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The identification of a risk profile for young people with borderline personality pathology: a review of recent literature

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The shift towards early intervention in borderline personality disorder (BPD) has introduced a clinical staging approach in the treatment for young persons with BPD. Complementary to staging is profiling: the identification of psychological, social and biological risk variables that may predict prognosis. The aim of this paper is to provide a risk profile for BPD by systematically reviewing literature on potential risk markers for poor prognosis for BPD. An extensive literature search revealed evidence for seven categories of risk factors: adverse childhood experiences, BPD symptom profile, associated mental disorders, personality impairments and traits, current interpersonal context, biological disposition and socio-demographics. Including these markers within the current staging approach, to compose individual risk profiles for poor BPD prognosis, may assist in personalizing treatment for young people with BPD and in refining research protocols for treatment outcome studies.

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Introduction

The last decade has witnessed a shift from detection and treatment of full-blown borderline personality disorder (BPD) in adults towards detection and intervention of BPD (features) in an early stage in adolescents [1]. Early intervention is underpinned by the promising assumption that treatment outcome and prognosis will improve when potentially progressive and even life-threatening disorders are treated early in life. To serve this aim, several authors have argued to define BPD in different clinical stages [2••,3]. Clinical staging describes where an individual resides on a continuum of disease progression and may serve as a heuristic strategy to determine treatment dosage, complexity and duration [4]. The assumption behind a staging model is that disorders in an earlier stage may benefit from shorter, less intensive and less complex treatments, while disorders in a more progressed stage may require more intensive and long during interventions, integrating different treatment modalities [5]. However, as BPD in an early stage has not yet been fully crystalized, it remains difficult to predict the risk of progressing to further stages and to determine the amount of treatment needed to change the developmental trajectory of BPD. Identifying markers that may constitute a *risk profile* for progressing can complement the current staging model to better fit the heterogeneous reality. Profiling refers to the identification of features and variables that may have etiological significance and may predict the course of the disorder and the potential success of treatment [6]. Risk profiles contain information on psychological, social and biological markers that can impact prognosis and expected treatment response. The combination of staging and profiling information at the level of the individual patient may provide the best indication to match the patient to treatment options.

The aim of this paper is to systematically review recent research findings that may help to inform a potential risk profile, defined by risk markers for developing full, severe, chronic or disabling BPD (i.e. poor prognosis).

Methodology

We searched PsychINFO and Pubmed databases to identify studies reporting on BPD prognosis between 2018 and March 2020. We chose 2018 as to match the recent developments in the field. The search terms (borderline personality disorder.ti,ab OR borderline personality disorder/) AND (predict* OR outcome OR prognos* OR course OR sever* OR profil*).ti,ab were entered. Adolescent as well as adult studies were included. 645 unique articles surfaced, which were further selected for studies meeting the following criteria based on title and abstract: 1) The study reported information on the influence of patient-related risk variables on prognosis and/or treatment outcome of BPD symptoms and/or related quality of life (e.g. vocational functioning, intimate relations) 2) The methodology of the studies was deemed appropriate as to standard guidelines

(e.g. at least 30 participants in each group when performing group-comparisons, acceptable generalizability based on the study sample). Approximately 150 articles met these criteria and the authors independently identified subject categories representing potential risk profile categories. Comparison of the outcomes showed a high level of agreement between the authors and agreed upon categories were included. The key references were selected by the authors (i.e. strongest evidence) and included in the text.

Identified risk profile categories

We identified seven categories of psychological, social and biological markers that have been shown to be associated with poor prognosis for BPD. Table 1 provides an overview of the most salient markers with their assessed level of evidence.

