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***Depression and Personality:
The Impact of Personality Dysfunction on Quality and Severity of
Depressive Symptoms and the moderating Role of Culture***

vorgelegt von
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List of Scientific Articles for the Cumulative Dissertation

1. Study I

Köhling, J., Ehrental, J. C., Levy, K. N., Schauenburg, H., & Dinger, U. (2015). Quality and Severity of Depression in Borderline Personality Disorder: A Systematic Review and Meta-Analysis. *Clinical Psychology Review, 37*, 13-25.

2. Study II

Köhling, J., Moessner, M., Ehrental, J. C., Bauer, S., Cierpka, M., Kämmerer, A., Schauenburg, H., & Dinger, U. (invitation for resubmission). Affective Instability and Reactivity in Depressed Patients with and without Borderline Pathology. *Journal of Personality Disorders*

3. Study III

Köhling, J., Undurraga, C. M., de la Parra, G., Krause, M., Ehrental, J. C., Kämmerer, A., Cierpka, M., Schauenburg, H., & Dinger, U. (submitted). Dependency, Self-Criticism and Personality Functioning as Predictors of Depression Severity in Chile and Germany – A Cross-Cultural Study. *Transcultural Psychiatry*

INTRODUCTION

The notion of an association between personality and depression can be traced back to antiquity, when Hippocrates, and later Galen, argued that particular „humors“ were responsible for specific types of personality and psychopathology (Klein, Durbin, & Shankman, 2009). Today, current psychiatric classification systems adopted a descriptive, atheoretical definition of unipolar depressive syndromes, irrespective of assumptions concerning their etiology. Furthermore, the majority of research on major depression follows a disorder-centered approach, aiming to identify specific etiological models and treatment approaches for this diagnosis. However, significant heterogeneity in symptom expression, triggers, and vulnerability factors pose considerable problems to this model. Another potential challenge to this concept is that, as noted by Westen (2006, p. 335), “...psychopathology was not created by an obsessive-compulsive god who created depression on one day, anxiety on the next, and rested on the seventh day once he was certain that his disorders were clearly separated.” In fact, comorbidity between depression and other psychiatric disorders is the rule rather than the exception (Otte, 2008).

It has therefore been argued that depression needs to be textualized in a much broader context. For example, as pointed out by Gilbert (2013), there is evidence that treatment with antidepressants may be less effective in people with major social adversities (Brown et al., 2010), and that personality and interpersonal style contribute to chronicity, treatment resistance, and relapse (Cain et al., 2012). One approach to a broader (con)textualization is offered by a “person-centered” perspective on depression. Mainly stemming from a psychodynamic theoretical background, this approach posits that if we want to understand symptoms, we have to know something about the person who hosts them. Consequently, symptoms can also be seen as an expression of characterological structure and impairments in personality functioning (Luyten & Blatt, 2007; Westen, 2006). This is of particular importance given that there is considerable comorbidity of personality disorders (PDs) in depression (Ingram, 2009a), and the development of depressive symptoms has repeatedly been linked to specific disruptions in personality development (for an overview, see Luyten & Blatt, 2013, 2011). Thus, the present dissertation project aims to help clarify to what extent – and under which circumstances – different forms of personality dysfunction affect the clinical presentation and severity of depression.

Borderline Personality Disorder (BPD) is counted among the most severe forms of personality pathology (Hooley, Cole, & Gironde, 2012). Furthermore, there is literature describing distinct characteristics of depression experience in patients with BPD (see Silk,

2010). Nevertheless, besides previous research efforts, several issues with regard to “borderline-depression” remain unclear. In addition, study designs utilized to examine depression in BPD are highly diverse, and a systematic integration of the literature is missing. Therefore, the *first study* of this project provides a systematic review of the quality of depressive symptoms, and a meta-analysis of depression severity in BPD-patients as compared to depressed patients without a BPD diagnosis.

