Quality and severity of depression in borderline personality disorder: A systematic review and meta-analysis

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HIGHLIGHTS

- A systematic review and meta-analysis of depression experience in BPD was performed.
- We found partial support for specific depression quality in BPD patients.
- There is higher depression severity in depressed patients with comorbid BPD.
- We identify challenges and directions for research on "borderline-depression".

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ABSTRACT

Depression in borderline personality disorder (BPD) is hypothesized to be distinct in quality and severity. This paper provides a systematic review of depression quality, and a meta-analysis of depression severity in BPD patients compared to those with depressive disorders (DeDs) only. Based on a systematic literature search, 26 studies were identified for systematic review and 35 studies (3425 participants) were included for meta-analysis. The review focused on different forms of depressive symptoms, affective impairment, self-evaluation, and negative interpersonal experiences. The meta-analysis examined age, gender, presence of comorbid DeDs in BPD patients, and type of depression scale as moderators of effect sizes. Findings indicate that depression quality in BPD is characterized by higher anger/hostility and self-criticism. There was no significant difference in depression severity between BPD and DeD groups, and a high level of heterogeneity. Moderator analyses revealed lower depression severity in BPD patients without comorbid DeDs, but higher severity in BPD patients with comorbid DeDs compared to depressed controls. Our results suggest high variability in depression severity across BPD patients, point toward the consideration of comorbid DeDs, and lend partial support to a BPD-specific depression quality. We discuss difficulties in research on depression in BPD, and offer directions for future studies.

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Contents

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1. Introduction

Borderline personality disorder (BPD) is a complex mental disorder characterized by a pervasive pattern of instability in interpersonal relationships, identity, impulsivity, and affect, accompanied by severe functional impairment and a high co-occurrence of other psychological disorders (Leichsenring, Leibing, Kruse, New, & Leweke, 2011; Skodol et al., 2002). Depressive disorders (DeDs) are among the most frequent comorbid diagnoses, with 41–83% of BPD patients reporting a history of major depression, and lifetime prevalence of dysthymia ranging between 12–39% (Lieb, Zanarini, Schmahl, Linehan, & Bohus, 2004). However, the mechanisms and implications of the co-occurrence of BPD and DeDs remain unclear. One issue is that the comorbidity of psychological disorders can result from a number of underlying processes. It may be that distinct risk factors lead to the co-occurrence of distinct conditions, that shared risk factors lead to the co-occurrence of distinct conditions, that one disorder leads to the development of another, or that there are nosological artifacts. In this regard, it is important to understand the considerable overlap between the symptom-sets defining BPD and DeDs (e.g., affective disturbances, suicidal ideation). This has led some researchers to argue that BPD should be conceptualized as an affective disorder (e.g., Akiskal, 2000). Others have noted that despite the symptom overlap, there are differences in the phenomenology of depression (including symptom quality and severity), and that therefore depression in DeDs and BPD should not be regarded as the same phenomenon (e.g., Gunderson & Phillips, 1991; Paris, 2010; Rohde-Dachser, 2010; Silk, 2010). Despite its clinical relevance, existing research on the nature of depression in BPD is far from being conclusive. The purpose of this study is to provide a systematic review and meta-analytic examination of depression experience in BPD patients as compared to depressed individuals without BPD.

1.1. Theoretical models of BPD and depression experience

The debate about the nature of depression in individuals with BPD is inherently embedded in existing theoretical models of borderline pathology. Although early writings on BPD stressed the proximity to psychotic symptoms (Knight, 1953; Stern, 1938), beginning with Grinker, Werble, and Drye (1968), and later Stone (1977), a growing interest in the affective experience in BPD began to emerge. Consequently, some authors labeled the depression experienced in BPD "borderline-depression", characterized by distinct feelings of loneliness

and isolation (Adler & Buie, 1979; Grinker et al., 1968), emptiness or boredom (Gunderson, 1996), high dependency and fears of abandonment (Masterson, 1976), as well as intense anger and hate toward the self and others (Hartocollis, 1977; Kernberg, 1975, 1992). Conceptually, those descriptions are closely tied to the assumption that depression in BPD patients is part of an overall affective dysregulation, reflecting "a core characterologic inability to cope with specific interpersonal conflicts" (Soloff, Cornelius, & George, 1991, p. 24).

Current personality-oriented and psychodynamic approaches to BPD, such as object relations theory (e.g., Clarkin, Lenzenweger, Yeomans, Levy, & Kernberg, 2007), attachment-based (Fonagy, Target, Gergely, Allen, & Bateman, 2003), and other related models (i.e., Gunderson, 1984), propose that early adverse life events and relational experiences result in specific dysfunctions of self-regulatory or interpersonal competencies. Among those are affectively split, unstable representations of the self and others as well as deficits in mentalization. Consistently, and in close resemblance to earlier psychoanalytic models outlined above, these theories suggest that depression experience in BPD is shaped by a fundamentally negative sense of the self and pronounced dependency toward others. In turn, these liabilities are assumed to be accompanied by intense and dysregulated negative affect, particularly anger, anxiousness, emptiness, and feelings of helplessness or hopelessness.

Additional hypotheses on the nature of depression in BPD patients are found in other prominent models of the disorder as well: In Linehan's (1993) biosocial model, affective impairment in BPD is characterized by a high baseline negative emotional intensity, high emotional reactivity, and a decelerated return to baseline after emotional arousal. Similarly, the multi-factorial model by Zanarini and Frankenburg (2007) emphasizes multifaceted, intense, and chronic emotional pain at the core of borderline pathology. In particular, certain dysphoric affects and cognitions (e.g., extreme feelings, self-destructiveness) are regarded as specific for BPD patients. The intensity of dysphoric states and cognitions that is suggested in these models may again affect severity, clinical presentation, and diagnostic assessment of depression in BPD.

1.2. Prior research on depression experience in BPD

A non-systematic review concluded that the depression experience in BPD differs substantially from that of DeD patients, and that individuals with BPD may experience an affective syndrome beyond the existence of a comorbid DeD diagnosis (Silk, 2010). In particular, BPD patients differed from depressed comparison groups regarding specific

depression symptoms, dysphoric affects, and cognitions, such as higher levels of emptiness, hopelessness, or self-hatred (e.g., Berrocal, Moreno, Rando, Benvenuti, & Cassano, 2008; Rogers, Widiger, & Krupp, 1995). Other studies that used the Depressive Experiences Questionnaire (DEQ) by Blatt, D'Afflitti, and Quinlan (1976) reported inconsistent findings on whether patients with BPD and patients with DeDs differ in their experience of dependency and self-criticism (e.g., Levy, Edell, & McGlashan, 2007; Wixom, Ludolph, & Westen, 1993). Furthermore, in some reports BPD patients with and without diagnoses of comorbid DeDs scored at comparable or higher levels on measures of depression severity than patients with actual DeDs (Comtois, Cowley, Dunner, & Roy-Byrne, 1999; Levy et al., 2007). BPD patients also tended to report higher levels of severity on self-rated depression inventories compared to observer-based depression scales (e.g., Snyder & Pitts, 1986; Stanley & Wilson, 2006; Wilson et al., 2007).

1.3. Methodological challenges for the study of depression experience in BPD

The findings on depression severity outlined above were discussed in the light of possible exaggeration or negative impression management in BPD patients (De la Fuente & Mendlewicz, 1996; Kurtz & Morey, 2001). Regarding the discrepancy between self- and observer-ratings in particular, Stanley and Wilson (2006) pointed out that the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960), the most widely used self- and expert-rated depression scales, emphasize different symptom domains. While the HRSD focuses on somatic, vegetative and behavioral symptoms, the BDI covers a wide array of depressive mood states and cognitions (Brown, Schulberg, & Madonia, 1995). In combination with higher affective and cognitive depression symptoms in BPD, this could lead to an elevated depression score of borderline patients on the BDI. Similarly, some authors (e.g., Blatt, 1974; Silk, 2010) argue that sole reliance on symptom-based measures for assessing depression severity rather than measures of the subjective experience of depression may fail to capture essential features of social-cognitive appraisal processes constitutive for the quality of depression in BPD.