Markers related to adverse childhood experiences

Evidence suggests that multiple and more severe interpersonal trauma, particularly childhood sexual abuse (CSA), predicts severity and continuation of BPD beyond adolescence. In a large umbrella review, including 19 meta-analyses, Hailes *et al.* [7•] found CSA to be predictive of 26 out of 28 specific outcomes, including a range of psychiatric disorders, negative psychosocial outcomes and poor physical health. Of all included psychiatric diagnoses, CSA was second strongest related to BPD. Several studies show that CSA is associated with more severe (including suicidality and self-injurious behavior) and chronic BPD [8,9]. CSA and physical abuse differentiate subclinical and clinical BPD adolescents with as much as 30% of the clinical BPD youngsters reporting experiences of sexual abuse and 77% of bullying [10]. Other studies have stressed the association between emotional abuse and BPD severity [11,12]. The combined trauma of neglect and abuse is especially predictive for general psychopathology, interpersonal insecurity, suicidality and BPD [13].

Markers related to BPD symptom profile

Severity, number and type (esp. impulsive self-harm) of BPD symptoms have been shown to be markers of poor prognosis. Severity of BPD symptoms at intake predicted poor general functioning in follow-up, with chronic emptiness, mood dysregulation and self-harm having the most impact [14••]. The number of BPD features was the strongest predictor of poor functioning and poor quality of life in a sample of 499 help-seeking outpatient youth [15]. In another study among 107 help-seeking youth aged 15–25, engaging in non-suicidal self-injury (NSSI), BPD features of impulsivity and interpersonal problems, but not frequency of NSSI, predicted number of suicide attempts [16]. Further analyses suggested that random patterns of NSSI were associated with higher severity of NSSI (i.e. higher level of medical treatment required following NSSI) and more suicide attempts than habitual patterns of NSSI [17]. Severity of DSM-5 BPD criterion 9, dissociative experiences, was lower at baseline in BPD patients whom ultimately recovered from BPD [18]. In a latent class analysis study among teenage girls, Slavin-Stewart *et al.* [19] identified four subgroups. Their data gave evidence that number of BPD features indicate severity and that interpersonal (abandonment), suicide and psychotic features of BPD are the type of symptoms that are most related to increased severity (i.e. increased co-morbidity).

Markers related to associated mental disorders

Although BPD is associated with a wide range of comorbid mental disorders, some specific disorders — particularly psychotic and substance use disorders (SUD) — increase the odds of a negative prognosis for BPD. There is strong evidence that comorbidity with psychotic symptoms, more specifically auditory verbal hallucinations (AVH), is a severity marker for BPD and has been shown to be associated with poor outcomes in BPD women [20]. BPD youngsters with AVH showed significantly higher levels of psychopathology including self-harm, paranoid

Table 1

Overview of psychological, social and biological markers with prognostic evidence for poor outcome in BPD

Category	Marker	Level of evidence
Adverse childhood experiences	Multiple interpersonal traumatic events	+++
	Severity of childhood sexual abuse	++
BPD symptom profile	Number and severity of BPD symptoms	+++
	Presence of impulsive/random NSSI	+
Associated mental state disorders	Psychotic symptoms	+++
	Substance abuse	+++
Personality	AMPD Criterion A impairment	++
	High Neuroticism and Low Agreeableness	++
Current interpersonal context	Abscence of experienced peer and parental support	+
	Concurrent adverse interpersonal events	+
Biological disposition	Amygdala habituation deficit	+
	Family disposition for severe psychopathology	+

ideation, anxiety and stress [21•]. Presence of AVH in BPD patients is associated with an increase in suicidality and need for hospitalization [22]. Adolescents with full-threshold BPD reported more confusion, paranoid ideation, visual hallucinations and strange thoughts than subthreshold BPD adolescents, even after adjusting for other psychopathology and functional impairment [23]. Additionally, there is clear evidence that associated SUDs predict poor outcomes in BPD patients. In a large longitudinal cohort study of teenagers and young adults, normative decrease in BPD features showed a slower decline in girls and women with major depressive disorder, aAlcohol use disorder and drug use disorder [24]. Comorbid alcohol dependence and polysubstance abuse were associated with more severe borderline features in young people [25] and comorbid SUDs increased the risk of mortality among BPD patients in a nationwide Danish register study [26]. A close association between BPD (severity) and SUDs was also suggested in a Swiss study among young men [27] and a Taiwanese retrospective case-control study [28]. Moreover, a smaller scale study indicated that SUD at intake in BPD patients was associated with increased global severity, higher number of lifetime Axis I comorbidities and greater impulsivity [29]. In addition to psychotic disorders and SUDs, some evidence has been found for a negative impact of comorbid anxiety disorders [30], ADHD [31] and other personality disorders [32].

