whereas impulsivity and identity disturbances decrease[49,50]. Self-harm may take other forms, such as non-adherence to medical regimes or misuse of medication[50].

Individuals with BPD are likely to have co-occurring lifetime mood disorders (83%), anxiety disorders (85%), substance use disorders (78%), and other personality disorders (53%)[51-53]. BPD and bipolar I or II disorder co-occur in about 10-20% of patients with either disorder[54,55]. Although BPD is often comorbid with major depressive disorder or bipolar disorder, the additional diagnosis of BPD should not be made in an episode of those disorders if there is no evidence that the typical BPD symptomatological pattern persists over time.

Among people with attention-deficit/hyperactivity disorder, the lifetime rate of BPD was found to be 37.7%[56]. Eating disorders are also common among individuals with BPD, with median rates of 6% for anorexia nervosa, 10% for bulimia nervosa and 22% for eating disorders not otherwise specified[53]. Of individuals with BPD, 30% were diagnosed with post-traumatic stress disorder (PTSD), and 24% of individuals with this latter disorder were diagnosed with BPD[57].

Although there is a considerable overlap between BPD and the construct of complex PTSD (CPTSD) introduced in the ICD-11 – both disorders include problems in affect regulation, self-concept and interpersonal relationships – there is evidence that they can be empirically differentiated[58,59]. In particular, difficulties in affect regulation in CPTSD are ego-dystonic, stressor-specific and variable over time, whereas in BPD they tend to be ego-syntonic and persistent. Moreover, in contrast with the unstable self-concept in BPD, individuals with CPTSD have a consistently negative sense of self. Finally, the high rates of impulsivity and suicidal and self-injurious behaviors of BPD are not observed in CPTSD[59].

The above high levels of comorbidity may be an artefact of the categorical approach to psychiatric disorders, as also evidenced by the considerable overlap between BPD and the general psychopathology or p factor[60-63]. It has been argued that this overlap may represent a more parsimonious way not only to explain the high “comorbidity” associated with BPD, but also its large negative impact on functioning[64].

BPD can be reliably diagnosed by semi-structured interviews. Several reliable and validated interview methods exist[65-81]. In addition, self-report questionnaires and projective techniques such as the Rorschach or the TAT have proved to be helpful, especially with regard

to assessing the level of personality functioning[28,29,31,32,54] (see Table 4). Sensitive diagnostic instruments for BPD in the elderly, however, need to be developed[50].

COURSE

BPD seems to be less stable over time than traditionally believed[54]. Considerable rates of recovery and relatively low rates of relapse have been reported in both short-term and long-term naturalistic follow-up studies[54,82]. In a 10-year prospective follow-up study, 50% of patients with BPD achieved recovery (i.e., symptomatic remission and good social and vocational functioning during the past two years), while 93% of them showed symptomatic remission lasting two years, and 86% remission lasting four years[82]. Of note, however, most individuals with BPD in these longitudinal studies received pharmacotherapy or psychotherapy, so that the above remission rates may not reflect the natural history of untreated BPD[83].

A meta-analysis of studies on the long-term course (≥5 years) of BPD reported a mean remission rate of 60%, associated with high heterogeneity between studies (I^2=80.9%)[84]. Thirty-four percent of patients lost their recovery and 30% their remission status after a two-year long remission[82]. Excellent recovery (i.e., remission of symptoms and good social and full-time vocational functioning) was achieved in 39% of BPD patients compared with 73% in other personality disorders[85].

Patients with BPD show poorer social functioning than those with other mental disorders, including major depressive disorder and other personality disorders[86,87]. Only approximately 16% of people with BPD were reported to be married or living with a partner[88]. Social functioning was found to be unstable and highly associated with the symptomatic status[83,88,89]. Those patients who experienced change in personality pathology showed some improvements in functioning[83,88-91]. There is evidence that changes in personality traits (defined by the five-factor model) are followed by changes in BPD psychopathology, but not vice versa[92]. Traits were found to be more unstable in BPD than in patients with other personality disorders, indicating a “stable instability”[93].

BPD features tend to decline over time, and this process seems to be in part influenced by temperament[94]. However, diagnostic instruments may not be sensitive enough to tap the shift in symptoms in older populations to more depression, emptiness and somatic complaints[49,50]. Moreover, as most individuals with BPD in these longitudinal studies received pharmacotherapy or psychotherapy, the finding of high remission rates cannot clearly be linked to a natural remission over time, but might be due to available effective treatment[83].

EPIDEMIOLOGY

The age of onset of BPD varies, but symptoms are usually manifest in early adulthood[27]. In the adult general population, rates for BPD range between 0.7 and 2.7%[95,96]. In primary care, psychiatric outpatients and psychiatric inpatients, higher prevalence rates of 6%, 11-12% and 22% have been found[96,97]. In a US community sample, 2.7% of individuals had been diagnosed with BPD in their lifetime, with only slightly higher rates for women compared to men (3% vs. 2.4%)[52]. In a psychiatric outpatient setting, however, considerably higher rates of BPD were found in women compared to men (72% vs 28%)[97]. There are gender differences in comorbidity: men with BPD display more frequently substance abuse and antisocial personality disorder, while women more frequently present with mood, anxiety and eating disorders and PTSD[98].

The rate of death by suicide is higher among individuals with BPD than in patients with other personality disorders (5.9% vs. 1.4%)[99]. These results are consistent with those of a recent meta-analysis which reported suicide rates of 2 to 5% (mean 4%) over follow-up periods of 5 to 14 years among people with BPD[84]. Suicide attempts occurred in more than 75% of BPD individuals[100].

In addition, BPD patients have a higher prevalence of somatic comorbidities – such as endocrine, metabolic, respiratory, cardiovascular and infectious (e.g., human immunodeficiency virus infection, HIV; hepatitis) diseases – than persons without BPD[101,102]. Mortality by non-suicide causes is clearly increased, with 14% of BPD patients and 5.5% of those with non-BPD personality disorders dying over a 24-year follow-up[99]. Compared with patients without BPD who had other mental disorders or medical conditions, BPD was associated with a 2.3-fold increase in mortality rate during a 2-year follow-up[101].

Patients with BPD die on average 14-32 years earlier than subjects in the general population[99], while some studies report lower lifetime loss (6-7 years)[101]. Loss of lifetime years is more pronounced in men[101]. Compared to individuals without BPD, men with BPD had a poorer lifetime expectancy than women with BPD, with an odds ratio (OR) of 2.40 (95% CI: 1.93-2.54) vs. 2.21 (95% CI: 2.08-2.77)[101].

These data suggest recommending BPD patients to engage in regular medical check-ups[103]. Increased health problems and associated increased mortality may reflect both unhealthy lifestyle and more direct neurobiological dysregulation of the stress and immune system associated with high levels of early adversity in BPD. Indeed, chronic physical diseases are strongly associated with “immature” personality[104], for which BPD may serve as a prominent example.

BPD is associated with intensive treatment utilization, and societal costs exceeding those of anxiety and depressive disorders, diabetes, epilepsy and Parkinson´s disease[54,87,101,105]. Thus, BPD constitutes a significant public health concern.

RISK FACTORS

It is currently hypothesized that, in BPD, genetic factors and adverse childhood experiences interact to influence brain development via hormones and neuropeptides[54,106]. Adverse childhood experiences are thought to modulate gene expression and lead to stable personality traits that may predispose to BPD[54]. There is familial aggregation of BPD[54,107], with recent data from a Swedish population-based study estimating heritability at 46%[108]. The risk of receiving a BPD diagnosis was increased 4.7-fold for full siblings[108]. The hazard ratio in identical twins was 11.5 (95% CI: 1.6-83.3). However, no single nucleotide polymorphisms associated with BPD have been identified[38,109], and some evidence of a genetic overlap of BPD with bipolar disorder, major depression and schizophrenia has emerged[109]. Results of epigenetic studies yielded inconsistent results and are often limited by small sample size[38,110]. Further large scale studies that are sufficiently powered to detect effects of genes on BPD phenotype are required[38]. In addition, more reliable measures of the BPD phenotype are needed.

Adverse childhood experiences – including physical, sexual and emotional abuse, and neglect – are significantly associated with BPD[111,112]. Consistent with these findings, BPD has been associated with high levels of disorganized and unresolved patterns of attachment[113]. Borderline personality traits were associated with prior significant negative experiences in 12-year-old children[107]. This effect was more pronounced when families had psychiatric histories. While multiple psychosocial factors, including maltreatment, are associated with an increased risk for BPD, these findings do not seem to be disorder-specific [111].

Inherited and environmental risk factors are thought to contribute independently and interactively to the etiology of BPD. Recent findings on familial clustering and heritability of clinically diagnosed BPD, which revealed a 54% contribution from unshared, individually unique environmental factors, point in this direction[108].

There is increasing evidence that BPD is associated with both early and later adversity, leading to vicious interpersonal cycles. This is, for instance, evidenced by high levels of revictimization in romantic relationships and bully-victim relationship with peers, leading to increasing levels of distrust in others and social isolation[114-118]. Moreover, there is growing evidence that social deprivation and societal inequality may increase the risk for BPD, which may be related to high levels of distrust and sensitivity to social rejection and injustice in

individuals with BPD[119-121]. These results point to the need of considering vulnerability to BPD from a broad, socio-ecological and transactional perspective[113,115].