Furthermore, some studies included BPD patients with diagnosed comorbid depression, while others investigated BPD patients without comorbid DeDs or did not report on the existence of DeDs at all. This lack of differentiation regarding the diagnostic status of patients contributes to difficulties in the interpretation and generalizability of findings. Finally, empirical research on depression experience in BPD is fundamentally complicated by the abovementioned overlap between diagnostic criteria. Individualized models of personality pathology, such as the Levels of Personality Functioning Scale in the DSM-5 (American Psychiatric Association [APA], 2013; Bender, Morey, & Skodol, 2011) or, including a more biological perspective, the Research Domain Criteria initiative (RDoC; Sanislow et al., 2010), may help to solve some of these issues in the future, but have yet to prove their superiority to current categorical diagnoses.

The review of Silk (2010) provided the first overview on the theoretical background, empirical findings and implications of BPD-specific depression experience. However, its non-systematic and qualitative nature potentially limits the validity and generalizability of its conclusions. Other important aspects which to our knowledge have not been addressed systematically so far, are the influence of different depression instruments (i.e., self- vs. expert rated), characteristics of study samples (i.e., gender and age), and current comorbid DeDs in BPD patients.

1.4. The present study

In order to advance the understanding of the nature of depression in BPD, a systematic and meta-analytic account of depression experience

in BPD patients compared to patients with DeDs alone is necessary. The advantage of this approach is the integration of original studies based on a systematic search, following explicit inclusion criteria and study quality standards. Applying meta-analytic procedures allows for a quantification of group differences, as well as the statistical examination of potential moderators.

Due to the fact that previous studies on depression quality in BPD included a variety of different measures, only the available data on depression severity were sufficient for meta-analytic procedures. Thus, the first aim of this study is to provide a comprehensive and systematic review of studies comparing BPD patients to DeD patients on the quality of depression, including different depression symptoms, negative or impaired affectivity, self-evaluation, and interpersonal experiences. The second aim is to examine differences in overall depression severity between these patient groups via meta-analysis. In addition to the investigation of group differences, we will examine the degree to which effect sizes vary as a function of study quality, gender, age, measures used to assess depression severity, and current comorbid DeDs in BPD patients.

2. Methods

2.1. Variables and studies examined: preliminary considerations

This review focuses on the immediate quality and severity of current depression, measured by instruments aiming at a respective time frame (e.g., the last two weeks). In consequence, we excluded studies that reported data on case history (e.g., number of depressive episodes), interpersonal styles, personality traits, or lifetime pathology, as measured for example by the Inventory of Interpersonal Problems (Horowitz, Alden, Wiggins, & Pincus, 2000) or the Minnesota Multiphasic Personality Inventory (Hathaway & McKinley, 1943). Studies using the DEQ were included because the DEQ has been commonly used in studies of depression quality in BPD. The DEQ assesses not only personality dimensions that are known to influence vulnerability to depression, but also captures the quality of day-to-day experiences related to the self and others frequently associated with depression. These experiences form a subjective quality of depression beyond the symptoms measured by traditional depression scales (Blatt, Quinlan, Chevron, McDonald, & Zuroff, 1982; Blatt & Zuroff, 1992).

The elements considered to be central for the quality of depression in BPD were informed by previous empirical and theoretical accounts as discussed in the introduction. Thus, we focused on negative or impaired affective experiences (anxiety or tension, hopelessness, anger or hostility, different forms of generally impaired affectivity), feelings and cognitions related to the evaluation of the self (DEQ self-criticism, different measures of self-esteem), and negative interpersonal experiences (DEQ dependency, interpersonal sensitivity). We aimed to include all reports based on psychometrically valid and reliable instruments that capture the immediate experience of these domains, as for example the anger/hostility, anxiousness, and interpersonal sensitivity subscales of the Symptom Checklist-90 (SCL-90; Derogatis, 1994).

2.2. Inclusion criteria

We first defined a range of basic criteria for studies to be included in this synthesis in general. These applied for both the systematic review and meta-analytic part. In order to reduce heterogeneity, only a subset of studies that fulfilled further inclusion criteria was then included in the meta-analysis.

In the first instance, studies had to: 1) be published in English or German language, 2) report group comparisons between BPD patients with or without comorbid DeDs and DeD patients (with a current diagnosis of MDD, bipolar disorder with current depressive episode,

dysthymic disorder, or DeDs not otherwise specified)[1] without BPD on 3) a psychometrically evaluated instrument or subscale measuring current depression symptoms, negative or impaired affectivity, DEQ self-criticism or other measures of self-evaluation, DEQ dependency or other measures of negative interpersonal experiences, 4) apply some kind of expert-rating to diagnose BPD and DeDs (ranging from unstructured clinical to standardized interviews), and 5) be based on adult or adolescent samples (defined as 13 years or older).

To be included in the meta-analysis, studies furthermore had to: 6) report sufficient data to calculate effect sizes for group differences in depression severity, 7) apply a standardized and psychometrically evaluated diagnostic procedure to diagnose BPD and DeDs or report interrater reliability for diagnostic criteria, and 3) be based on an adult sample (defined as 18 years or older).[2]

2.3. Search strategy

Relevant literature was identified by a comprehensive search of PsycInfo, PubMed, and PSYNDEX (German) databases. The search terms used were: borderline AND (depression OR depressive). The search period included coverage of the databases from 1980 (initial formulation of BPD criteria in DSM-III; APA, 1980) to February 05, 2014. Additionally, the references lists of relevant theoretical articles (Gunderson & Phillips, 1991; Rohde-Dachser, 2010; Silk, 2010) and recent empirical studies on depression experience in BPD (Bellino et al., 2005; Leichsenring, 2004; Levy et al., 2007; Stanley & Wilson, 2006) were examined. The titles and abstracts of publications were then screened for relevance and eligibility according to inclusion criteria.

2.4. Study selection and procedure

A flow diagram of the systematic search and selection procedure is shown in Fig. 1. The database and hand search together yielded 3565 records, of which 2599 studies were screened for eligibility on abstract level after exclusion of duplicates. One hundred forty-one full-text articles were then surveyed, resulting in the inclusion of 52 studies according to the basic inclusion criteria (three of these studies were covered by two publications reporting on different outcome measures, resulting in 55 publications altogether). Of these, 26 studies were included in the systematic review on depression quality, and 35 studies were included in the meta-analysis on depression severity.[3] For a full reference list of all 52 studies (55 publications), see Appendix A. Detailed study characteristics and an overview of results are depicted in Appendices B and C.

Difficulties in determining the inclusion status of studies were discussed between three authors (JK, UD, HS) and resolved by

consensus. If recurrent appearance of one author on different publications suggested that articles were based on the same study, authors were contacted for clarification. If it was verified that publications were based on the same study, results from the most comprehensive sample were included. If two publications from one study reported results of different instruments, findings of both publications were included. Study authors were also contacted if diagnostic procedures were not outlined clearly or if data needed for effect size calculations were missing. Following a conservative strategy, articles were excluded if information on overlapping or shared samples, diagnostic procedures, or data for effect size calculations could not be obtained.

2.5. Risk of bias

Risk of bias in studies included in the meta-analysis was assessed with a modified version of the Systematic Assessment of Quality in Observational Research (SAQOR) by Ross et al. (2011). The SAQOR is a standardized tool to assess the risk of bias in observational studies. Its development followed a modified version of the system for grading the quality of evidence and the strength of recommendations of the GRADE Working Group (Guyatt et al., 2008). The original SAQOR was modified by JK, JCE, and UD to fit the purpose of the present meta-analysis. This modified version covers five topics: sample, control group, quality of diagnostic assessment and outcome measures, distorting influences, and integrity of data. Each category is evaluated with 1–5 items, with each item given a rating of adequate (= 1) or inadequate (= 0). Summing up these ratings, we computed a total study quality score ranging from 0 to 14. Quality ratings were conducted by two authors (JCE, UD) and an additional master-level psychologist, resulting in two independent ratings per study. Scores were averaged across raters. Interrater reliability, calculated as ICC [1,3] (Shrout & Fleiss, 1979) was excellent (ICC > .75; Fleiss, 1981) with ICC = .802.