Markers related to personality impairments and traits

Several studies have demonstrated that Criterion A (i.e. Alternative Model for Personality Disorders; AMPD) related impairments in identity, including clarity of self-concept [33], low self-esteem [34], problems in emotion regulation [35], avoiding reactions towards experienced emotions [36] and experiencing attenuated positive emotions [37,38] are all associated with more severe manifestations of BPD and/or reduced quality of life. Regarding self-direction, some studies have demonstrated that non-productive self-reflection [39,40] or highly self-referring interpretations of negative content [41] are associated with increased borderline symptom severity and longer recovery from (interpersonal) distress in individuals who experience many negative affects. Increased self-direction on the contrary, as expressed in enhanced experienced meaning of life, may protect against severity of BPD symptoms [42]. Several studies also suggest that there is an association between level of interpersonal impairment and severity of BPD features. Level of social cognitive deficits has been found to be related to increased impulsivity, emptiness, instable pattern of relationships, and quasi-psychotic states in BPD patients [43]. Dimaggio *et al.* [44] found that a more differentiated capacity to understand the mind of others (metacognition) at treatment onset predicted an increase of therapist-rated alliance over time, which in turn improved outcome. A related finding is that patients with an unresolved attachment style and low-level reflective functioning at the outset, had the least chance for representational change during the first year of psychotherapy [45]. Being disorganized attached with both parents seems particularly characteristic of adolescents with BPD [46]. In addition to AMPD Criterion A, several studies also point to the risk and protective role of different Criterion B related personality traits. Excellent recovery in Zanarini's longitudinal study [47•] was (among other factors) predicted by low Neuroticism and high Agreeableness. Similarly, Conway *et al.* [48••] demonstrated that the stable component of BPD — borderline proneness — was strongly correlated with Neuroticism and Agreeableness, and somewhat less strong with Conscientiousness. Stokes *et al.* [49] found that the combination of both high Neuroticism/Negative Emotionality and high Aggressiveness was profoundly predictive of affective instability, identity problems and negative relations, while self-harm was best predicted by a combination of Disconstraint, Neuroticism/Negative Emotionality and Aggressiveness. Taken together, most findings seem to converge in that high Neuroticism and Low Agreeableness predict more severe and chronic borderline symptoms.

Markers related to current interpersonal context

Current or recent life events and circumstances may increase risk for poor outcomes. Increased conflicts with parents [50] and absence of experienced relational support at age 15 [51] were found to be associated with an increase in BPD symptoms and/or reduced satisfaction in life. Dating victimization seems associated with maintenance or even exacerbation of BPD features throughout time [52]. Mixed results were found for vocational status [53,54], with findings suggesting that diagnostic remission from BPD is neither necessary nor sufficient for good psychosocial functioning. Retrospective research showed that adult BPD patients had higher scores on any index of sexual abuse severity than adolescents BPD patients, including having experienced sexual abuse/assault at multiple developmental stages [55]. This suggests that, when working with adolescents in early stages of BPD, one must be attentive to signs of possible current traumatizing situations.

Markers related to biological disposition

Neurobiological and epigenetic research is still in its infancy and has been reviewed recently [56•,57,58]. There is evidence that deficient amygdala habituation to successive emotional stimuli constitutes a neurobiological risk for BPD [59]. Reduced resting-state heart-rate variability and increased heart rate (indicating autonomic nervous systems dysfunction) have been associated to BPD symptom severity and psychosocial disability [60]. In their review, Perez-Rodriguez *et al.* [56•] show evidence for the heritability of BPD, although no specific risk genes or molecular pathways have been identified.