NEUROBIOLOGY

A large number of studies have been conducted on the neurobiological underpinnings of BPD. Although several brain areas and neurotransmitters have been identified as potentially involved, only few findings have been confirmed by meta-analyses.

At the neuroendocrinological level, dysfunctions of the hypothalamic-pituitary-adrenal (HPA) axis, with altered levels of cortisol, have been suggested to underly the impaired stress responses characteristic of BPD. One meta-analysis found significantly lower mean basal cortisol levels in individuals with BPD compared to non-psychiatric controls, with a small effect size of d=0.31 (95% CI: –0.56 to –0.06, N=546, n=12, I^2=53%)[122]. Yet, a more comprehensive meta-analysis found no significant differences in singular cortisol assessment between individuals with BPD and healthy controls or individuals with other mental disorders, although heterogeneity between studies was high and moderate, respectively[123]. In a sub-analysis of five studies investigating continuous cortisol output, increased cortisol levels were detected in BPD patients vs. healthy controls[123]. Furthermore, BPD patients' cortisol response to psychosocial challenges was blunted relative to healthy controls and individuals with other personality disorders[123]. To date, it is unclear whether disturbed HPA axis functioning is specifically associated with BPD or may rather be understood as a consequence of trauma exposure common in many psychiatric disorders[124]. However, research evidence is consistent with the allostatic load hypothesis, suggesting that the blunted cortisol response in BPD reflects a compensatory down-regulation consequent to adversity and stress.

Oxytocin has been also implicated in BPD, with particular relevance for interpersonal functioning given its purported role in attachment behavior and social cognition[125]. A recent meta-analysis found decreased oxytocin levels among women with BPD (standardized mean difference, SMD=–0.46, 95% CI: –0.90 to –0.02; N=131, n=4, I^2=64%)[126]. However, the number of studies included was small, heterogeneity was moderate, and there were no significant differences with other personality disorders[126]. Furthermore, the administration of exogenous oxytocin in BPD patients has yielded inconsistent and paradoxical effects[127]. More research is required to determine the role of oxytocin in BPD, in particular whether the observed impairments in the oxytocinergic system reflect a transdiagnostic vulnerability factor associated with early adversity and disturbed parent-infant attachment[125], or psychopathology in general[126].

In terms of neural systems, the most widely held hypothesis proposes a fronto-limbic imbalance in BPD, in which emotion dysregulation is mediated by hyperactivity of limbic structures (e.g., amygdala, hippocampus and anterior cingulate cortex) and abnormal functioning of prefrontal structures[128]. However, to date only tentative conclusions can be drawn on the neurobiology of BPD, as most neuroimaging studies are severely underpowered[129].

The most robust meta-analytic result of neuroimaging studies in BPD is hyperactivity of the amygdala and hippocampal area during emotional processing experiments[130-132], which seems to be accompanied by impairments in habituation of the amygdala to repeated negative stimuli[133-138]. While earlier meta-analyses found a reduction in hippocampal and amygdala volume in BPD[139,140], a more recent and comprehensive meta-analysis found no gray matter alterations[141]. Although the amygdala is assumed to be involved in emotional evaluation and recognition of subjectively dangerous situations, its exclusive role in processing negative emotions has recently been challenged, as studies have shown that amygdala activation contains little information on subjective fear ratings[142], correlates with the experiencing of positive emotions[143], and might rather indicate saliency for faces than threats[144]. Furthermore, despite the common conceptualization of the amygdala as the brain's "fear center", inconsistent meta-analytic evidence has been found for its involvement in processing threats[145,146]. Hence, negative emotional experiencing cannot be confidently inferred from amygdala hyperactivity in BPD[147].

Research on abnormal prefrontal functioning lacks spatial specificity in BPD[147,148], and meta-analyses have yielded conflicting results, with an earlier one finding abnormal functioning in prefrontal areas[131] while the most recent and comprehensive one reported no significant differences to healthy controls[132], although again the marked heterogeneity of BPD may be an important factor explaining inconsistent findings.

Connectivity analyses could test assumptions of reduced prefrontal top-down regulation on limbic areas such as the amygdala. However, only very few studies have investigated connectivity during emotion regulation tasks in BPD[149]. A considerable number of studies have investigated resting-state connectivity in BPD, yielding conflicting results with respect to the fronto-limbic imbalance hypothesis[150-152].

Taken together, to date there is only weak evidence that a fronto-limbic imbalance underlies emotion dysregulation in BPD[147]. Moreover, most neuroimaging findings lack specificity to BPD and might rather relate to transdiagnostic factors of psychopathology[131,153] or to childhood maltreatment[134,147,154-157]. Recent research efforts point to the possible role in BPD of impairments in the temporoparietal junction[158], which is thought to play a crucial role in distinguishing self from other, so that its impairments might underlie the typical self-other

distinction problems (i.e., identity diffusion) observed in BPD patients. Yet, meta-analyses are not yet available and the small number of studies preclude drawing strong conclusions.

In summary, although brain areas and neurotransmitters have been identified as potentially involved in BPD, an integrated and empirically supported neurobiological model of the disorder does presently not exist. Research on the neurobiology of BPD is complicated by several factors, including the high prevalence of comorbidities, the heterogeneity of the condition, the use of medication, as well as substantial differences in experimental designs.

SOCIAL COGNITION AND NEUROCOGNITION

Over the past decade, empirical studies on social cognition have advanced our understanding of interpersonal and emotional dysfunction in BPD. The disorder appears to be characterized by relatively severe impairments in mentalizing, i.e., the capacity to understand the self and others in terms of intentional mental states, as a result of largely affect-driven, externally-cued processing of social information. Results are not always consistent, which may be due to the type of tasks used (e.g., some social cognition tasks show ceiling effects or primarily rely on “cold” social cognition, whilst mentalizing impairments mainly tend to emerge in high-arousal contexts in BPD patients) and the influence of factors involved in the etiology of the condition (e.g., severity of trauma or attachment style).

A recent systematic review[159] of experimental studies of social cognition in BPD based on the Systems for Social Processes approach of the Research Domain Criteria included four meta-analyses, concerning more basic (i.e., emotion recognition accuracy and reaction time) and more complex (i.e., understanding of mental states and ostracism) features of mentalizing with regard to others. Individuals with BPD showed reduced accuracy for recognizing facial emotional expression in others compared to healthy controls, with a significant moderate effect size of g=–0.41 (95% CI: –0.57 to –0.25; n=18, I^2=21%). There was no evidence for differences with respect to reaction time in detecting facial emotions in BPD (g=0.27, 95% CI: –0.04 to 0.59, n=8, I^2=27%). As to the widely held hypothesis of an anger bias in BPD, the evidence of the systematic review was inconsistent, although the number of included studies was very small (n=4). Another meta-analysis found evidence for an attentional bias to negative and personally relevant negative words rather than an attentional bias towards facial stimuli[160].

Strong rejection sensitivity (ostracism) was found in BPD. Following perceived social exclusion, individuals with BPD experienced substantially more negative emotions and reported a greater threat to needs relative to healthy controls, with a large effect size (g=1.13, 95% CI: 0.67-1.59, n=10)[159]. Although there was significant heterogeneity and evidence for publication bias, people with BPD showed greater levels of ostracism compared to individuals

with other mental disorders (e.g., social anxiety disorder, major depressive disorder), with a medium effect size (g=0.67, 95% CI: 0.16-1.18). These findings from experimental studies are consistent with those of other meta-analyses, reporting strong expectancy of social rejection assessed by self-report in BPD compared to normal controls[120,161,162]. However, heterogeneity between studies was again large, and there was evidence for publication bias.

Notably, one meta-analysis found a larger difference in negative affectivity following social inclusion (d=1.00, 95% CI: 0.76-1.25, I^2=78%) than social rejection (d=0.68, 95% CI: 0.57-0.80, I^2=68%) in individuals with BPD compared to non-BPD groups[120]. However, heterogeneity was high and significant. Although these findings await confirmation, disturbed perceptions of both social exclusion and inclusion might be one explanation for the marked instability in close relationships in BPD. Further evidence for this comes from a meta-analysis of 26 studies on romantic attachment in BPD patients[163]. The disorder was significantly correlated with attachment anxiety (r=0.48, I^2=77%), but also with attachment avoidance (r=0.30, I^2=74%)[163]. Heterogeneity was significant. Hence, a combination of both forms of attachment difficulties might underlie BPD, which is consistent with the assumption that the disorder, and its severe cases in particular, is related to a disorganization of the attachment system characterized by strong push-pull cycles in close interpersonal relationships[164,165].

The above-mentioned meta-analysis of experimental studies[159] also found, in BPD patients compared to healthy controls, a significantly poorer understanding of mental states in others, as assessed with Theory of Mind (ToM) tasks[166], with a medium effect size (g=–0.45, 95% CI: –0.75 to –0.16, n=24). However, there was high heterogeneity between studies (I^2=85%). Individuals with BPD also showed greater deficits in inferring others' mental states in comparison to people with other mental disorders, with a medium effect size (g=–0.53, 95% CI: –1.03 to –0.03). Heterogeneity was high (I^2=64%). These findings are largely consistent with those of other meta-analyses of studies using ToM tasks[167,168].