2.6. Data analytic strategy

2.6.1. Calculation of effect size

Differences in depression severity between BPD and DeD groups were analyzed using the Comprehensive Meta-Analysis Software Version 2.0 (CMA; Borenstein, Hedges, Higgins, & Rothstein, 2005). Significance level was set at $\alpha = .05$ (two-sided). The standardized mean difference effect size Hedges' g was calculated based on group means, standard deviations, and sample size. We used Cohen's (1992) interpretative framework to describe the magnitude of effect sizes, wherein values of 0.20, 0.50 and 0.80 are considered small, medium, and large effects.

First, an overall analysis was run across measures and subgroups within studies. If one study included more than one depression instrument (e.g., HRSD and BDI), results from different instruments were combined within studies, leading to one effect size per study.[4] If studies included two separate BPD groups (to control for comorbidity of DeDs; see Appendices B and C), data of the two groups were combined within studies as well, again resulting in one comparison per study.

2.6.2. Heterogeneity, sensitivity, and publication bias

As we expected significant heterogeneity of effect sizes between studies due to different sample sources, levels of impairment, comorbidities, and instruments, a random effects model was chosen a priori over a fixed effects model (Borenstein, Hedges, Higgins, & Rothstein, 2009). Heterogeneity was assessed with Cochrane's Q and the I^2 index. Significant Q-statistics indicate that effect sizes do not belong to the same distribution (Higgins & Thompson, 2002). Because the Q statistic has been criticized for its low power, I^2 indexes are also reported. I^2

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[1] A substantial number of otherwise eligible studies included patients with a diagnosis of bipolar disorder. Since current international classification systems as DSM-IV, DSM-5 (APA, 1994; 2013) or ICD-10 (World Health Organization, 1993) do not differentiate between depression symptoms in unipolar vs. bipolar disorder, we did not exclude studies with depressed bipolar patients, as long as the sample did not exclusively consist of individuals with bipolar disorders. Furthermore, studies of patients with DeDs in full remission were excluded. In case a study contained two groups of DeD patients, one with and without personality disorders (other than BPD), we chose the clearer-cut differentiation between diagnostic groups and only included DeD patients without personality disorders.

[2] Diagnosing BPD in adolescents is controversial for several reasons (e.g., difficulties to differentiate enduring symptoms from temporary crises). Moreover, neurobiological development in the areas of social perception, emotion, and cognition is ongoing until the end of adolescence (Nelson, Leibenluft, McClure, & Pine, 2005). Since a substantial proportion of studies on depression experience in BPD contain adolescent patients, we included these studies in the systematic review, but narrowed the inclusion criterion for the meta-analysis to a minimum age of 18 years.

[3] Of the 52 studies fulfilling basic inclusion criteria, 9 reported on depression severity, but not quality, and did not fulfill further criteria to be included for meta-analysis. Thus, these studies neither appear in the results section of the systematic review nor of the meta-analysis. To provide a complete record, we kept these studies listed in the reference list and tables in the Appendix.

[4] One study (Joyce et al., 2003) included three depression instruments. In this case, we chose the more comprehensive HRSD and Montgomery–Asberg Depression Rating Scale (Montgomery & Åsberg, 1979) over the SCL-90-Depression subscale.
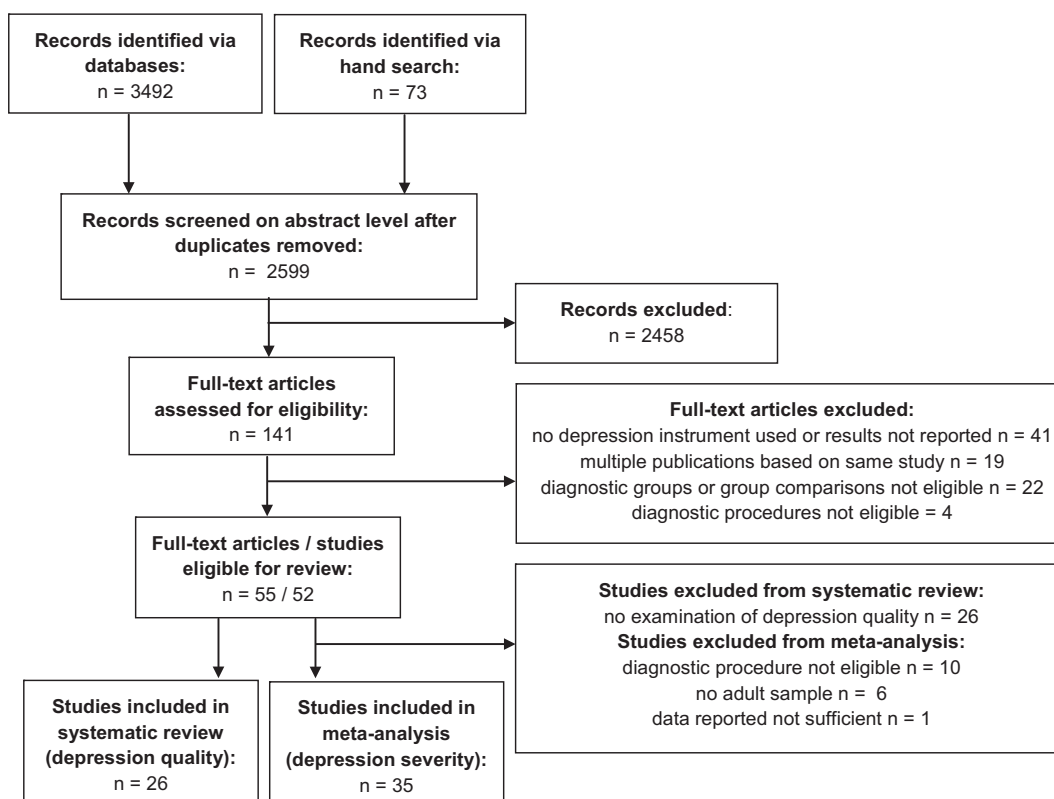
Fig. 1. Flow diagram of study selection.

informs about the degree of heterogeneity, with values on the order of 50% indicating a moderate, and of 75% indicating a high degree of heterogeneity (Borenstein et al., 2009; Higgins & Thompson, 2002).

To determine whether a finding was driven by results of a single study, we performed sensitivity analyses with the "leave-one-out" strategy, repeating the analysis with each study removed once (Borenstein et al., 2009). Publication bias was assessed via visual inspection of funnel plots and Egger's regression test for funnel plot asymmetry. Funnel plots depict the effect sizes against the precision of measurement in each study. Asymmetric plots can indicate publication bias, which is quantified by Egger's regression test. In case of a suspected bias, we planned to apply a trim-and-fill procedure to estimate the effect without such bias (Duval & Tweedie, 2000).

2.6.3. Moderator analyses

In a second step, we examined the extent to which effect sizes varied as a function of several moderators. In addition to risk of bias assessed with the modified SAQOR, primary studies and samples were coded for age, gender, rate of comorbid DeDs in BPD group, and type of depression scale. Moderator analyses were conducted as follows:

(1) The effect of potential bias was analyzed via meta-regression, using the total study quality scores of the SAQOR ratings as a continuous moderator variable.
(2) The influence of gender and age was tested accounting for absolute levels (percentage of females and mean age in BPD group), as well as for differences between diagnostic groups (percentage of females in DeD group subtracted from percentage of females in BPD group; mean age of BPD group subtracted from mean age of DeD group). Again, moderation by these variables was tested using meta-regression.
(3) Data from different measures of depression severity used within one study were incorporated via the "multiple outcomes within one study" function of CMA, allowing for the assignment of

different results to one study. Results based on different instruments were then coded by the dichotomous moderator variables self- vs. expert-rating and HRSD vs. BDI. Effect sizes were calculated in separate subgroup analyses, contrasting effect sizes based on self- vs. expert-rating and HRSD vs. BDI, respectively.
(4) Moderation by comorbid DeDs within BPD samples was tested in two ways. First, the percentage of patients with comorbid DeDs within the BPD groups of primary studies was used as continuous moderator in a meta-regression. Second, BPD samples were coded with the categories "currently depressed" (100% comorbid DeDs), "part of BPD sample currently depressed" (rate of comorbid DeDs between 1 and 99%), and "non-depressed" (0% comorbid DeDs). Effect sizes for the comparisons of these subgroups to the respective depressed control groups were then calculated in separate analyses: 1) currently depressed BPD patients vs. DeD patients, 2) BPD group with part of the sample currently depressed vs. DeD patients, and 3) non-depressed BPD patients vs. DeD patients. Five studies included two BPD groups (currently depressed and non-depressed), but only one DeD control group. In these cases, comparisons between the different BPD samples and the DeD controls were included in analyses 1) and 3) separately, with the sample size of the control group halved for each comparison.