In addition, dynamic characteristics of depression experience in BPD have not been taken into account. This is surprising, because affective instability is regarded a core feature of BPD (APA, 2013; Linehan, 1993), and it has been proposed that the affective disturbance in BPD can be distinguished from that in depression by more frequent, abrupt mood changes triggered by external events (e.g., Nica & Links, 2009). Furthermore, while earlier studies of these features were based on self-report questionnaires or experimental paradigms, more and more studies began to pursue the ebb and flow of affect via Ambulatory Assessment (AA) methodology. AA-designs can be integrated into naturalistic settings and participants report on their current experiences in repeated measurements over time. By this, AA combines the advantages of high ecological validity, reduced memory biases, and the identification of important situational variables (see Myin-Germeys et al., 2009). Thus, the *second study* employs AA-methodology to explore affective instability and reactivity in depressed patients with and without BPD.

Finally, Klein and colleagues (2009) suggested that future research should identify moderators of the personality-mood relationship. Hence, since this dissertation project is embedded in the Chilean-German Doctoral Program at the University of Heidelberg, another focus lies on the degree to which the relationship between personality and depression varies by cultural context. The personality dimensions of dependency and self-criticism (Blatt, 1974) and overall personality functioning as measured by the Levels of Structural Integration Axis (LSIA) of the Operationalized Psychodynamic Diagnosis system (OPD; OPD Task Force, 2008) are at the center of this research question. While these dimensions are generally assumed to be associated with higher depression severity, the transcultural universality of this relationship is not clear, since the majority of research has been conducted in Northern American or European countries. In addition, it has been proposed that the “fit” between personality and sociocultural norms might determine whether specific personality features are accompanied by psychological distress or not (“culture-clash hypothesis”; see for example Triandis, 2000). Following these suggestions, *study three* compares the implications of personality dysfunction for depression severity in Chile and Germany.

1. THEORETICAL BACKGROUND

This chapter is designed to give a brief overview of the constructs and the previous literature that forms the starting point of this dissertation project. The first part outlines the syndrome of depression. In the second part, the three major concepts of personality dysfunction employed in the empirical studies are introduced. The aim of the third section is to outline different implications of personality dysfunction for the quality and severity of depressive symptoms. Finally, the last section is dedicated to the role of culture. It introduces methodological approaches to intercultural research on psychopathology, as well as the possible impact of culture on the association between personality and depression.

1.1 Depression

The term *depression* can be conceptualized at multiple levels, ranging from a mild affective state to a severe clinical disorder. In terms of psychiatric diagnoses, depressive symptoms are included in a range of unipolar and bipolar mood disorders defined in the *Diagnostic Statistical Manual of Mental Disorders* (DSM-5; American Psychological Association [APA], 2013) and *International Classification of Diseases* (ICD-10; World Health Organization [WHO], 1993). The most prominent unipolar depression syndrome included in these classification systems is a major depressive episode (MDE), which, if recurring, is designated a major depressive disorder. According to the diagnostic criteria specified in the DSM-5, the core symptoms of an MDE consist of 1) depressed mood (e.g., sadness, hopelessness) and/or 2) diminished interest or pleasure. Other symptoms are 3) changes in appetite or weight, 4) sleep disturbances, 5) psychomotor agitation or retardation, 6) fatigue or loss of energy, 7) feelings of worthlessness or guilt, 8) diminished ability to think, concentrate or decide, and 9) ideation or attempts of suicide. Besides a few other basic criteria (e.g., exclusion of organic origin), the full diagnosis of an MDE applies if at least five of these nine symptoms were present during the same 2-week period, including at least one of the two core symptoms. In addition, significant depressive symptoms not fulfilling the criteria of an MDE can also be subsumed under the diagnoses of a dysthymic disorder or depressive disorder not otherwise specified.

Unipolar depression is a serious health problem of high prevalence worldwide. Point prevalence estimates of major depression are typically in the range of 2-4% in adult samples (WHO World Mental Health Survey Consortium, 2004). Recent estimates within the European population indicated a 12-months prevalence of major depression of 6.9% (Wittchen et al., 2011). Furthermore, surveys assessing depression with symptom screening

scales find that up to 20% of adults report depressive symptoms during recall periods of up to 6 months (Kessler, Avenevoli, & Merikangas, 2001). Generally, it is regarded as well-established across different countries and ethnic groups that women are diagnosed with depression at twice the rate as men (Ingram, 2009b). With regard to course, it was reported that more than 80% of people with a history of major depression experience recurrent episodes (Kessler et al., 2003). Furthermore, comorbidity with other psychiatric diagnoses is common, with up to half of the individuals with lifetime depression diagnoses reporting other lifetime mental disorders. Moreover, comorbid depression has generally found to be more severe and persistent than non-comorbid depression (Kessler, 2009).