Moreover, in a meta-analytic evaluation[169], significant impairments were found in studies of mentalizing involving ToM tasks in BPD compared to healthy controls (d=0.36, 95% CI: 0.24-0.48, n=31, N=2.737, I^2=50%). Deficits in mentalizing assessed by self-report were more pronounced (d=1.84, 95% CI: 1.64-2.04, n=4, N=595, I^2=0%). These findings are consistent with a meta-analysis finding a strong correlation between deficits in mentalizing with regard to the self, assessed in terms of emotional awareness or alexithymia, in BPD compared to healthy controls (r=0.52, 95% CI: 0.41-0.61, n=15)[170].

Yet, one recent meta-analysis found evidence for a role of excessive mentalizing or hypermentalizing in BPD (r=0.26, 95% CI: 0.12-0.39, n=10), which was, however, comparable to other mental disorders[171]. Although hypermentalizing may be related to psychopathology in general rather than BPD in particular, these findings suggests that BPD is not simply associated with general deficits in mentalizing, but with a specific imbalance which can be

expressed in hypomentalizing as well as hypermentalizing. This interpretation is consistent with research findings suggesting that BPD is associated with a predominance of automatic, affect-driven and largely externally-based mentalizing, with little possibility for more controlled, cognitive and internally-based mentalizing, specifically in high-arousal contexts[172]. However, more longitudinal research is needed, as there is evidence that mentalizing problems and BPD features reciprocally interact over time, and meta-analytic evidence for a specific mentalizing profile in BPD patients is currently lacking.

A meta-analysis of 3,543 participants[173] found that BPD symptomology was associated with less frequent use of adaptive emotion regulation (i.e., cognitive reappraisal, problem solving, and acceptance) and more frequent use of maladaptive emotion regulation strategies (i.e., suppression, rumination and avoidance). The role of ruminations as a dysfunctional emotion regulation strategy in BPD was also confirmed by two recent meta-analyses[174,175]. Furthermore, a meta-analysis found stronger self-report of experienced shame in comparison to healthy controls, with a large effect size of d=1.44 (N=3.543, n=10)[176]. However, there was significant heterogeneity and evidence for publication bias.

Lastly, there is preliminary evidence of negative self-evaluation[159,177], lack of cooperation/trust[178,179], impairments in self-other distinction[180], disturbed interoception[181], or splitting[179] in BPD patients, but meta-analytic evaluations have yet to confirm these hypothesized deficits.

Deficits in neurocognition in BPD were demonstrated in a meta-analysis of 207 effect sizes across cognitive domains, reporting a medium overall effect size for impaired neuropsychological functions in BPD compared to healthy controls (d=–0.48, 95% CI: –0.58 to 0.43, N=9.332)[182]. However, heterogeneity was significant. The strongest impairments were found for decision making (d=–1.41, 95% CI: –0.91 to –1.91), memory (d=–0.57, 95% CI: –0.64 to –0.58), and executive functioning (d=–0.54, 95% CI: –0.64 to –0.43)[198]. These results are in line with other meta-analyses[183,184].

In summary, meta-analyses support a complex pattern of alterations in social cognition and neurocognition in BPD. The most robust findings are impairments in emotion recognition accuracy, an attentional bias towards negative stimuli, marked rejection sensitivity following social exclusion as well as inclusion, imbalances in mentalizing, dysfunctional emotion regulation, and deficits in neurocognition. Limitations are that most meta-analyses showed substantial heterogeneity, and results are often not specific to BPD. Further research is required to develop a more comprehensive understanding of the role of social cognition and neurocognition in BPD.

MANAGEMENT

As a first step of management, BPD patients need to be informed about the diagnosis, expected course, putative risk factors, and treatment options[54]. Informing the patient should prioritize psychotherapy as a first-line treatment, with pharmacotherapy as a possible adjunctive treatment in specific situations. Clear boundaries should be set, response to provocative behavior should be avoided, and a consistent approach should be agreed upon with all involved clinicians, in order to prevent a situation in which some of them are regarded as “bad” and others as “good”. If present, life-threatening behaviors need to be addressed first.

Managing life-threatening behaviors

Life-threatening behaviors (e.g., suicidal, self-mutilating or high-risk behaviors, attacks against others) must be given priority. Verbal interventions include a calm attitude, understanding the crisis from the person´s point of view, empathic open questions, stimulating reflections about solutions. Sedative or antipsychotic medications may be used for the treatment of crisis, but for no longer than one week[185].

For understanding and managing suicidality, the following recommendations can be given[186,187]. The therapist needs to clarify the acute danger of committing suicide (e.g., has the patient already developed a plan on how to commit suicide; has the patient previously made a suicide attempt; is impulse control severely impaired, e.g. by substance misuse; is there a lack of social support system; is the patient trustful with regard to agreements?). It should then be explored whether there is a major depressive disorder requiring pharmacotherapy or inpatient treatment. If this is not the case, clarifying the trigger of the present suicidality is required (e.g., interpersonal loss, shift from all-good to all-bad). Suicide may be experienced by the patient as a solution of a problem (e.g., stopping anxiety, despair, loneliness, emptiness, or anger). Discussing what makes life intolerable may help to move the focus from suicide to life´s wounds. Other solutions may emerge. Focusing on black-and-white images of the self or of others related to the triggering situation may be helpful. Suicidal threats may be used by the patient to force the clinician not to abandon him/her (as others may have done). As a result, the clinician may feel as helpless or angry as the patient, or being tortured. The clinician is recommended not to counteract aggressively – e.g., by trying to get rid of the patient (thus, confirming the patient´s experiences and expectations).

Instead, the clinician may convey that he/she is concerned and trying to help the patient to reduce his/her suicidal pressure, but that ultimately it is the patient´s decision to commit suicide or not. It is recommended to make a contract that commits the patient not to act on

suicidal impulses, but to discuss them in the sessions or to go to emergency psychiatric services if he/she feels that suicidal impulses cannot be controlled.

Evidence-based psychotherapies for BPD include detailed recommendations about how to treat suicidality[187-189].

Pharmacotherapy

Up to 96% of patients with BPD seeking treatment receive at least one psychotropic drug[190]. Polypharmacy is common[191,192]: almost 19% of patients with BPD report taking four or more psychotropic drugs[193]. However, no class of psychoactive medications has consistently proved to be efficacious, and no medication has been approved by the US Food and Drug Administration (FDA) for BPD[194].

Pharmacotherapy is not recommended for the treatment of any core symptom of BPD, but only for addressing discrete and severe comorbid disorders such as severe depression or anxiety or transient psychotic symptoms, and only for the shortest possible time and as a treatment in crisis[22]. It should be noticed, however, that there are only a few RCTs focusing on BPD with distinct comorbidities[16], as most trials excluded patients with comorbid major depressive disorder, bipolar disorder, psychotic disorders or substance-related disorders. Short-term symptoms of depression or anxiety that are part of the BPD emotional instability and can be related to specific triggering situations must not be misinterpreted as reflecting comorbid disorders. For insomnia in BPD, general advice about sleep hygiene without medication prescription is recommended[22]. For severe insomnia, Z-drugs (e.g., zolpidem or eszopiclone) may be prescribed[22]. Due to concerns over dependence, the use of Z-drugs is recommended only for severe insomnia, with the lowest dose possible and for no longer than four weeks[195].

Acute suicidality or psychotic crises may necessitate psychotropic medication, as well as severe agitation or dissociative states, or pronounced difficulties in controlling aggression. At present, no RCTs exist on the use of psychotropic drugs in manifest crises of patients with BPD[194]. Due to the high comorbidity of BPD with addictive disorders[196,197], the use of substances with dependence potential should be avoided as far as possible. Sedative antihistamines (such as promethazine) or low-potency antipsychotics (such as quetiapine) may be preferred. After the acute crisis has subsided, the medication should be discontinued to avoid polypharmacy.

Psychotherapy

Psychotherapy is regarded as the first-line treatment for BPD[22,54,198]. Guidelines do not recommend brief forms of psychotherapy lasting less than three months[22]. However, although a number of specialist treatments – i.e., dialectical behavioral therapy (DBT), mentalization-based therapy (MBT), transference-focused psychotherapy (TFP), and schema therapy (ST) – for BPD have been developed and empirically validated, their implementation in routine clinical practice remains patchy. If evidence-based methods of psychotherapy are not available, experienced mental health professionals may apply psychoeducation or crisis management[26]. Evidence has emerged for generalist models of treating patients with BPD that incorporate features of specialized evidence-based treatments, and can be carried out by experienced clinicians without a training in those treatments[199]. Of note, however, these treatment models, which typically served as comparison conditions in trials of specialized methods of psychotherapy, followed manuals or manual-like guidelines, and therapists received supervision by experts as well[200-202]. Thus, as discussed in more detail below, further research is required to establish whether generalist models are as efficacious as the specialized treatments with respect to all outcomes.

More efforts are needed to decrease the stigma associated with BPD in both the general public and health care workers. It often takes many years before individuals with BPD seek help and, when they do, they are unfortunately often still met with stigma with regard to the nature and treatability of their problems in many health care settings[203,204].

In the following sections, we discuss the various methods of psychotherapy that have proved to be efficacious for BPD in RCTs[17,205]. For family members of BPD patients who suffer from considerable burden, helpful psychoeducational methods have been developed[206].