3. Results

3.1. Systematic review of depression quality in BPD

Twenty-six studies examined the quality of depression beyond overall severity. These included specific depression symptoms, negative or impaired affectivity, different forms of self-evaluation, and interpersonal

experiences. Comorbid DeDs in BPD samples are taken into account in the interpretation of findings.

3.1.1. Depression symptoms

Six studies gave an account of specific symptoms of depression. The depression scales used in these studies cover a variety of symptoms, including negative affects other than depressed mood (e.g., anxiety). Because this section focuses on core depression symptoms, findings on these affects are reviewed in the section on negative affectivity.

Four studies included currently depressed BPD patients. Three of these did not find group differences on the HRSD factors weight change, cognitive symptoms, diurnal variation, retardation, and sleep disturbance (Stanley & Wilson, 2006; Wilson et al., 2007), or on the Profile of Mood States (POMS; McNair, Lohr, & Droppelman, 1981) subscale assessing feelings of depression and dejection, vigor, fatigue-inertia, and concentration (Fertuck et al., 2006). The fourth study (Bellodi, Battaglia, Gasperini, Scherillo, & Brancato, 1992) found higher depressed mood, higher depersonalization and derealization, less insight, and less diminution of sexual interest, but no differences on other items of the HRSD in depressed patients with BPD. Snyder and Pitts (1986) and Snyder, Sajadi, Pitts, and Goodpaster (1982) reported less insomnia and higher paranoia in their BPD sample with unknown status regarding current depression, while there were no differences on all other HRSD items, the Zung Self-Rating Depression Scale (Zung, 1965), or the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962) items measuring depressed mood. Finally, in one study of non-depressed BPD patients, no group differences on the cognitive-affective and somatic-performance factors of the BDI were found (Kurtz & Morey, 2001). Taken together, the majority of these findings does not support specific differences in the experience of depression symptoms in BPD, even when BPD patients were currently depressed.

3.1.2. Negative and impaired affectivity

Seventeen studies investigated negative or impaired affective experiences beyond depressed mood. Specifically, results on feelings of anxiety or tension, hopelessness, anger or hostility, and various forms of generally impaired affectivity (overall mood-disturbance, anhedonia, emotional withdrawal, emotional lability, and general negative affectivity) were taken into focus.

3.1.2.1. Anxiety and tension. Of twelve studies overall, seven included currently depressed BPD patients. Of these, one (Fertuck et al., 2006) reported higher anxiety and tension on the POMS, and another one (Riihimäki, Vuorilehto, & Isometsä, 2014) found higher anxiety on the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988) in the BPD group. The remaining investigations (Bellodi et al., 1992; Joyce et al., 2003; Stanley & Wilson, 2006; Sullivan, Joyce, & Mulder, 1994; Wilson et al., 2007) did not find different levels of anxiety between the two groups on the SCL-90-subscale or HRSD items and factors. Non-depressed BPD patients were included in three studies, of which two reported higher anxiety in the BPD group on the SCL-90 anxiety subscale (Barnow et al., 2009) and the anxious arousal subscale (Hooley et al., 2010) of the Mood and Anxiety Symptom Questionnaire (MASQ; Watson et al., 1995). The third study (Unoka, Seres, Áspán, Bódi, & Kéri, 2009) did not find group differences on the SCL-90 anxiety subscale. Testing group differences on the BPRS and HRSD items measuring anxiety and tension, the Hamilton Psychiatric Rating Scale for Anxiety (HAS; Hamilton, 1959), and the Zung Self-Rating Anxiety Scale (Zung, 1971), Snyder and Pitts (1986) did not report more anxiety or tension in BPD patients with unknown depression status. Thus, with eight out of twelve studies, the majority of results indicated comparable levels of anxiety and tension in BPD and DeD samples. This distribution of findings does not support enhanced anxiety or tension as a specific feature of depression experience in BPD.

3.1.2.2. Hopelessness. Seven studies investigated feelings of hopelessness, with one study including two separate BPD samples, one with and one without current DeDs (Soloff, Lynch, Kelly, Malone, & Mann, 2000). Of six studies including currently depressed BPD patients, four (Corbitt, Malone, Haas, & Mann, 1996; Fertuck et al., 2006; Keilp et al., 2006; Riihimäki et al., 2014) reported higher levels of hopelessness in BPD patients on the Beck Hopelessness Scale (BHS; Beck, Weissman, Lester, & Trexler, 1974). Applying the same instrument, Soloff et al. (2000) did not find differences between depressed patients with and without BPD, as did Pinto, Grapentine, Francis, and Picariello (1996) on the Hopelessness Scale for Children (Kazdin, Rodgers, & Colbus, 1986). Using the BHS on a BPD group with part of the sample diagnosed with current DeDs, Horesh, Orbach, Gothelf, Efrati, and Apter (2003) found a degree of hopelessness comparable to DeD patients. Soloff et al. (2000) reported lower levels of hopelessness on the BHS for patients with BPD only compared to DeD controls. Summing up, these findings suggest a trend for depressed BPD patients to exhibit higher levels of hopelessness than DeD patients. BPD patients without current depression may experience comparable or even lower hopelessness than patients with DeDs only. However, the small number of studies with non- or partly depressed BPD samples calls for caution in the interpretation of these results.

3.1.2.3. Anger and hostility. Anger or hostility was examined in eight studies. In three of four investigations comparing depressed BPD patients to those with DeD only, BPD patients experienced significantly more anger and hostility as measured by the SCL-90 subscale (Bellodi et al., 1992; Joyce et al., 2003; Sullivan et al., 1994). The same was true in the fourth study by Fertuck et al. (2006), comparing diagnostic groups on the Anger-Hostility subscale of the POMS. In BPD groups with part of the sample diagnosed with current DeDs results were not as clear, with one study (Barnow et al., 2009) reporting higher, and another study (Stern, Herron, Primavera, & Kakuma, 1997) reporting comparable levels on the SCL-90 Anger-Hostility subscale in BPD patients. Beeney, Levy, Gatzke-Kopp, and Hallquist (2014) investigated state-hostility on a subscale of the PANAS-X in non-depressed BPD patients, and found no difference compared to DeD-controls. Finally, another study on BPD patients with unknown depression status (Snyder & Pitts, 1986; Snyder et al., 1982) reported higher levels of hostility in the BPD group as indicated by items of the BPRS. Overall, these findings indicate higher anger and hostility in depressed BPD patients compared to individuals with DeDs only, with equivocal results on non- or partially-depressed BPD samples.

3.1.2.4. Impaired affectivity. Five studies explored different forms of impaired affectivity. One of these studies (Fertuck et al., 2006) included currently depressed BPD patients and found higher mood disturbance as measured by different items of the POMS in this group. Comparing a BPD group with current depression in part of the sample to DeD patients without BPD, Pietrek, Elbert, Weierstall, Müller, and Rockstroh (2013) found higher negative affectivity on the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988) in the BPD group, while Hooley et al. (2010) did not find group differences between these diagnostic groups on the anhedonia subscale of the MASQ. Applying the PANAS-X (Watson & Clark, 1999) subscale measuring negative affect at the present moment, Beeney et al. (2014) reported comparable levels of negative state-affect in non-depressed BPD patients and a depressed comparison group. Furthermore, Snyder et al. (1982) found higher emotional withdrawal and emotional lability on items of the BPRS in a sample of BPD patients with current depression status not reported. Altogether, with three reports indicating higher and two reports indicating similar levels of impaired affectivity in BPD compared to DeD patients, studies in this domain yielded mixed results.