There is a wide range of theoretical models of depression etiology, including cognitive (e.g., Clark, Beck & Alford, 1999), interpersonal (e.g., Joiner, 1997) and psychodynamic (e.g., Blatt, 1974) approaches. Furthermore, a significant genetic contribution to depression is regarded as well-established, and a host of neurobiological systems (i.e., monoamines, neurohormones, neuroplasticity, neurogenesis, and inflammation) has been proposed as possible etiological pathways (see Cleare & Rane, 2013; Kupfer, Frank, & Phillips, 2011). Besides biological factors, several vulnerabilities for depression development (e.g., childhood low self-esteem) as well as environmental risk factors (e.g., low socioeconomic status) have been identified. These factors put individuals at higher risk of depression and potentially moderate the impact of genetic dispositions (see Gilbert, 2013). Summarizing these interactions, different authors integrated research findings into elaborated (bio)psychosocial models (e.g., Bifulco, 2013; Gilbert, 2013). It would be beyond the scope of this thesis to depict the vast body of theoretical models and empirical findings on depression etiology in detail. Instead, I would like to take one step back and highlight several fundamental problems in the definition and modeling of depressive disorders.

Until the introduction of DSM-II (APA, 1980), a “binary model” of depression had a lengthy history, with “endogenous/psychotic” vs. “neurotic/reactive” labels giving different weight to biological and psychosocial determinants. Due to little empirical support of this model and insufficient etiological knowledge on depression, conceptualization was shifted to a descriptive approach. As a consequence, the current dominant model of depressive disorders represents a continuum view, with depression seen as a single condition varying by severity. Notwithstanding the utility of this model for diagnostic communication and replication of research studies, about 30 decades later, high heterogeneity within the depressive disorders and questionable validity of a disorder-specific model of depression have been widely recognized (e.g., Bebbington, 2013; Gilbert, 2013; Luyten & Blatt, 2007; Parker, 2005,

Watson; 2005). In particular, unclear boundaries with a low diagnostic threshold, high comorbidity, difficulties to replicate patterns of neurobiological changes across different populations, as well as treatment-specificity as a function of individual vulnerability factors rather than a major depression diagnosis per se, are challenging the unitary concept of major depression (for overviews, see Gilbert, 2013; Luyten & Blatt, 2007; Parker & Manicavasagar, 2005). Thus, these and other authors suggested that there might be differing etiological pathways for different individuals diagnosed with depression.

Consequently, debate about possible alternative concepts of depression is ongoing. Contemporary examples are a newly proposed type of atypical depression (Posternak & Zimmermann, 2002) or a “mix-and-match model” for capturing both categorical subtypes of depressive syndromes as well as dimensional and “normal reaction” depressive conditions (Parker & Manicavasagar, 2005). Another differentiating perspective can be found in so-called person-centered (instead of disorder-centered) models (Blatt & Zuroff, 2009; Luyten & Blatt, 2013), which are aiming to bridge the gap between personality theories and psychiatric nosology. From this perspective, depressive symptoms can only be sufficiently comprehended when seen within the framework of the personality of a particular individual (Blatt & Zuroff, 2009; Westen, 2006). These approaches encompass both empirically derived dimensional models related to broad personality traits (e.g., the internalization-externalization continuum; Aschenbach, Krukowski, Dumenci, & Ivanova, 2005), as well as more specific, theory-driven personality dimensions (e.g., sociotropy vs. autonomy; Beck, 1999).

As already noted in the introduction, the research questions of this dissertation project can generally be located in this framework. In particular, the present empirical studies were set up to explore the consequences of personality dysfunction for depression. Thus, the specific forms of personality dysfunction taken into focus will be depicted in more detail in the following section.