Dialectical behavior therapy (DBT)

DBT[189,207,208] is a structured outpatient psychotherapy based on cognitive-behavioral principles. This therapy is “dialectical” in the sense that both acceptance and change is regarded as necessary for improvement. It consists of four components: individual therapy, group skills training, telephone coaching, and team consultations of therapists.

Individual therapy is conducted by the patient’s primary therapist. It focuses on six main areas. Parasuicidal behavior is explored in detail and problem-solving behaviors, including short-term distress management techniques, are emphasized. Therapy-interfering behaviors are addressed (e.g., non-adherence, breaking agreements), as well as behaviors that interfere with the quality of life (e.g., substance abuse, high-risk sexual, interpersonal, legal, financial or health-related behavior). Acquired behavioral skills are discussed and applied to patient´s

daily life. Trauma history is addressed when the patient is ready, including remembering the abuse, validation of memories, acknowledging emotions related to abuse, reducing self-blame and stigmatization, addressing denial and intrusive thoughts regarding abuse (e.g., by exposure techniques), and reducing polarization or supporting a dialectical view of the self and the abuser[208]. The therapist consistently reinforces the patient´s self-respect behaviors.

Group skills training focuses on behavioral skill deficits in BPD, including an unstable sense of self, unstable interpersonal relationships, fear of abandonment, impulsivity and emotional lability. Training includes four modules: core mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance. Group meetings take place weekly for two hours. The four modules are worked through in about six months. Modules may be repeated and the skills training group is recommended for at least one year. Patients are assigned homework to reinforce skills. Diary cards are used to document the use of skills and are discussed with the individual therapist.

Core mindfulness skills have been adopted from Eastern meditation practice. To target the BPD patients´ impulsivity and emotion-driven behavior, they are taught to observe and participate fully in the present moment. To target their tendency to idealize and devaluate both themselves and others, they are taught to focus on one thing at a time with a non-judgmental mindset. Doing so also prevents patients from ruminating about past and worrying about future events.

Interpersonal effectiveness skills training teaches patients to ask for what they need, to say “no” or to deal with interpersonal conflicts. Emotion regulation skills include identifying and labelling emotions; identifying obstacles to change of emotions, including parasuicidal behaviors; learning to avoid vulnerable situations; increasing events which lead to positive emotions; learning to tolerate painful emotions. Distress tolerance skills include techniques for self-soothing or distracting as well as transforming intolerable pain into tolerable suffering.

Telephone coaching can be used in times of crises between regular sessions. Patients can learn how to ask for help in an adequate, non-abusive manner. Reinforcement for parasuicidal behaviors is minimized by making an agreement that the patient is expected to call the therapist before enacting a parasuicidal behavior, and patients are not allowed to call the therapist for 24 hours after a parasuicidal behavior act, unless there are life-threatening injuries.

Weekly team consultations of therapists form an integral part of treatment, to monitor treatment fidelity, enhance therapeutic skills, and maintain therapists’ motivation in working with this particular group of patients. Team consultation may promote empathy with the patient and accepting the patient.

Mentalization-based therapy (MBT)

MBT[209] is a structured treatment that combines individual and group psychotherapy. It focuses on addressing suicidality and self-harm, emotional processing, and relational instability in BPD patients, through a consistent focus on improving their capacity for mentalizing and social learning.

BPD is characterized by imbalances in mentalizing, as expressed in high levels of automatic, affect-driven and externally-based mentalizing, and frequent losses of the capacity for balanced mentalizing, particularly within close interpersonal relationships. This is associated with a dominance of experiencing the self and others in non-mentalizing modes, such as: a) the psychic equivalence mode (equating thoughts and feelings with reality), b) the teleological mode (only recognizing observable reality as a determinant of mental states), and c) the pretend mode (characterized by excessive mentalizing severed from reality).

These unmentalized or "alien-self" experiences are assumed to give rise to very intense and often unbearable feelings (e.g., high levels of anger, sadness or rejection), and as a result there is a tendency to externalize these unmentalized feelings through acting-out behaviors (e.g., self-harm, substance abuse), in an attempt to regulate them.

MBT also focuses on improving the capacity for epistemic trust, i.e., the capacity to trust knowledge conveyed by others and to use this knowledge for salutogenetic purposes (i.e., to be able to benefit from positive resources in the social environment).

The therapeutic stance of the MBT therapist has at its core a consistent focus on the patient's subjective reality, rooted in a not-knowing and inquisitive therapeutic stance guided by the following basic principles: a) management of anxiety and arousal is central in MBT, as high levels of arousal easily lead to a loss of mentalizing, whereas low levels of arousal typically result in pretend mode functioning; b) interventions are aimed at restoring more balanced mentalizing, as patients with BPD easily resort to automatic, highly affect-driven and externally-based mentalizing, with little ability for more balanced, controlled mentalizing that integrates cognition and affect, and externally-based and internally-based social information; c) MBT has a strong focus on relational mentalizing, in which the patient and therapist are seen as equal, conversational partners attempting to reconstruct and better understand what is happening in the interpersonal relationships of the patient, and how interpersonal issues are associated with the patient's presenting problems; d) MBT prioritizes process over content; a focus on the recovery of mentalizing implies that the therapist is primarily concerned with the "how" of mental processes, rather than the "what" and "why"; e) to restore a sense of agency and understanding in the patient, contingent and marked responses of empathic emotional validation are another key feature of MBT, which also aims to foster a sense of "we-ness" in

which the patient and therapist jointly try to understand what is happening with the patient in the session and in daily life.

MBT uses a spectrum of interventions to restore mentalizing and epistemic trust. These include: supportive interventions (empathic and normalizing interventions that primarily serve to regulate anxiety and arousal, and foster epistemic trust by restoring a sense of agency through experiences of marked mirroring); interventions aimed at clarification and elaboration of subjective experiences; interventions aimed at restoring basic mentalizing (e.g., stop-and rewind, stop-stand-and-explore, stop and stand, and challenge); interventions aimed at mentalizing the therapeutic relationship; interventions aimed at translating and generalizing knowledge acquired within the therapeutic process to interpersonal relationships outside of the therapeutic context.

The intensive phase of MBT for BPD usually lasts 9-12 months, and is followed by a less intensive treatment phase lasting up to 18 months. Two types of MBT for BPD have been developed and empirically validated: intensive outpatient MBT and day-hospitalization-based MBT for adults[210].

MBT includes an initial phase of treatment, a treatment phase, and a final or ending phase, each with their specific goals and strategies that are directly rooted in the evolving understanding of the condition.

The initial phase involves: psychoeducation provided through an MBT introductory group course; case formulation developed collaboratively with the patient; a focus on developing a treatment alliance based on an understanding of the patient's attachment history; safety planning; formulation of a mentalizing profile, i.e., the identification of specific imbalances in mentalizing, including triggers of mentalizing problems.

The treatment phase distinguishes between general and specific strategies. General strategies include: stabilization of risky behaviors; supportive, empathic validation to regulate anxiety/arousal and to enable the (re)activation of mentalizing; the use of elaboration and clarification to foster basic mentalizing, particularly of highly affective states; a strong focus on interpersonal relationships and events to enable an exploration of alternative perspectives (i.e., relational mentalizing); a focus on repairing alliance ruptures. Specific strategies include: management of impulsivity by mentalizing events that trigger impulsive behavior; activation of the attachment system in both group and individual therapy, allowing for the development of basic mentalizing; linking experiences in therapy to daily life, with a focus on social exclusion/inclusion and rejection; increasing mentalizing capacity when under stress; recovering mentalizing capacity when a loss of mentalizing occurs; mentalizing traumatic experiences when indicated.

The final phase focuses primarily on the following issues: review of the therapy with a focus on the experience of ending for both patient and therapist; a focus on issues associated

with ending that trigger BPD-specific concerns (e.g., fears of abandonment or rejection); generalization of stable mentalizing and learned social understanding; considering how to continue the therapeutic process after ending.

Transference-focused psychotherapy (TFP)

TFP represents a specific extension of psychoanalytic therapy for treatment of individuals with personality disorders[187,211]. Within the framework of psychoanalytic object relations theory, unconscious conflicts activated in the transference are seen as expressions of conflictual, affectively invested internalized object relations. Unconscious conflicts are represented as dyadic units composed of a representation of the self interacting with a representation of a significant other, framed by a particular affect state. These dyadic structures come to be enacted, or lived, by the patient in his/her interactions with the therapist.

In TFP, the therapist's focus is on exploration and interpretation of patient's behaviors in the treatment that reflect the activation of specific transferences, associated internalized object relations, and the conflicts they imply. The activation of dominant internalized object relations is interpreted both in their defensive function, that is, as a protection against the opposite relationships that they attempt to avoid, and in their "impulsive", or expressive, function as a reflection of deeper primitive, affectively motivated behaviors pushing for actualization.

Within the setting of a borderline structure, unconscious conflict takes the form of a fundamental conflict, or split, between positively charged, idealized sectors of experience and negatively charged, paranoid sectors. Each internalized object relation can, at different moments, serve impulsive or defensive functions. These idealized and persecutory internalized object relations are activated and then enacted in the transference.

The main psychoanalytic techniques employed in TFP are interpretation, transference analysis, technical neutrality, and countertransference utilization. Affective dominance refers to material that, in the perception of the therapist, is most strongly present and affectively salient in the patient's verbal and, in particular, nonverbal communications at any moment of the session[211]. Affective dominance signifies the major area of conflict currently active in the therapy session, and thus, the material that becomes the most suitable and productive focus of therapeutic intervention.