Table 2

Tool to check risk profile of a (subclinical) BPD patient, questions are in order of empirical evidence (highest to lowest)

Question
Is there evidence for multiple interpersonal traumas (e.g. emotional abuse, childhood physical abuse, bullying)?
Is there evidence for psychotic symptoms (spec. auditory verbal hallucinations)?
Is there evidence for substance use?
Is there evidence for severe childhood sexual abuse?
Is there evidence for moderate to severe impairments in self (self-concept, self-esteem, sense of meaning, rumination) and/or interpersonal (social cognition, disorganized attachment) functioning?
Is there evidence for a combination of high neuroticism and low agreeableness?
Is there evidence for a pattern of random and impulsive self-harm?
Is there evidence for high parental conflict and low experienced parental and/or peer support?
Is there evidence for current adverse interpersonal events, like bullying, victimization, sexual abuse?
Is there evidence for severe (affective) psychopathology in the patient's family?

Some studies have found DNA methylation abnormalities associated with BPD and severity of childhood maltreatment [57].

Markers related to demographical characteristics

Results regarding demographic characteristics converge into a younger age being associated with a higher likelihood for remission of BPD [61] and that affective instability decreases with age [62]. However, it remains unclear whether a BPD diagnosis at a younger age is an indicator of poor prognosis (e.g. dysfunction in early developmental stages) or protective in its course (e.g. higher flexibility at a younger age). Because of this inconclusiveness, we did not include this marker in our model. Results regarding gender have also been inconclusive. A meta-analytic review showed that being female as a BPD patient was correlated with lower functional improvement [61]. However, another study showed that men with BPD may be more impaired and may be at higher risk of dying by suicide compared to women with BPD [63].

Conclusions

Summary of findings

The aim of this paper was to systematically review potential risk markers for poor prognosis for BPD that may inform treatment assignment in young people with (emerging) BPD. Our review revealed seven categories of risk factors, including 12 specific markers: adverse childhood experiences (markers: complex interpersonal trauma and CSA), BPD symptom profile (markers: number and severity of BPD symptoms, impulsive/random NSSI), associated mental disorders (markers: symptoms of psychosis and substance use), personality impairments and traits (markers: AMPD Criterion A impairment and high Neuroticism and low Agreeableness), current interpersonal context (marker: absence of experienced peer and parental support and concurrent adverse interpersonal events), biological disposition (markers: amygdala habituation deficit and family burden of psychopathology) and socio-demographics (no specific markers). Identifying the risk profile of a young person may be done by checking the questions in Table 2, ordered in terms of their assessed relevance as based upon recent empirical evidence. Patients in an early stage of BPD with a severe profile may need more intensive and higher-dosed treatment, targeting different areas of functioning, than patients in an early stage with a less severe profile. For example, a young girl aged 13 displaying subclinical features of BPD, with a history of neglect and childhood sexual abuse, who's hearing critical voices, displaying impulsive self-harm and unable to experience peer or parental support, may need more intensive and complex treatment than a young girl aged 15, displaying full BPD, but lacking many of these severity markers.

Research implications

Early intervention of emerging BPD is still in its infancy. Nevertheless, one of the most salient findings has been the lack of superiority of most adolescent-adapted versions of adult BPD treatment programs compared to standard care [64–68]. Moreover, most studies suffer from high levels of drop-out, which might suggest that the treatment packages used in these studies may not fit the clinical needs of many or even most youngsters and families involved in these studies (e.g. Ref. [67]). A possible explanation for these less favorable outcomes may be the heterogeneity of the samples with respect to the stage of BPD and the risk profiles of the participants involved in these studies. Most studies include youngsters with two or more features of BPD, resulting in a clinically heterogeneous sample with rather mildly affected young people besides very severe and highly comorbid BPD youngsters. Interestingly, most studies use fixed treatment packages that are often much lower dosed than their adult counterparts, probably informed by their aim to provide early intervention. Post hoc, one may argue that the short, often monomodal and low-dosed treatment packages of these studies may be best suited for specific early stages of BPD, characterized by low to moderate risk profiles. However, they may provide insufficient treatment for young persons in a later stage and/or with a severe risk profile, resulting in overall reduced efficacy. We believe that further research should use a

combination of both staging and risk profiling information to identify what dosage and intensity of treatment matches which young person as opposed to a 'one-size-fits-all' approach [64–68].