3.1.3. Self-evaluation and interpersonal experience

Thirteen studies compared aspects of self-evaluation and interpersonal experience in patients with BPD and patients with DeDs only. Some of these studies used the DEQ, thus examining self-criticism as well as dependency, while others employed different instruments capturing self-evaluation or interpersonal sensitivity only. Finally, one study compared groups on a separate DEQ scale containing items designated as prototypical for borderline-depression.

3.1.3.1. DEQ self-criticism.
Of four studies, three (Levy et al., 2007; Southwick, Yehuda, & Giller, 1995; Westen et al., 1992) included one BPD group with and one without current DeDs. When comparing currently depressed BPD patients to depressed controls, Westen et al. (1992) and Levy et al. (2007) did not find group differences, while Southwick et al. (1995) reported more self-criticism in depressed BPD patients. Concerning the non-depressed BPD groups in the studies of Westen et al. (1992) and Levy et al. (2007), self-criticism was comparable to the DeD group as well. However, possibly due to a small effect becoming significant through an increase in sample size, when the depressed and non-depressed BPD groups were combined, self-criticism was significantly higher in BPD compared to DeD patients in both studies. Finally, Wixom et al. (1993) reported higher self-criticism in a sample of BPD patients as compared to depressed controls, without reporting the presence of affective disorders for BPD patients. Overall, these findings support the assumption of higher self-criticism in BPD as compared to DeD patients, while the influence of current comorbid depression remains unclear.

3.1.3.2. Other measures of self-evaluation.
Five studies presented findings regarding the evaluation of the self, captured by instruments other than the DEQ. In the two studies on currently depressed BPD samples (De Bonis, De Boeck, Lida-Pulik, Hourtané, & Féline, 1998; Pinto et al., 1996), BPD patients exhibited a poorer self-concept on the Piers Harris Childrens Self-Concept Scale (Piers, 1984), but a similar subjective valence of the self as depressed patients on a simplified version of Kelly's Repertory grid (De Bonis, De Boeck, Lida-Pulik, & Féline, 1995). Horesh et al. (2003) aggregated self-esteem items of the BDI and found a higher score in the BPD group, with part of the BPD sample currently depressed. The remaining two studies did not report depression status in BPD patients and yielded the following results: Ille et al. (2014) found stronger personal disgust (devaluation of one's own physical appearance and personality) in BPD, but no group difference in behavioral disgust (devaluation of one's own behavior) measured by the Questionnaire for the Assessment of Self-Disgust (Schienle, Ille, Sommer, & Arendasy, 2014). In the study by Snyder et al. (1982), BPD patients reported feelings of guilt and inferiority to a similar extent as depressed controls. With three of the six reported comparisons rendering comparable, and three rendering a more negative self-evaluation in BPD compared to DeD patients, results of these studies are not consistent, without pointing toward an association to current depression in BPD.

3.1.3.3. DEQ dependency.
Of four studies, three reported comparisons between currently depressed BPD and DeD patients. All three studies found similar levels of dependency (Levy et al., 2007; Southwick et al., 1995; Westen et al., 1992). With regard to non-depressed BPD samples, Levy et al. (2007) and Westen et al. (1992) did not find group differences either. Combining the two BPD groups in their study to one group, Westen et al. (1992) found higher levels of dependency than in patients with DeDs. Finally, Wixom et al. (1993) reported higher dependency for their BPD sample with unknown depression status, as compared to patients with DeDs only. Levy et al. (2007) additionally compared groups on two subscales within the dependency factor, which were extracted at a later stage of the DEQ development (Blatt, Zohar, Quinlan, Zuroff, & Mongrain, 1995): "Anaclitic Neediness" (a generalized, more maladaptive form of dependency, characterized by

anxiety, helplessness, and frustration regarding separation or rejection not linked to a particular relationship), and "Interpersonal Depression" (a less maladaptive form of loneliness or sadness in response to disruptions or loss of specific relationships). Using these subscales, Levy et al. (2007) found more anaclitic neediness in both BPD groups, but no differences regarding interpersonal depression. Taken together, with two out of seven comparisons denoting higher DEQ dependency in BPD groups, these results do not suggest stronger dependency in BPD as compared to DeD patients. Current depression in BPD patients does not seem to have a systematic influence on these findings. However, results from the study of Levy et al. (2007) suggest that a differentiation between more and less adaptive forms of dependency might help to further elucidate the degree of anaclitic depression in BPD, suggesting higher anaclitic neediness in these patients.

3.1.3.4. Interpersonal sensitivity.
Four studies used the interpersonal sensitivity subscale of the SCL-90, with three including currently depressed BPD groups. Of these, two found depressed BPD patients to experience higher interpersonal sensitivity than depressed controls (Joyce et al., 2003; Sullivan et al., 1994), while the third study yielded comparable levels of interpersonal sensitivity in both groups (Bellodi et al., 1992). The fourth study included BPD patients with part of the sample currently depressed, and found these to experience higher interpersonal sensitivity than patients with depression only. Summing up, these results indicate a trend toward elevated interpersonal sensitivity in BPD compared to DeD patients, even though the small number of studies urges cautious interpretation.

3.1.3.5. DEQ borderline-depression scale.
Westen et al. (1992) combined ten items of the DEQ to a new "borderline-depression" scale. The respective items had been rated by experts to represent the depression experience typical for BPD patients. According to the authors, this scale depicts "a quality of depressive experience characterized by emptiness, loneliness, diffuse negative affectivity, poorly integrated self-experience (including judgments of self-esteem), and tremendous insecurity and desperation regarding attachment figures" (Westen et al., 1992, p. 385). Comparing the samples in their study on this subscale, the authors found significantly higher scores in BPD patients with and without current depression than in the DeD comparison group.

3.2. Meta-analysis of depression severity in BPD

The 35 studies included in the meta-analysis contained a total of 3425 participants. For detailed information on study characteristics and results, see tables in Appendixes B and C.

3.2.1. Overall analysis, sensitivity, and risk of bias
Comparing BPD patients to patients with DeDs across different BPD subgroups and measures of depression severity resulted in a non-significant effect size ($g = 0.131$ [-0.033 to 0.296], $p = .118$, participant $n = 3425$, study $K = 35$). Analysis of heterogeneity was significant ($Q = 134.187$, $p < .001$, $I^2 = 74.662$), indicating a high degree of heterogeneity between study effect sizes. Sensitivity analysis further revealed that one study (Greggersen et al., 2011) significantly biased results, with a small effect size indicating higher depression severity in BPD patients ($g = 0.176$, $p = .020$) after removal of this data set. The exclusion of six other studies[5] each moved the effect toward a marginally significant realm, with a small, positive effect size and p-values ranging from .061 to .089. Visual inspection of the funnel plot (see Appendix D) and the Egger's regression test ($\beta = -0.965$, $SE = 1.192$, $t = 0.809$, p (2-tailed) = .424) did not yield indications of publication bias. Furthermore, a meta-regression analysis with the total quality scores of the modified SAQOR

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[5] De la Fuente et al., 2004; Nigg, Lohr, Westen, Gold, & Silk, 1992; Riso, Klein, Anderson & Ouimette, 2000; Soloff et al., 2000; Sprock, Rader, Kendall, & Yoder, 2000; White, Flanagan, Martin, & Silvermann, 2011.

($m = 8.67$, $min = 5.0$, $max = 11.5$) as predictor of effect sizes did not indicate a significant moderation effect of study quality ($p = .106$). The high heterogeneity, together with the dependence of the overall effect size on single studies, suggests that the overall finding of no difference in depression severity between BPD and DeD patients may not be generalized. Therefore, moderator analyses were conducted to test the influence of age, gender, comorbid DeDs in BPD patients, and choice of depression scale.