Interpretation is the establishment of hypotheses involving unconscious conflicts. They derive from the combined analysis of the content of the patient's communications, his/her nonverbal behavior, and the dominant countertransference. Interpretations focus predominantly, but not exclusively, on the transference. Affect dominance determines the focus of interpretation.

Transference analysis represents the main therapeutic instrument. It refers to the analysis of unconscious conflicts activated in the dyadic relations between patient and therapist that replicate the conflictual internalized relation between self and others ("objects") from the past, modified by present context.

Technical neutrality is the observing attitude of the therapist, who keeps a concerned objectivity in his/her interpretive interventions, and maintains himself/herself outside the patient's activated internal conflicts.

Countertransference utilization refers to the therapist's ongoing observation of his/her emotional reactions to the patient, utilizing them to more sharply understand the emotional conflicts activated in the transference, and to interpret the transference in this light without direct communication to the patient of his/her own countertransference.

An early stage of TFP involves clarification of self and object representation of the activated internalized object relationship, their predominant affective implication, the distribution of self and object roles to patient and therapist, and their potential interchange. A more advanced stage involves the patient's emotional learning that he/she is, at a deeper level of unconscious experience, identified with both self and other in both idealized and persecutory internalized relationships, with decrease in the splitting of idealized and persecutory states of mind. In this advanced stage of treatment, the patient learns and tolerates the reasons for his/her splitting of polar opposite love- and hatred-dominated relationships, and integrates the concepts of his/her self and the respective concepts of significant other. Normalization of personal identity is achieved, and a realistic capacity for relationships with significant others develops. Modulation of affect states, increased affect control, and increased capacity for non-conflictual investment in work and profession, love and sex, and gratifying social relations may evolve.

Schema therapy (ST)

ST[212,213] draws on cognitive-behavioral, psychodynamic, attachment and emotion-focused approaches. It focuses on four dysfunctional life schemas characteristic of BPD: the abandoned/abused child; the angry/impulsive child; the detached protector; and the punitive parent. In addition, some presence of the healthy adult is assumed. The development of the healthy adult is one of the goals of ST, first embodied in the therapist and internalized by the patient during the therapeutic process.

The abandoned/abused child mode is characterized by feeling isolated, lost, unloved, and frantic, obsessive with finding a parental figure who will take care of him/her. This mode is regarded as a core state of being for the BPD patient. ST recommends the therapist to envision BPD patients as functioning as a young child.

In the angry/impulsive child mode, the patient expresses rage about mistreatment and unmet emotional needs. This mode is activated in situations of real or perceived abandonment, deprivation or mistreatment. Tragically, this mode makes it even less likely that the patient´s needs are met. In addition, the punitive parent may be activated and punish the angry child. Outburst of rage may be followed by cutting or other forms of self-punishment.

In the detached protector mode, the patient avoids investing emotionally in people or activities; he/she may feel numb or empty, withdraw socially, excessively fantasize or seek stimulation or distraction. This mode interferes with therapeutic progress.

The punitive parent mode represents the patient´s identification with an abusive parental figure. By internalizing this figure, the inner abuse continues. In this mode, patients feel “evil” or “dirty” and may engage in parasuicidal behaviors. The therapist helps the patient to recognize this part of himself/herself, and gives it a descriptive name (e.g., “your punishing father”). Thus, the patient may achieve some distance from this part of himself/herself and may fight back.

The healthy adult mode is widely missing in BPD patients. This mode includes three functions: caring for the vulnerable child, setting limits to the angry and impulsive child, and moderating dysfunctional coping or parent modes. The therapist takes on the role of the healthy adult, allowing the patient to internalize him/her as a healthy parent. This is why schema therapy takes at least two years.

Four processes are regarded as core mechanisms of change in ST: “limited reparenting”, emotion-focused work, cognitive restructuring and education, and behavioral pattern breaking.

“Limited reparenting” is regarded as the most important change mechanism[235]. The therapist tries to compensate for the deficits in parenting that patients with BPD experienced during their childhood, while maintaining professional boundaries. The therapists conduct themselves in a warm and sympathetic way, providing safety, stability and acceptance. They may disclose themselves if they believe it will be beneficial to patients. Therapists provide the patients with their home phone number for use in crises, give extra session time, and have phone sessions and email exchange as needed. Patients who have problems related to separation and abandonment may be provided with check-in calls, flashcards or other transitional objects.

ST uses emotion-focused techniques, including imagery work, dialogues and letter writing. Patients are asked to bring up images and memories of difficult situations they experienced in the past. The therapist can enter into the childhood scenes, and protect and support the abandoned/abused child, functioning as the healthy adult. After the therapist has done so, the patient takes on the healthy adult role, by entering into the image and protecting the child mode. Traumatic memories are worked through more slowly and only with the patient´s permission. ST uses dialogues between the therapist and the patient to nurture the

abandoned child, to protect the misused child, and to fight the punitive parent. These dialogues can be done in imagery or through Gestalt chair work. The latter helps to locate the punitive voices outside the patient. By role-playing, the therapist helps the patient to strengthen his/her healthy adult mode. As a third technique, therapists encourage the patients to write a letter to those who have mistreated them in which they express their feelings and needs. The letters are not intended to be sent.

Cognitive techniques used in ST include education and cognitive restructuring. Patients are taught about normal needs and emotions. Thus, the therapist validates the patient's rights to have these needs met, while also teaching the patient to negotiate the desires in a reciprocal way, respecting others. This applies to emotions and specifically to anger. However, patients are taught to adequately express their emotions, not using a "black-and-white" thinking. In addition, patients are taught not to blaming themselves for setbacks during therapy.

Finally, the patients are guided to generalize to the life outside what they have learnt during sessions. For this purpose, traditional behavioral techniques may be used, such as relaxation training, assertiveness training, anger management, self-control strategies, or graduate exposure. Flashcards or dialogues may also be used. Therapists and patients identify the most serious behaviors as targets for change. *In vivo* exercises maybe used to disconfirm distorted expectations, for example of others acting as punitive parents. In sessions, role-playing and behavioral rehearsals can be used.

ST includes three phases: bonding and emotional regulation, schema mode change, and development of autonomy.

The bonding and emotional regulation phase aims at establishing a relationship with the therapist which is an antidote to the abusive or punitive one that the patient experienced as a child. Thus, a "holding environment"[214], a safe place for the patient, is developed. After that, childhood and adolescent experiences are explored. During these explorations, the patient is kept in the abandoned/abused child mode, in order to allow him/her to make a new relational experience. The patient begins to internalize the experience with the therapist as a healthy parent. Anger may be expressed, but in a controlled way, in order to avoid that it becomes counterproductive. All the patient´s needs and longings that have been unmet are activated, allowing the therapist to engage in a limited reparenting behavior.

While working on changing schema modes, the therapist maintains a relationship with the abandoned/abused child. The therapist praises the patient and calls him/her "generous, loving, intelligent, sensitive, creative, empathic, passionate, or loyal"[215, p.335], reparenting the patient. The punitive parent mode may be triggered, and the patient may reject these affirmations.

If the patient is flooded with anxiety and painful emotions, the detached protector mode could be triggered. This is a survival mechanism developed by the patient, but can interfere

with the therapeutic process. When it emerges in the therapeutic process, this mode is identified, and its benefits and costs are discussed. The situation can be addressed by adjusting the intensity and frequency of affective work carefully. Furthermore, the use of medication can be considered to reduce the intensity of affects.

As a first step in treating the punitive parent, the critical voice is labeled as a mode to reduce identification and give the patient some distance from the punitive parent mode. The therapist asks the patient to verbalize this voice, and then they directly challenge what the punitive parent is saying.

As the first step in treating the angry/impulsive child, the therapist asks the patient to express the anger as fully as possible. A neutral, fact-finding tone is recommended rather than an empathic reaction, which may diffuse angry responses. The goal is to clarify how the therapist hurt the patient and the schema that was activated. As a next step, the therapist responds emphatically, acknowledging the pain that his/her behavior may have caused. Doing so, the therapist is trying to move the patient from the angry abandoned/abusive child mode to the actual experiences of deprivation or misuse. After that, the therapist should acknowledge those aspect of the situation that the patient perceived. Then the therapist goes on to point out those aspect of the anger that were schema-driven and distortions of the actual situation. Finally, the therapist helps the patient to find out how he/she could have expressed his/her anger more appropriately, in an assertive manner.

In the final stage of treatment, the therapist shifts the focus from reparenting within the therapeutic relationship to developing independence outside sessions. The focus is on interpersonal relationships and on the sense of identity. Relationships are explored to see how the various modes are interacting. With regard to developing a sense of identity, the therapist and the patient work together to explore what resonates with the patient.