1.2 Personality Dysfunction

A common definition refers to *personality* as enduring ways of thinking, feeling, behaving, as well as regulating emotions and impulses that manifest across time or situations (Westen, 2006). Yet another term stemming from the psychodynamic tradition is that of *personality organization* or *structure*, referring to repetitively activated and functionally defined processes, such as motivation, regulation of mood or of impulses. In his overview over different conceptualizations of personality structure, Westen (2006) distinguishes these by the aspects they focus on: functional domains (e.g., social skills), levels of disturbance (e.g., ranging from neurotic to psychotic), and personality configurations or types (e. g., PDs

defined in DSM-5). Throughout this thesis, *personality dysfunction* will be used to describe clinically significant impairments in terms of any of these three perspectives. The following three sections will introduce the specific concepts of personality dysfunction (BPD, overall personality functioning, and dependency vs. self-criticism) which were examined in the empirical studies of this project. A second aim is to outline the interrelations between these concepts to aid the integration of research findings and conclusions.

1.2.1 Borderline personality disorder

The term “borderline” was first used by Stern (1938) to describe a group of patients who were hypersensitive, had problems with reality testing, and were extremely difficult to handle in psychotherapy. Thus, Stern regarded them as being at the border of psychoses and neuroses. Later, three developments set the stage for the current definition of BPD: Kernberg’s (1968) concept of “borderline personality organization”, the preliminary empirically based criterion set for the borderline syndrome by Grinker, Werble, and Drye (1986), and the literature review of Gunderson and Singer (1975) defining the disorder by six criteria. By 1980, BPD was differentiated from other types of PDs and included in the third edition of the DSM (APA, 1980). Since then, it has become the most researched form of personality pathology (Hooley et al., 2012).

According to the current DSM-5 definition, the essential feature of BPD is a pervasive pattern of instability of interpersonal relationships, self-image and affects, and marked impulsivity in a variety of contexts beginning by early adulthood. These features are defined in more detail in nine diagnostic criteria (see Table 1), of which at least five have to be fulfilled to assign a BPD diagnosis. Apart from these specific criteria, DSM-5 also demands that the general criteria for a PD have to be present. These include (A) an enduring pattern of inner experience and behavior deviating markedly from the individuals’ culture and manifested in two or more of the following areas: cognition, affectivity, interpersonal functioning or impulse control, which is (B) inflexible and pervasive across a range of situations, (C) leads to clinically significant distress or impairment in important areas of functioning, D) is of long duration and has its onset in adolescence or early adulthood, E) is not better explained by another mental disorder, and F) is not attributable to the effects of a substance or medical condition (APA, 2013). These criteria are consistent with those of the DSM-IV.

The median point-prevalence prevalence of BPD is estimated between 1.6% and 5.9% in the general population. In clinical samples, prevalence is around 10% in outpatient mental health treatment and 20% in psychiatric inpatients. BPD is diagnosed predominantly (about

75%) in females (APA, 2013). Nevertheless, there is no evidence that BPD actually is more common in women (Leichsenring, 2011), and recent studies in community samples actually report no sex differences (e.g., Coid et al., 2009). The most frequent course is one of enduring instability in early adulthood, with episodes of serious affective and impulsive dyscontrol and high use of health resources. The impairment from BPD is usually highest in young-adult years, and gradually waning with advance in age. Follow-up studies of BPD patients treated in outpatient mental health settings indicate that after 10 years, around half of individuals no longer meet the full diagnostic criteria (APA, 2013).

Table 1. DSM-5 Diagnostic Criteria for Borderline Personality Disorder.

1.	Frantic efforts to avoid real or imagined abandonment. (Note: Does not include suicidal or self-mutilating behavior covered in Criterion 5.)
2.	A pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization or devaluation.
3.	Identity disturbance: markedly and persistently unstable self-image or sense of self.
4.	Impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating). (Note: Does not include suicidal or self-mutilating behavior covered in Criterion 5.)
5.	Recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior.
6.	Affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than a few days).
7.	Chronic feelings of emptiness.
8.	Inappropriate, intense anger or difficulties controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights).
9.	Transient, stress-related paranoid ideation or severe dissociative symptoms.