3.2.2. Moderation by age and gender

Due to missing information on patient characteristics in primary studies, the number of studies included in the meta-regression analyses was reduced to $K = 33$ for gender and to $K = 32$ for age. With respect to gender, neither differences between BPD and DeD groups in the percentage of female participants ($p = .460$), nor the absolute ratio of females to males within the BPD group ($p = .720$) were significantly related to effect sizes. Analyses also did not indicate significant associations of effect sizes to age differences between groups ($p = .305$) or to mean age within BPD patients ($p = .134$).

3.2.3. Moderation by depression instrument

The analysis of the influence of self- vs. observer-rated depression scales was based on all 35 studies included in the meta-analysis. Since ten studies reported results of two different instruments, the self-rating subgroup included 27 and the observer-rating subgroup 18 comparisons. There was no significant difference ($Q = 0.890$, $p = .345$) between overall effect sizes in the context of self-rated ($g = 0.191$ [-0.002 to 0.384], $p = .052$) and observer-rated ($g = 0.047$ [-0.180 to 0.275], $p = .683$) scales.

The next analysis contrasted effect sizes based on the BDI (18 comparisons) with effect sizes based on the HRSD (14 comparisons), including 26 studies in total. Of these, six studies employed both instruments and thus were represented in both subgroups. The comparison of overall effect sizes on the BDI ($g = 0.213$ [-0.047 to 0.473], $p = .108$) and HRSD ($g = -0.017$ [-0.305 to 0.271], $p = .909$) did not yield a significant difference ($Q = 1.350$, $p = .245$). Both subgroup comparisons (self- vs. observer-rating and HRSD vs. BDI) remained non-significant when the Greggersen et al. (2011) data set was excluded.

3.2.4. Moderation by comorbid depression in BPD patients

Meta-regression revealed a significant association between the percentage of comorbid DeDs in BPD samples and effect sizes (point estimate = 0.009, $z = 4.737$, $p < .001$), indicating that the higher the rate of DeDs in the BPD group, the higher was the severity of depression in BPD patients compared to patients with DeDs only. Nevertheless, there was still significant unexplained heterogeneity in this model (Q-test $p < .001$). The number of studies for this analysis was reduced to $K = 31$, since four studies did not report exact comorbidity rates for the BPD group.

To further investigate the effect of comorbid DeDs in BPD groups, a subgroup analysis was conducted to contrast effect sizes of group comparisons including BPD patients with 0%, 1–99%, or 100% comorbidity of DeDs. Due to missing reports of comorbidity in two studies, this analysis included $K = 33$ studies altogether. Five of these contained two separate BPD groups (0% vs. 100% comorbidity of DeDs), leading to seven (currently depressed BPD sample), eleven (part of BPD sample currently depressed), and 20 (non-depressed BPD sample) comparisons within the three subgroups.

The effect sizes and 95% CIs of the studies are plotted in Fig. 2. There were significant differences in overall effect sizes ($Q = 25.509$, $p < .001$), with a large significant overall effect in the subgroup including non-depressed BPD patients ($g = -0.812$ [-1.181 to -0.442], $p < .001$), a non-significant overall effect in the subgroup of BPD patients with part of the sample currently depressed ($g = 0.193$ [-0.069 to 0.455], $p = .150$), and a small significant effect in the subgroup of depressed BPD patients ($g = 0.230$ [0.043 to 0.416], $p = .016$). A direct comparison

of overall effect sizes of the subgroups with currently depressed BPD patients and BPD samples with some individuals currently depressed did not show a significant difference ($Q = 0.076$, $p = .783$). Still, overall effect sizes of both groups differed significantly from that of the subgroup with non-depressed BPD patients (currently depressed vs. non-depressed: $Q = 23.178$, $p < .001$; part of BPD sample currently depressed vs. non-depressed: $Q = 16.900$, $p < .001$). Heterogeneity within subgroups was still significant on a moderate level, with $Q = 20.662$, $p < .002$, $I^2 = 70.961$ for non-depressed BPD samples, $Q = 20.554$, $p < .024$, $I^2 = 51.348$ for BPD groups with part of the sample currently depressed, and $Q = 52.178$, $p < .001$, $I^2 = 63.586$ for currently depressed BPD samples. Significance levels and differences between subgroups did not change substantially when the study by Greggersen et al. (2011) was excluded.

Taken together, results from meta-regression and subgroup analyses suggest a positive association between the occurrence of comorbid DeDs and depression severity in individuals with BPD compared to non-BPD depressed patients. More specifically, severity of depression symptoms was significantly lower in BPD patients without comorbid DeDs, but significantly higher in BPD samples with all patients suffering from current DeDs.

4. Discussion

The aim of this review was to provide a systematic comparison of the quality and severity of depression between BPD and DeD patients, taking into account the impact of patient and study characteristics. The review on depression *quality* indicated higher anger, hostility, and DEQ self-criticism as specific for the experience of depression in individuals with BPD. With regard to depression *severity*, the meta-analytic results do not support the notion that BPD patients "per se" experience an overall level of depression symptoms comparable to—or even exceeding—that of patients with DeDs, as reported previously (e.g., Comtois et al., 1999; Silk, 2010). Instead, depression severity in BPD varied depending on whether a comorbid DeD is present. While BPD patients without DeDs were less severely depressed, BPD patients with an additional comorbid DeD were more severely depressed than patients with DeDs only.

The finding of intensive anger and hostility in depressed BPD patients is consistent with psychodynamic models such as object-relations theory (Clarkin et al., 2007; Kernberg, 1992), that see aggressive affects as central in borderline pathology. It is also in line with the assumption of a general emotional dysregulation in BPD patients as proposed in the developmental model by Linehan (1993), even though this model does not emphasize aggressive emotions in particular. Anger and irritability, on the other hand, are a significant risk-factor for long-term course and outcome in depression per se (Judd, Schettler, Coryell, Akiskal, & Fiedorowicz, 2013).