Efficacy of psychotherapy in BPD

A meta-analysis aggregating the effect sizes achieved by psychotherapy in comparison to treatment-as-usual (TAU) yielded an overall SMD of –0.52 (95% CI: –0.70 to –0.33, n=22, N=1,244), which corresponds to a clinically relevant reduction in BPD symptom severity[17]. Thus, psychotherapy of BPD is among the few treatments for common mental disorders achieving medium or large effect sizes in comparison to TAU[217]. For self-harm (SMD=−0.32, 95% CI: −0.49 to −0.14, n=13, N=616), suicide-related outcomes (SMD=−0.34, 95% CI: −0.57 to −0.11, n=13, N=666) and psychosocial functioning (SMD=−0.45, 95% CI: −0.68 to −0.22, n=22, N=1,314), psychotherapy was statistically significantly superior to TAU as well, but with low-quality evidence and effect sizes below clinical relevance[17]. There is no evidence that psychotherapy is associated with a higher rate of serious adverse events compared with TAU

(relative ratio, RR=0.86, 95% CI: 0.14-5.09; n=4, N=571, p=0.86)[17]. Generic methods of psychotherapy (e.g., general psychiatric management, structured clinical management, client-centered therapy, supervised team management) were found to be inferior to specialized psychotherapies such as DBT, MBT or schema therapy[216].

For the main types of evidence-based psychotherapy, the effect sizes achieved in comparison with TAU in BPD patients do not differ significantly[17]. This applies to symptom severity (X^2=6.88, df=4, p=0.14, I^2=41.8%) and psychosocial functioning (X^2=0.67, df=3, p=0.88, I^2=0%). The most recent network meta-analysis confirmed the lack of significant differences between specialized psychotherapies in reducing BPD symptom severity, with only two exceptions: ST was superior to DBT (SMD=0.72, 95% CI: 0.03-1.41) and cognitive-behavior therapy (CBT) (SMD=0.90, 95% CI: 0.12-1.69)[216]. However, these results should be interpreted with caution, as some of these differences were based on only a few trials[216]. Between DBT, TFP and MBT, no statistically significant differences were found in reducing BPD symptom severity, with small between-group effect sizes[216]. For suicidal behavior, no differences in efficacy were found between specialized psychotherapies[216].

With regard to different types of psychotherapy, most studies are available for DBT[17]. DBT achieved a medium clinically significant effect size compared to TAU for BPD severity (SMD= −0.60, 95% CI: −1.05 to −0.14, n=3, N=149, I^2=42%). It achieved small and clinically not significant effect sizes for self-harm (SMD=−0.28, 95% CI: −0.48 to −0.07, n=7, N=376, I^2=0%) and psychosocial functioning (SMD=−0.36, 95% CI: −0-69 to −0.03, n=6, N=225, I^2=31%)[17]. In these studies, DBT had a duration of 2.5 to 12 months[17]. A recent RCT found DBT of 6-month duration to be non-inferior to 12-month DBT with regard to self-harm (primary outcome), as well as for general psychopathology and coping skills, at 24-month follow-up[218]. There were no differences in dropout rates between treatments. A briefer form of DBT may reduce barriers to treatment access.

For psychodynamic therapies in BPD, ten RCTs presently exist (five for MBT[25,219-222], three for TFP[200,223,224], and four for other techniques, such as dynamic deconstructive therapy[201,225-227]). In these RCTs, psychodynamic therapy was compared to TAU or to other active treatments. It had a duration of 5-24 months, except for one study, in which it had a 3-year duration[224]. A meta-analysis comparing psychodynamic therapy with TAU found medium effect sizes in favor of the former for core BPD symptoms (g=−0.65, 95% CI: −0.99 to −0.32, n=4, N=213, I^2=15.4%), suicide-related outcomes (g=−0.67, 95% CI: −1.13 to −0.20, n=5, N=354, $I^{2=}$40.1%) and psychosocial functioning (g=−0.57, 95% CI: −1.04 to −0.10, n=5, N=392, I^2=60.1%), with low or moderate heterogeneity[228]. Effect sizes were clinically significant, except for functioning. This meta-analysis did not find significant differences in efficacy between psychodynamic therapies and other active psychotherapies, including DBT

and ST (g=0.05, 95% CI: −0.52 to 0.62, n=4, N=394, I^2=64%). Excluding one outlier[224] reduced heterogeneity (g=−0.08, 95% CI: −0.55 to 0.39, n=3, N=308, I^2=19%).

Due to the limited number of RCTs, meta-analyses specifically focusing on between-group effect sizes with ST are not available[229]. The most recent meta-analysis on psychotherapy of BPD included only three RCTs of ST[216]. As noted above, in reducing BPD symptoms, ST was found to be superior to DBT and CBT, but not MBT or TFP[216]. However, these results should be interpreted with caution, due to the limited number of RCTs on which they were based. With regard to individual studies, a large RCT (N=495) found combined individual and group ST to be superior to both TAU (d=1.14, 95% CI: 0.57-1.71, p<0.001) and predominantly group ST (d=0.84, 95% CI: 0.09-1.59, p=0.03) in reducing severity of BPD symptoms, with large effect sizes[230]. Predominantly group ST was not superior to TAU (d=0.30, 95% CI: −0.29 to 0.89, p=0.32)[230]. Both treatments were delivered over a period of two years, with combined individual and group ST encompassing 124 sessions and predominantly group ST 122-135 sessions. Another RCT found ST to be superior to TFP[224]. These results, however, have been critically discussed with regard to the question whether TFP was adequately implemented[231,232]. In a pilot study, brief ST (20 sessions) was not found to be superior to TAU[233].

Research on psychotherapy for BPD has several limitations. The number of studies is still relatively limited and the quality of evidence is moderate[17]. In many studies, risk of bias was high[17,205], possibly inflating effect sizes[205]. Dropout rates are high[234] and differ considerably between studies[235]. Furthermore, treatment effects are found to be unstable at follow-ups[17, 205]. Regarding publication bias affecting outcomes, results are heterogeneous[17,205] . Moreover, rates of non-response vary considerably between studies and treatments, which may also in part be due to different definitions of response used[23]. For psychotherapy alone, non-response was on average 48.8%[23] when the definition of non-response included both non-remission (no longer meeting criteria for BPD) and non-response (no reliable change or reduction below a cut-off, e.g. 50% or 25% reduction of BPD symptoms)[23]. The mean rates of non-response were similar for DBT (47%), ST (42%) and psychodynamic therapies (42%)[23]. For TAU, it was 64%[23]. Thus, the proportion of non-responders is considerable, and psychotherapy needs to be further improved.

There is limited evidence that psychotherapy for BPD is also effective under real-world conditions. For instance, more than a dozen of naturalistic studies have found that MBT is associated with clinically significant improvements in BPD symptoms, general psychiatric symptoms, suicidality and self-harm[236]. For TFP, a naturalistic study reported a remission rate of 58% as well as improvements in BPD symptom severity and functioning (N=19)[237]. An inpatient treatment which combined TFP with modules of DBT skills training was reported to achieve significant improvements in identity diffusion and symptoms (N=32)[238]. In another

naturalistic study, both DBT (N=25) and dynamic deconstructive psychotherapy (N=27) achieved significant reductions in symptoms of BPD, depression, and disability by 12 months of treatment[239]. This was not true for a non-randomized TAU condition (N=16). A naturalistic study found no differences in outcomes between MBT and DBT after 12 months of treatment[240].

Psychotherapy in adolescents

A recent Cochrane review concluded that adolescent patients with BPD do benefit from psychotherapy, but to a lesser extent than adult patients[17]. Disorder-specific treatments such DBT, TFP, MBT have been adapted for adolescents. Studies often include young patients with subthreshold BPD pathology and use naturalistic or even hybrid study designs with randomized assignment in a naturalistic setting. In these studies, high attrition rates are quite common.

Some reasonably robust studies on psychotherapeutic interventions for adolescents with BPD are, however, available. A quasi-experimental investigation compared DBT (N=29) with TAU (N=82) among suicidal outpatient adolescents who also met the DSM-IV BPD criteria[241]. The DBT group had significantly fewer hospital admissions, but no differences were found in suicide attempts. In a Norwegian randomized control trial of 77 adolescents with recent and repetitive self-harm, DBT (N=39) was compared to enhanced usual care (EUC) (N=38)[242]. Participants met at least two DSM-IV criteria for BPD plus the self-destructive criterion, or at least one DSM-IV BPD criterion plus at least two below-threshold criteria. The authors found DBT to be superior to EUC. The former remained superior in reducing self-harm but not for other outcomes (including BPD symptoms) over a follow-up period of 52 weeks[243]. For DBT, a recent meta-analysis including five RCTs and three controlled clinical trials reported a medium effect size for DBT compared to control groups (g=–0.44, 95% CI: – 0.81 to –0.07, n=7, I^2=80%) for reducing self-harm, and a small effect size (g=–0.31, 95% CI: –0.52 to –0.09, n=6, I^2=44%) for suicidal ideation[244].

The adolescent identity treatment (AIT)[245] integrates behavioral elements with TFP. In a naturalistic study, 60 adolescents diagnosed with BPD or subthreshold BPD pathology received either DBT or AIT[246]. Both treatments significantly improved BPD symptoms, depression, and psychosocial and personality functioning. Overall, AIT was found to be not inferior to DBT and even more efficient in reducing BPD symptoms.

TFP was examined in a naturalistic day clinic setting[247]. One hundred twenty adolescents with personality pathologies (BPD as a majority) received either TFP or TAU. Contrary to the TAU group, patients treated with TFP showed a significant reduction in self-harm.

MBT was compared with TAU in 80 adolescents exhibiting self-harm behavior and comorbid depression, of whom 73% met the criteria for BPD. MBT was more effective than TAU in reducing self-harm and depression[248]. A reduction in BPD traits after the end of MBT was also reported.