Nonetheless, BPD is characterized by severe functional impairments, high risk of suicide, a negative effect on the course of depressive disorders, extensive use of treatment, and considerable societal costs (Leichsenring, 2011). In addition, the presence of other mental disorders is highly common in BPD, with comorbidity rates much higher than in other mental health conditions (Hooley et al., 2012). In a study of patients drawn from an outpatient clinic, almost 70% of BPD patients had three or more Axis-I disorders, compared to 31% of the non-BPD sample (Zimmerman & Mattia, 1999). Furthermore, in a community survey by Jackson and Burgess (2004), when compared to other PDs, BPD had the largest odds ratio (18.9) for a relationship with one or more comorbid Axis-I disorders.

With regard to diagnostic criteria, the construct of BPD is polythetic in nature, with no one specific symptom regarded as mandatory. In consequence, there are 126 different ways that the necessary five criteria can be combined. This makes BPD a highly heterogeneous disorder, especially in combination with high comorbidity. Accordingly, there is controversy about the core pathology of BPD. While it was proposed that BPD might constitute a variant of mood disorder (Akiskal, Chen, & Davis, 1985) or of posttraumatic stress disorder (Herman, Perry, & Van der Kolk, 1989), both suggestions received little empirical support (Hooley et al., 2012). Nonetheless, traumatic experiences in early childhood have repeatedly been found to be higher in BPD patients than in those with other Axis I or II disorders (e.g., Widom, Czaja, & Paris, 2009; Zanarini et al., 2000). Still, child maltreatment is often associated with more general family dysfunction and psychopathology, and not every individual developing BPD has a history of childhood adversity, which highlights the likely importance of gene-environment interactions. Thus, it is currently assumed that BPD reflects stress-induced compromises in neural circuits that underlie regulatory processes in social-emotional functioning (for an overview, see Hooley et al., 2012). With regard to theoretical models and treatment approaches developed in the clinical field, the most prominent accounts are focusing on aspects of emotional dysregulation (e.g., the biosocial model of Linehan, 1993) or self-representation and interpersonal relationships, as for example object-relations theory (Clarkin et al., 2007) or the attachment and mentalization based model of Fonagy and Bateman (2008).

In terms of the distinctions drawn by Westen (2006), BPD represents a specific pathological personality configuration. However, this conceptualization is not to be taken for granted, since there is a general dispute over whether personality pathology should best be organized in the form of categorically distinct PDs or as dimensional continua. Thus, the following section will introduce the dimensional concept of overall personality functioning and the ways in which it relates to BPD.

1.2.2 Overall personality functioning

A considerable line of research has argued that PDs are better conceptualized as continua rather than types (e.g., Clark, 2007; Widiger & Trull, 2007). This view arose from a number of problems with the current typological approach, such as difficulties in distinguishing different PDs in factor analyses, or the dilution of the severity and kind of personality disturbance (Zimmerman et al., 2013). Accordingly, the DSM-5 “emerging measures and models” chapter contains an alternative “hybrid model” of personality pathology. This model characterizes PDs by a dimensional assessment of 1) impairments in

personality functioning, 2) pathological personality traits, and 3) specific PD types which may be derived from these assessments (APA, 2013).

In this model, impairments in personality functioning are rated by clinicians on the Levels of Personality Functioning Scale (LPFS). One of the main rationales behind the DSM-5 LPFS was to provide a measure of overall severity of personality impairment, since recent research (Hopwood et al., 2011) suggested that in assessing personality pathology, general severity is the most important predictor of concurrent dysfunction. Thus, the LPFS combines ratings of different functional domains into an overall index of severity, ranging from none to extreme impairment. It was derived from several extant models of personality organization, as well as related measures and studies (see Bender et al., 2011). Drawing on these works, it was concluded that “maladaptive patterns of mentally representing self and others serve as the substrates for personality psychopathology common to a wide range of conceptualizations (e.g., psychodynamic, cognitive-behavioral, interpersonal, and trait)...” Therefore, the core dimensions assessed by the LPFS relate to identity and self-direction in a self-domain, and empathy and intimacy in an interpersonal domain (see Table 2).