Even though support for a more negative self-concept in BPD samples was weaker across other measures of self-evaluation, findings indicated higher DEQ self-criticism in BPD. This is in line with previous accounts of BPD patients perceiving themselves as fundamentally worthless or bad (Gunderson, 1984; Kernberg, 1975). Although in the initial model of Blatt (1974) introjective (self-critical) depression was conceptualized as a neurotic or "superego" phenomenon, more recent studies indicate a wider variability of this dimension. For example, intense self-criticism can be associated with self-destructive behavior and identity disturbances in depressed patients with comorbid BPD (Levy et al., 2007), and with higher depression severity (Luyten et al., 2007). In other words, just as "depression is not just depression" (Westen et al., 1992), self-criticism may have a differential impact on depression experience at different levels of personality functioning (see Bender et al., 2011). Taken together, the findings of higher levels of aggression and DEQ self-criticism support the idea of a "bad-mad" or "angry" depression in BPD (Hartocollis, 1977; Silk, 2010). This is also consistent with the trend for higher hopelessness in depressed
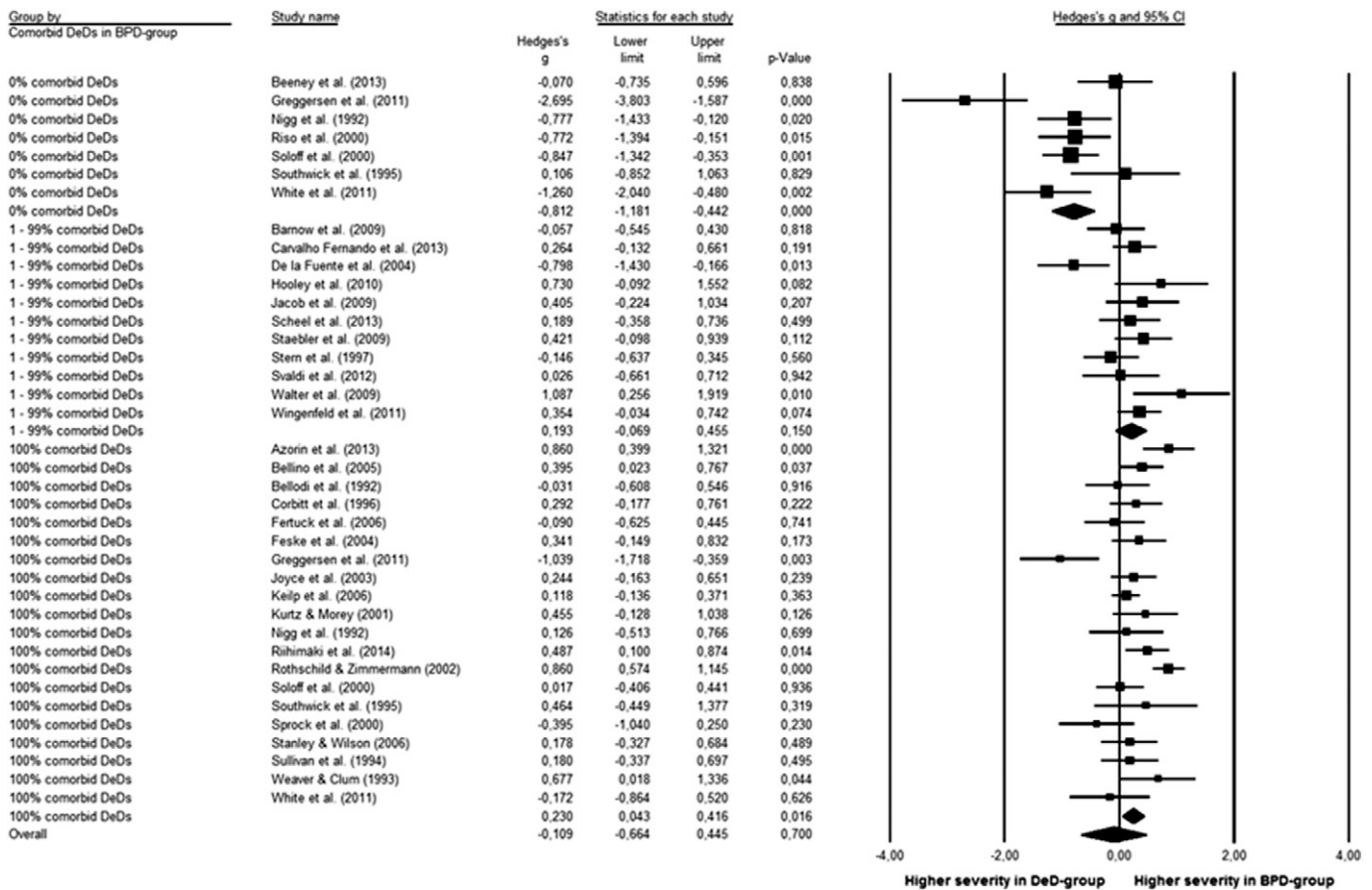
Fig. 2. Forest-plot of between-group effect sizes of depression severity as compared between BPD and DeD patients, grouped by comorbidity status in the BPD sample. *Note.* The squares represent the effect sizes for each study, the size of the square the relative weighing of the study in the analysis.

BPD patients in our review, as this angry type of depression might also involve strong feelings of hope- and helplessness if aggression is turned toward the self (Leichsenring, 2004).

Though there was a trend for more interpersonal sensitivity on the SCL-90, the reviewed findings did not consistently support higher dependency as measured by the DEQ in BPD patients. This might partly be due to validity problems of the DEQ dependency scale, as Levy et al. (2007) demonstrated more anaclitic neediness in BPD patients. At the same time, it may encourage researchers and clinicians to consider dependency on different levels of adaptiveness. Another potential explanation relates to the particular content of the SCL-90 interpersonal sensitivity subscale, which also encompasses items related to self-esteem and social anxiety, and thus possibly captures symptoms over and above interpersonal dependency. Taken together, these results do not provide clear support for an "abandonment depression" (Masterson, 1976) revolving around fears of loss and separation in BPD. Still, discrepant findings of different scales suggest that the specific aspects distinguishing interpersonal experiences in borderline-depression from those in individuals with DeDs alone might still need to be identified. For example, higher fear of abandonment in BPD could be accompanied by hostile affects in particular (Critchfield, Levy, Clarkin, & Kernberg, 2008), or, as in the concept of anaclitic neediness, be highly generalized.

Findings did not indicate higher levels of anxiety or tension in BPD patients, while results on generally impaired affectivity were mixed. Interestingly, the two studies on impaired affectivity that found no differences between groups included scales that were rather specific in operationalization and content, such as affect at the present moment (Beeney et al., 2014) or anhedonia (Hooley et al., 2010). Studies with a broader operationalization of impaired affectivity including overall mood disturbance, negative affectivity, emotional withdrawal, and

lability over the preceding days reported higher impairment in BPD patients. Taking this into account, the overall picture of findings in the affective domain, including anger and hopelessness, lends tentative support to a broader range of affective disturbance as specific for depression in BPD, as suggested by the models of Linehan (1993) or Zanarini and Frankenburg (2007). This is also in line with a recent qualitative study on the nature of sadness in BPD (Briand-Malenfant, Lecours, & Deschenaux, 2012), characterizing the dysphoric experience in BPD as more complicated than sadness proper. We also found more similarities than differences between BPD and DeD patients on single items and factors of depression scales. At the same time, those areas where individuals with BPD did show higher impairment include symptoms that are not at the core of depressive disorders (e.g. less insight, higher derealization-depersonalization, and higher paranoia) but rather tap into the symptom domain of BPD (i.e., criterion nine in DSM-5 referring to transient, stress-related paranoid ideation or severe dissociative symptoms).

Taken together, our systematic review suggests that the quality of depression in BPD is not characterized by elevated prototypical depression symptoms. Instead, results point to a broader experience of negative affect, primarily constituted of anger and hostility, possibly of hopelessness and general affective impairment. Disturbances of the self-concept like high self-criticism and derealization–depersonalization—probably intertwined with specific interpersonal difficulties like interpersonal sensitivity, anaclitic neediness and paranoid ideation—further stand out as features of depression quality in BPD. This mixture of symptoms is also reflected by higher scores on the DEQ borderline-depression scale, as reported by Westen et al. (1992). Even though we can only speculate on explanations for this finding, the resemblance of this symptom profile to actual symptoms of BPD could reflect a blending in of BPD pathology

with the symptoms of depression. Another potential explanation could be that the lower level of personality functioning typical in patients with BPD (Dinger et al., 2014) is leading to increased comorbidity and general psychopathology, and thus to a higher polymorphism in the clinical picture.

Across 35 cross-sectional studies in our meta-analysis, overall depression severity did not differ between BPD and DeD patients. Effect sizes were independent of the quality of primary studies and, consistent with the fact that the majority of studies did not focus on depression severity as the main outcome, there was no indication of publication bias. Nevertheless, the high degree of heterogeneity suggests that the variance of effect sizes is systematically influenced by variables other than the presence of a BPD diagnosis. There was no significant effect of self- vs. observer-rated depression scales or of contrasting depression severity as indicated by the BDI vs. the HRSD, challenging the assumption that—due to exaggeration, negative impression management or higher cognitive or affective depression symptoms—depression severity in BPD is higher in self-reports or on specific instruments (De la Fuente & Mendlewicz, 1996; Kurtz & Morey, 2001; Stanley & Wilson, 2006). While different types of depression scales might, in fact, not make a difference in the assessment of depression severity in BPD, other factors such as shortcomings in the standardization of the HRSD (Williams, 2001), or raters who are not blinded, could render it difficult to detect a possible effect of particular instruments.

Nevertheless, in our data, only the presence of comorbid DeDs within BPD samples was a significant moderator explaining heterogeneity: A small effect size ($g = 0.230$) indicated higher depression severity in BPD patients with comorbid DeDs, and a large negative effect size ($g = -0.812$) indicated lower depression severity in BPD patients without comorbid DeDs as compared to depressed controls. It is nevertheless important to note that the depression symptoms in all "pure" BPD samples without comorbid DeDs as reported in the original studies were still within the realm of clinically significant, mild to moderate depression.