The efficacy of the psychoanalytic-interactional method (PiM) was examined in an inpatient setting[249]. This RCT included 66 adolescents with the primary diagnosis of a mixed disorder of social behavior and emotions (F92 according to the ICD-10) compared with a mixed control group (waiting list and TAU). The ICD-10 F92 diagnosis was used as an indicator of BPD features. The sample comprised severely impaired patients with high rates of comorbidity. Patients in the treatment group had a significantly higher rate of remission (OR=26.41, $p<0.001$) and a significantly greater improvement in behavioral problems and strengths. At six-month follow-up, treatment effects were stable. A subsequent analysis examined 28 adolescents fulfilling the DSM-IV diagnostic criteria for BPD who had started inpatient treatment[250]. At the end of treatment, 39.3% of these patients no longer met the DSM-IV criteria for BPD and were therefore classified as remitted.

A recent systematic review and meta-analysis of psychotherapy for adolescents with BPD or BPD features included ten RCTs which showed a high risk of bias and very low quality[251]. Only a few trials demonstrated superiority of the intervention over the control condition. Thus, the review concluded that it is difficult to derive any conclusions about the efficacy of psychotherapy in BPD adolescents, and further high-quality studies with larger samples are required[212].

CONTROVERSIES

Diagnostic issues

A first debated issue is whether BPD should be regarded as a separate disorder ("there has been a notable absence of sound scientific evidence that it is a unified syndrome"[19, p.394]). In fact, the BPD criteria were found to show a high loading only on a general personality pathology factor, whereas other personality disorders showed loadings either on both the general and a specific factor or largely only on a specific factor[62].

Furthermore, BPD has been critiqued for missing stability in studies with long-term follow-ups, with some typical symptoms of BPD being associated with a higher stability than others[252-254]. However, the percentage of BPD patients who retain their personality disorder diagnosis in a 2-year follow-up (44%) is not substantially different from that of patients with obsessive-compulsive (40%), schizotypal (39%) and avoidant (50%) personality disorder[252].

Furthermore, the decrease in proportion of criteria met across time does not differ significantly between the various personality disorders[252].

Some authors have argued that the high overlap with the general factor of personality pathology, and the intrinsic experience of self and interpersonal dysfunction, suggest that the BPD criteria reflect general impairments in personality functioning rather than a distinct personality disorder[60,62]. This notion is consistent with Kernberg´s concept of borderline personality organization[3,255], and is compatible with the DSM-5 and ICD-11 dimensional model of personality disorders[35,60].

Another critical issue is the number of criteria that have to be fulfilled in order to be able to assign a diagnosis of BPD. A patient with intense feelings of emptiness, highly unstable interpersonal relationships, severe identity disturbance, and self-harm, for example, may not fulfill the diagnostic criteria due to missing a fifth criterion, despite severe impairments in functioning. Furthermore, with five of nine criteria required for the diagnosis, there are 256 possible ways to meet the DSM-5 criteria of BPD[39], suggesting considerable heterogeneity between BPD patients. This heterogeneity represents a challenge for research on etiology and treatment[38].

Another critical argument refers to the fact that clinical features typical of BPD are well represented within the ICD-11 system, with its two-step approach of firstly assigning a core personality disorder diagnosis (mild, moderate, severe), based – among others – on self and interpersonal functioning, and secondly the specification via trait dimensions, most notably negative affectivity (e.g., emotional lability, anxiety), disinhibition (e.g., reckless behavior, impulsivity), and dissociality (e.g., hostility, aggression)[21,35]. On the other hand, proponents of a categorical model emphasize that BPD is a clinically useful diagnosis and one of the best researched ones, especially with regard to the development and testing of psychotherapeutic treatments[254]. Moreover, it is argued that some of the most important concepts related to our understanding of mental disorders and psychopathology – such as mentalization and its neurobiology, trauma, and relationship dynamics – have been stimulated by research on BPD[256-258].

The final decision to include a “borderline specifier” in the ICD-11 was preceded by intense discussion and controversy[19]. This decision has been seen as a political and practical compromise in order to strengthen the acceptance of the new system[19,21]. Considering that there is a lot of ongoing research and funding related to BPD, and that academic careers have been built upon its research and treatment, abolishing it has been likely seen as too far reaching. Additionally, the new system, including both options, will likely lead to interesting research options (e.g., studying milder forms of personality disorder in combination with typical borderline domains, or comparing the old versus the new model)[21].

Treatment issues

Some meta-analyses suggest limited differences in efficacy between specialized and non-specialized treatments for BPD, particularly at long-term follow-up and when controlling for publication bias[205]. This has led some authors and guidelines to conclude that non-specialist treatments may be as effective as specialist treatments[25]. Of course, non-specialist treatments may have the advantage of being more cost-effective and thus have the potential to greatly increase access to effective psychotherapy for patients with BPD. Yet, as noted, several meta-analyses have instead found clinically significant differences between specialist and non-specialist treatments for BPD[17,216]. Moreover, non-specialist treatments evaluated in clinical trials are typically manualized, with clinicians being trained and supervised in the approach, and thus may often not be truly "non-specialized" treatments.

Because of their problems with self-coherence and trust in others, patients with BPD might be particularly sensitive and responsive to treatments that offer coherence, consistency and continuity[24]. This assumption is also borne out by studies suggesting that the effect sizes of specialist treatments for BPD considerable decrease when offered under suboptimal conditions[259]. Moreover, some studies suggest that specialist treatments may be particularly more effective compared to non-specialist ones in more complex patients[260,261]. Finally, the effectiveness of "non-specialist" treatments evaluated in RCTs has dramatically increased over time, suggesting that they have increasingly incorporated effective principles of "specialist" treatments or, at the very least, have discontinued the use of iatrogenic practices such as unfocused exploratory and supportive interventions[24].

Although more research concerning the (cost-)effectiveness of specialist and non-specialist treatments, and their implementation in routine clinical care, is needed to investigate the above assumptions, the good news is that there is growing convergence among different treatment approaches as regards effective and possible iatrogenic practices in patients with BPD.

CONCLUSIONS

BPD is a common mental disorder, associated with considerable functional impairment, intensive treatment utilization, and high societal costs. The construct of BPD is internally consistent and more homogeneous than often assumed[262]. However, it is still controversial whether BPD is better represented by a categorical or dimensional approach[19]. Future research is required to clarify this issue. This is also true for the elucidation of the risk factors,

the neurobiological underpinnings, and the role of social cognition and neurocognition in the disorder.

With regard to the treatment of BPD, pharmacotherapy is presently only recommended for severe and discrete comorbid mental disorders and for the short-term treatment of crises. Psychotherapy has proved to be efficacious in BPD[17] and is recommended as first-line treatment[22]. With regard to the different types of psychotherapy, there is presently no reliable evidence that one method is superior to others[17,216]. Some differences in efficacy that were recently reported are based on a few trials[216]. As a limitation, rates of non-response and relapse are relatively large[23]. Thus, psychotherapy needs to be further improved.

Future studies of psychotherapy in BPD are recommended to focus on patients at risk of non-response and on improving long-term effects, as well as on reducing self-harm behavior and suicidal ideation[263]. Taking the high dropout rate into account[234], another focus should be on patients prematurely terminating treatments. By studying dropouts, researchers can learn which aspects of a treatment are experienced by patients as not beneficial or even harmful, and in which way treatments may be improved. Thus, patients who drop out of a treatment can provide important information[264].

As another limitation, the quality of psychotherapy studies was found to be modest[17,216]. Further high-quality studies are required, for both adults and adolescents. Taking the shift from categorical to dimensional concepts into account[20], research on psychotherapy of BPD (and of personality disorders in general) needs to take dimensional outcome measures into account (e.g., Level of Personality Functioning Scale[72]). Treatment research on dimensionally defined (severe) personality disorders is required[265].

In addition, high-quality head-to-head comparisons of the major forms of psychotherapy with a sufficient statistical power, adequate treatment implementation, and control of bias and researcher allegiance are needed. Such trials may also examine presumed mechanisms of change. For these head-to-head comparisons, proponents of each approach need to be included on an equal basis (adversarial collaboration)[266]. Funding organizations are encouraged to support these comparative trials, since large samples may be required to detect small but clinically significant differences, implying considerable study costs. As the differences in efficacy between the major psychotherapeutic approaches do not seem to be substantial at the group level[17,216], identifying what works for whom seems to be a promising strategy. Individual participant data meta-analysis may be helpful in this regard[216].

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Table 1 DSM-5 criteria for borderline personality disorder[27]

A pervasive pattern of instability of interpersonal relationships, self-image and affects, and marked impulsivity, beginning by early adulthood and present in a variety of contexts, as indicated by five (or more) of the following:

1. Frantic efforts to avoid real or imagined abandonment.
2. A pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluation.
3. Identity disturbance: markedly and persistently unstable self-image or sense of self.
4. Impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating).
5. Recurrent suicidal behavior, gestures or threats, or self-mutilating behavior.
6. Affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, irritability or anxiety usually lasting a few hours and only rarely more than a few days).
7. Chronic feelings of emptiness.
8. Inappropriate, intense anger or difficulty in controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights).
9. Transient, stress-related paranoid ideation or severe dissociative symptoms.