Limitations and future directions

There are some limitations to this paper. First, although the review focused on prognostic value for BPD outcome, none of these markers are exclusively predictive for trajectories of BPD. Most markers are generic and may predict poor outcome in general. This is in line with hierarchical models of psychopathology [69] and studies demonstrating that BPD can better be conceived as a general factor of personality pathology [70]. Second, the findings cited in this overview are all group-level findings and may not necessarily be generalized to determine individual and personal risk assessment. Although informative, real-life clinical decisions should take into account the complete picture and context, which may mitigate (or aggravate) the effects of some of these markers. Third, this is a clinical model that should be tested empirically. The field of BPD needs prospective studies that follow the treatment trajectory of youngsters in different stages of BPD and with different risk profiles to test the validity of personalized approaches to treatment assignment. Finally, more markers may be included in this model when more studies become available.

Conclusions

Previous models on personalized treatment in young people with BPD have only included staging information, missing the opportunity to include relevant psychological, social and biological markers that constitute a risk for fast and unfavorable progression of BPD in young people [2••,3,5]. Combining staging and profiling information enables a more personalized approach to treatment assignment by subdividing the clinically heterogeneous sample of youth according to their supposed treatment needs.

Conflict of interest statement

Nothing declared.

CRediT authorship contribution statement

Joost Hutsebaut: Conceptualization, Writing - original draft. **Anouk Aleva:** Methodology, Data curation, Writing - review & editing.

References and recommended reading

Papers of particular interest, published within the period of review, have been highlighted as:

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The authors argue for a life course perspective on personality disorders, discussing the course of PDs from adolescence to (very) old age. They introduce a model of clinical staging to refine assessment of PDs. Furthermore, they adopt the concept of Health management to organize continuous and coordinated health care management for patients with (emerging) BPD.

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interpersonal and vocational functioning? *Personal. Ment. Health* 2018, **12**:334-344 http://dx.doi.org/10.1002/pmh.1432
Although remission of BPD symptoms seems feasible, recovery is harder to reach in BPD patients. This study investigates which symptoms make it harder to function in a prospective study of 199 BPD patients in treatment over 12 months. The authors found that those who experienced more severe emptiness, impulsivity and self-harm had worse outcomes. A relationship between chronic emptiness at intake and impaired vocational outcome (days out of work) at follow-up was found, mediated by severity of impulsivity and frequency of self-harm.

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This is one of the many papers derived from Mary Zanarini's monumental follow-up study of 290 BPD patients and 72 axis II comparison subject. After admission, patients were re-assessed every two years during a period of 20 years. This paper reports on the predictors of excellent recovery, defined as concurrent remission of borderline or another primary personality disorder, good social and full-time vocational functioning, and absence of an axis I disorder associated decreased social and/or vocational functioning. Only 39% of BPD patients, as compared to 73% of personality-disordered comparison subjects were recovered after 20 years. Predictors for recovery were higher IQ, good childhood work history, good adult vocational record, lower trait neuroticism, and higher trait agreeableness. The results of this study suggest that complete recovery is difficult for borderline patients to achieve even over long periods of time.

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This study tested the hypothesis that BPD has both stable and dynamic elements. Participants were 668 patients who were diagnosed with a PD an/or major depressive disorder and no PD at baseline. In this heterogeneous sample BPD pathology was assessed five times over a decade. The authors found borderline pathology to have a stable core and sizeable situational componets Both of these elements showed relatedness to normative perosnality dimensions, i.e. the Five Factor Model.

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