In general, the liability of the overall effect size to the removal of single studies and significant heterogeneity in all analyses urge for a cautious interpretation of results. The high heterogeneity indicates that depression severity in BPD is determined by additional factors beyond age, gender, method of depression assessment, and BPD or DeD diagnoses. Despite restriction of study inclusion by a number of criteria, methodological differences between primary studies not covered in the assessment of study quality (e.g., choice of instruments to diagnose disorders, treatment status of patients, or comorbidities in depressed controls) are likely to account for some of these factors. In addition, BPD itself is a highly heterogeneous disorder, with the DSM-IV and DSM-5 definition allowing for 151 possible combinations of BPD criteria and no "necessary criteria" as diagnostic threshold. Furthermore, with five out of nine symptoms over two weeks, major depression has a low diagnostic threshold, and a study by Olbert, Gala, and Tupler (2014) demonstrated that polythetic criteria can lead to considerable heterogeneity within this diagnosis as well. Attempting to explain clinical heterogeneity in BPD, a substantial line of research has examined factor-analytic solutions reflecting core dimensions of borderline psychopathology. The most common model includes a three-factor structure of disturbed relatedness, affective dysregulation, and behavioral dyscontrol (Skodol et al., 2002). Thus, it is possible that elevated depression severity might primarily be found in BPD patients characterized by affective disturbances, but not the other two subgroups.

Overall, results of our study call for a differentiation between BPD patients with and without comorbid DeDs in the concept of borderline-depression, especially with regard to depression severity. If one is relating to an affective syndrome not fulfilling criteria for a DeD, severity is likely to be lower than in individuals with actual DeDs. Nevertheless, given that depression symptoms in BPD samples without DeDs were clinically meaningful, and that, compared to depressed controls, depression severity in BPD patients with comorbid DeDs was elevated, the overall picture suggests that individuals with BPD experience a "baseline" impairment in

symptom domains overlapping with DeDs. For BPD patients with co-occurring DeDs, this might lead to a higher symptom severity compared to depressed individuals without the additional liabilities of borderline pathology.

4.1. Limitations and future directions

Our study is the first to systematically and quantitatively synthesize results on depression experience in BPD. Strengths of this approach lie in the explication of inclusion criteria regarding the variables and samples under study, as well as the quantification of group differences and the impact of moderating variables. At the same time, the findings are limited with regard to the attributes of depression taken into account. For example, we did not consider suicidal ideation or the onset and course of depression. Furthermore, we excluded qualitative investigations, and our results are based on cross-sectional, naturalistic studies that cannot disentangle the mechanisms behind the comorbidity and phenomenology of BPD and DeDs.

In addition, the shift in the conceptualization of BPD toward affective dysregulation makes it more difficult to differentiate between BPD and DeDs. Thus, some features designated to be central for BPD are seen as elements of depression as well (i.e., negative self-evaluation). On the other hand, some features assumed to be specific for borderline-depression (i.e., anger or hostility) are not accounted for among prototypic depression symptoms, as are several symptoms included in common depression scales (e.g., obsessive–compulsive symptoms in the 21-item version of the HRSD). This symptom overlap between disorders and inconsistent definition of depression pose a considerable challenge to empirical research on depression in BPD and its interpretation. It would be advisable for future studies to utilize constructs and methods reducing tautology between both diagnoses. This might be achieved by the study of underlying transdiagnostic risk factors and novel markers, as emphasized in the psychiatric RDoC-framework (see for example Nolen-Hoeksema & Watkins, 2011). From a psychological perspective, dimensional measures of personality pathology as proposed by the Levels of Personality Functioning scale of the DSM-5 (Bender et al., 2011) or related approaches, such as the Operationalized Psychodynamic Diagnosis system (OPD-2; see Zimmermann et al., 2012), can be useful for further differentiation of personality pathology and symptoms of depression.

With regard to existing studies on the quality of depression in BPD, the following problems can be identified: First, a considerable number of studies were based on relatively small samples, and therefore possibly underpowered. Second, we were not able to investigate all of the features designated to be central for borderline-depression in the literature. There were no eligible studies comparing BPD and DeD patients with regard to feelings of emptiness, loneliness, or boredom. Also, the number of studies investigating similar aspects was often small and there was high diversity in the instruments and samples (e.g., with regard to age or inclusion criteria). All these factors decrease comparability of studies and impeded a meta-analytic synthesis of the data. Future empirical studies should ensure adequate sample sizes, careful selection of variables taken into focus, and control for possibly confounding sample characteristics, like treatment status, comorbid PDs within DeD patients, or antidepressant medication.

Another limiting issue is that a pervasive pattern of temporal instability in various symptom domains is considered a defining feature of BPD (APA, 2013) and is specified in a number of theoretical models, for example as emotional dysregulation (Linehan, 1993) or integration vs. vacillations of mental states (Levy, Beeney, Wasserman, & Clarkin, 2010). Therefore, the temporal stability of reported symptoms may be insufficient to detect core aspects of depression experience in BPD if relying on one-time, cross-sectional measurement (Nica & Links, 2009; Santangelo, Bohus, & Ebner-Priemer, 2014). This is especially true if the domains of interest are assumed to shift at high frequencies (Ebner-Priemer & Sawitzki, 2007; Gunderson, 2010). The supposed

instability of affects, interpersonal experience, and sense of self could also be a potential explanation for the heterogeneity of results in cross-sectional studies. Besides posing a methodological challenge, temporal instability of affect and self-esteem could also be defining features of depression in BPD. Taken together, this calls for a test of temporal stability regarding different domains of borderline-depression through diverse methodology. Ecological Momentary Assessment, ensuring a series of measurements over time, could be a worthwhile approach for future studies on depression experience in BPD and DeDs (see for example Trull et al., 2008; Santangelo et al., 2014).

4.2. Conclusions

Regarding the diagnostic process and treatment of depression in BPD, our review suggests that broad affective impairment and intense self-devaluation could serve as cues for a possible comorbid BPD in patients initially presenting with an affective disorder. Furthermore, the finding of higher severity of comorbid depression in individuals with BPD is in line with longitudinal studies indicating later remission of depression in BPD (e.g., Levenson, Wallace, Fournier, Rucci, & Frank, 2012) as compared to depressed patients without personality disorders. Furthermore, results of a longitudinal study by Gunderson et al. (2004) suggest that improvements in BPD are followed by improvements in depression symptoms, but not vice versa, and meta-analytic findings indicate that antidepressants have a rather small effect on depression symptoms in BPD (Mercer, Douglass, & Links, 2009). These findings call for a broad theoretical scope and qualification of therapists, as symptom-oriented methods that do not take into account structural deficits in self-concept and regulatory functions may fall short in patients with comorbid personality disorders (Levy & Anderson, 2013; Milrod, Leon, Barber, Markowitz, & Graf, 2007). In short, strategies for the treatment of BPD and related personality dysfunction should always be taken into account when handling depressive symptoms in this patient group.

Summarizing, depression experience in BPD has long been perceived to differ from that of depressed patients without BPD. Primary studies and findings on depression experience in BPD are characterized by high heterogeneity, and difficulties in the definition and measurement of borderline-depression became evident. Nevertheless, our findings point toward a distinct quality of depression in BPD with respect to some, but not all symptom domains hypothesized in the literature. Regarding depression severity, results of our meta-analysis emphasize the importance of differentiating between BPD patients with and without comorbid DeDs. With regard to future research, the consideration of specific subtypes of BPD and DeD patients, as well as diagnostic approaches avoiding tautology between the diagnostic entities of BPD and depression are promising.

Contributors

JK and UD jointly designed the study and conducted statistical analyses. JK conducted the literature search and wrote the first draft of the manuscript. JCE conducted quality ratings of primary studies together with UD. HS developed the study inclusion criteria together with JK and UD. KNL contributed to the study design. All authors contributed to the manuscript and approved its final version.

Conflict of interest

All authors declare no conflicts of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.cpr.2015.02.002.

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