Table 2 Proposed criteria for borderline personality disorder in the alternative DSM-5 model for personality disorders[27]

A. Moderate or greater impairment in personality functioning, manifested by characteristic difficulties in two or more of the following four areas:

1. Identity: Markedly impoverished, poorly developed, or unstable self-image, often associated with excessive self-criticism, chronic feelings of emptiness; dissociative states under stress.
2. Self-direction: Instability in goals, aspirations, values or career plans.
3. Empathy: Compromised ability to recognize the feelings and needs of others associated with interpersonal hypersensitivity (i.e., prone to feel slighted or insulted); perceptions of others selectively biased toward negative attributes or vulnerabilities.
4. Intimacy: Intense, unstable and conflicted close relationships, marked by mistrust, neediness and anxious preoccupation with real or imagined abandonment; close relationships often viewed in extremes of idealization and devaluation, and alternating between overinvolvement and withdrawal.

B. Four or more of the following seven pathological personality traits, at least one of which must be 5, 6 or 7:

1. Emotional lability: Unstable emotional experiences and frequent mood changes; emotions that are easily aroused, intense and/or out of proportion to events and circumstances.
2. Anxiousness: Intense feelings of nervousness, tenseness or panic, often in reaction to interpersonal stresses; worry about the negative effects of past unpleasant experiences and future negative possibilities; feeling fearful, apprehensive or threatened by uncertainty; fears of falling apart or losing control.
3. Separation insecurity: Fears of rejection by – and/or separation from – significant others, associated with fears of excessive dependency and complete loss of autonomy.
4. Depressivity: Frequent feelings of being down, miserable and/or hopeless; difficulty recovering from such moods; pessimism about the future; pervasive shame; feelings of inferior self-worth; thoughts of suicide and suicidal behavior.
5. Impulsivity: Acting on the spur of the moment in response to immediate stimuli; acting on a momentary basis without a plan or consideration of outcomes; difficulty establishing or following plans; a sense of urgency and self-harming behavior under emotional distress.
6. Risk taking: Engagement in dangerous, risky, and potentially self-damaging activities, unnecessarily and without regard to consequences; lack of concern for one's limitations and denial of the reality of personal danger.
7. Hostility: Persistent or frequent angry feelings; anger or irritability in response to minor slights and insults.

Table 3 Requirements for the borderline pattern specifier in the ICD-11[34]

The borderline pattern specifier may be applied to individuals whose pattern of personality disturbance is characterized by a pervasive pattern of instability of interpersonal relationships, self-image and affects, and marked impulsivity, as indicated by five (or more) of the following:

- Frantic efforts to avoid real or imagined abandonment.
- A pattern of unstable and intense interpersonal relationships, which may be characterized by vacillations between idealization and devaluation, typically associated with both strong desire for and fear of closeness and intimacy.
- Identity disturbance, manifested in markedly and persistently unstable self-image or sense of self.
- A tendency to act rashly in states of high negative affect, leading to potentially self-damaging behaviors (e.g., risky sexual behavior, reckless driving, excessive alcohol or substance use, binge eating).
- Recurrent episodes of self-harm (e.g., suicide attempts or gestures, self-mutilation).
- Emotional instability due to marked reactivity of mood. Fluctuations of mood may be triggered either internally (e.g., by one's own thoughts) or by external events. As a consequence, the individual experiences intense dysphoric mood states, which typically last for a few hours but may last for up to several days.
- Chronic feelings of emptiness.
- Inappropriate intense anger or difficulty controlling anger manifested in frequent displays of temper (e.g., yelling or screaming, throwing or breaking things, getting into physical fights).
- Transient dissociative symptoms or psychotic-like features (e.g., brief hallucinations, paranoia) in situations of high affective arousal.

Other manifestations, not all of which may be present in a given individual at a given time, include the following:

- A view of the self as inadequate, bad, guilty, disgusting and contemptible.
- An experience of the self as profoundly different and isolated from other people; a painful sense of alienation and pervasive loneliness.
- Proneness to rejection hypersensitivity; problems in establishing and maintaining consistent and appropriate levels of trust in interpersonal relationships; frequent misinterpretation of social signals.

Table 4 Major diagnostic interviews, self-report questionnaires and projective techniques available for borderline personality disorder (BPD)

Tool	Scope	Description
Structured Clinical Interview for DSM-5 Personality Disorders **(**SCID-5-PD)[65]	BPD diagnosis according to DSM-5	Semi-structured interview including an optional screening questionnaire (SCID-5-SPQ); assessment of all personality disorders along DSM-5 criteria
Structured Clinical Interview for the DSM-5 Alternative Model for Personality Disorders (SCID-5-AMPD)[66]	BPD diagnosis according to DSM-5 Alternative Model for Personality Disorders (AMPD)	Semi-structured interview consisting of three modules: Module I: Dimensional assessment of the four domains of functioning (identity, self-direction, empathy and intimacy) Module II: Dimensional assessment of the five pathological personality trait domains (negative affectivity, detachment, antagonism, disinhibition and psychoticism) Module III: Assessment of each of the six specific personality disorders of DSM-5 AMPD
Diagnostic Interview for personality disorders (DIPD-IV), BPD module[67]	BPD diagnosis according to DSM-IV	Diagnostic interview for DSM-IV personality disorders
Zanarini Rating Scale for Borderline Personality Disorder (ZAN-BPD)[68]	BPD symptom change	Clinician-administered scale for assessment of change in DSM-IV borderline psychopathology
Structured Interview of Personality Organization-Revised (STIPO-R)[69]	Personality organization	Semi-structured clinical interview assessing personality organization in five domains (identity, object relations, defenses, aggression, moral values)
Borderline Personality Inventory (BPI)[70]	BPD diagnosis, screening and personality functioning	Self-report tool assessing BPD symptoms and diagnosis, and borderline personality organization according to Kernberg
Borderline Symptom List (BSL)[71]	Borderline-typical symptomatology based on DSM-IV-TR criteria	Self-report tool assessing subjective impairments of BPD patients along the subscales of self-perception, affect regulation, self-destruction, dysphoria, loneliness, intrusions and hostility
Level of Personality Functioning Scale Self-Report (LPFS-SR)[72]	Personality functioning	Self-report tool assessing impairment in personality functioning according to the DSM-5 AMPD

McLean Screening Instrument for BPD (MSI-PD)[73]	Screening measure for BPD along the DSM-IV criteria	Self-report true-false screening questionnaire, including one item for each DSM-IV BPD criterion, with the exception of two items for paranoia/dissociation
Personality Assessment Inventory (PAI)[74]	BPD features	Self-report inventory of adult personality, including clinical scales assessing borderline features (affective instability, identity problems, negative relationships, self-harm)
Personality Diagnostic Questionnaire-4 (PDQ-4)[75]	Screening tool for DSM-IV personality disorders	Self-report tool with true/false questions intended to provide an indication of key features of each personality disorder, followed up with additional questions
Zanarini Rating Scale for Borderline Personality Disorder (ZAN-BPD) - Self-Report[76]	BPD symptom change	Self-report scale for the assessment of change in DSM-IV borderline psychopathology
Dimensional Assessment of Personality Pathology–Basic Questionnaire (DAPP-BQ)[77]	Personality pathology	Self-report measure of personality pathology, based on a dimensional model; subscales include affective lability, identity problems and self-harm
Personality Inventory for DSM-5 (PID-5)[78]	Maladaptive personality traits	Self-report measure of five broad domains of maladaptive personality variation: negative affect, detachment, antagonism, disinhibition and psychoticism
Rorschach/Holtzman Inkblot Technique[79,80]	Personality functioning (e.g., primary process thinking, defense mechanisms, object relations)	Projective techniques based on 10 (Rorschach) or 45 (Holtzman) unstructured cards. Subjects are asked: "What might this be?"
Thematic Apperception Test (TAT)[81]	Personality functioning (e.g., primary process thinking, defense mechanisms, object relations, affect regulation)	Projective technique based on 20-30 cards with a specific thematic valence. Subjects are asked to make up as dramatic a story as possible for each card.

Table 5 Meta-analytic evidence for efficacy of psychotherapies vs. treatment as usual (TAU) for borderline personality disorder (BPD)

	N trials	N patients	Outcome	SMD (95% CI)
Major forms of psychotherapy vs. TAU[17]	22	1,244	Severity of BPD symptoms	–0.52 (–0.70 to –0.33)
	13	616	Self-harm	–0.32 (–0.49 to –0.14)
	13	666	Suicide-related outcomes	–0.34 (–0.57 to –0.11)
	22	1,314	Functioning	–0.45 (–0.68 to –0.22)
Dialectical behavior therapy vs. TAU[17]	3	149	Severity of BPD symptoms	–0.60 (–1.05 to –0.14)
	7	376	Self-harm	–0.28 (–0.48 to –0.07)
	6	225	Functioning	–0.36 (–0.69 to –0.03)
Psychodynamic therapies vs. TAU[228]	4	213	Severity of BPD symptoms	–0.65 (–0.99 to –0.32)
	5	354	Suicide-related outcomes	–0.67 (–1.13 to –0.20)
	5	392	Functioning	–0.57 (–1.04 to –0.10)

Major forms of psychotherapy include dialectical behavior therapy, psychodynamic therapies, cognitive-behavior therapy, schema therapy, and acceptance and commitment therapy. Psychodynamic therapies include mentalization-based therapy, transference-focused therapy, and dynamic deconstructive therapy. SMD – standardized mean difference.