The LPFS synthesizes and mirrors several longstanding approaches to the description of individual differences in levels of personality disturbance. With the publication of the LPFS in DSM-5, these perspectives have now started making their way into the official diagnostic nomenclature. Nonetheless, in the empirical studies of this dissertation project, another well-established instrument for the assessment of overall personality functioning was applied: The OPD-LSIA. The OPD system is a multi-axial diagnostic inventory based on a large body of psychodynamic and interpersonal theories (OPD Task Force, 2008). Similar to the LPFS, Axis IV of the OPD system, the LSIA, describes personality functioning via four basic domains in a self-other framework: perception of the self and objects, regulation of the self and objects, internal and external communication, and attachment to internal and external objects (see Table 2). Thus, the OPD-LSIA covers many aspects identified as core capacities of personality functioning in the DSM-5 LPFS (see Zimmermann et al., 2012). Furthermore, the LSIA has demonstrated substantial construct validity with regard to DSM-IV PD diagnoses and related questionnaires (Benecke et al., 2009).

In addition, a self-report questionnaire corresponding to the LSIA has been developed, the OPD-Structure Questionnaire (OPD-SQ; Ehrental et al., 2012). The OPD-SQ is offering an economic alternative to the expert-rated LSIA, and correlates in the expected direction with measures of personality and attachment, number of DSM-IV PD diagnoses, and expert

ratings of the LSIA (Dinger et al., 2014; Ehrenthal et al., 2012). Thus, the OPD-SQ was utilized as a measure of overall personality functioning in studies two and three.

Table 2. Functional Domains of the DSM-5 LPFS and OPD-LSIA.

LPFS		LSIA	
Self	Interpersonal	Self	Objects
<p>1. Identity:</p> <ul style="list-style-type: none"> – Experience of oneself as unique, with boundaries between self and others – Coherent sense of time and personal history – Capability and accuracy of self-appraisal and self-esteem – Capacity for a range of emotional experience and its regulation <p>2. Self-direction:</p> <ul style="list-style-type: none"> – Pursuit of coherent and meaningful short-term and life goals – Utilization of constructive and prosocial internal standards of behavior – Ability to productively selfreflect 	<p>1. Empathy:</p> <ul style="list-style-type: none"> – Comprehension and appreciation of others' experiences and motivations – Tolerance of differing perspectives – Understanding of social causality <p>2. Intimacy:</p> <ul style="list-style-type: none"> – Depth and duration of connection with others; desire and capacity for closeness – Mutuality of regard reflected in interpersonal behavior 	<p>1. Self-perception:</p> <ul style="list-style-type: none"> – Self-reflection – Affect differentiation – Identity <p>2. Self-regulation:</p> <ul style="list-style-type: none"> – Affect tolerance – Impulse control – Regulation of self-esteem <p>3. Internal communication:</p> <ul style="list-style-type: none"> – Experiencing affect – Use of fantasies – Bodily self <p>4. Attachment to internal objects:</p> <ul style="list-style-type: none"> – Internalization – Use of introjects – Variability of attachment patterns 	<p>1. Object-perception:</p> <ul style="list-style-type: none"> – Self-object differentiation – Whole object perception – Realistic object perception <p>2. Regulation of relationships:</p> <ul style="list-style-type: none"> – Protecting relationships – Balancing interests – Anticipation <p>3. External communication:</p> <ul style="list-style-type: none"> – Making contact – Communicating affect – Empathy <p>4. Attachment to external objects:</p> <ul style="list-style-type: none"> – Capacity for attachment – Accepting help – Detaching from relationships

Note. DSM-5 LPFS = Diagnostic and Statistical Manual of Mental Disorders Fifth Edition Levels of Personality Functioning Scale; OPD-LSIA = Operationalized Psychodynamic Diagnostic System Structural Integration Axis.

As noted in the previous section, impairments of specific functional domains typical in BPD can also be described from a personality functioning perspective. Indeed, as BPD represents a particularly extensive and severe configuration of personality disturbance, some researchers see borderline pathology as a reflection of overall personality functioning in that BPD criteria encompass general key features of PDs (Bender & Skodol, 2007; Fonagy & Luyten, 2009; Kernberg & Caligor, 2005; Pincus, 2005). This view is supported by recent

empirical findings indicating that in multidimensional scaling analyses, BPD criteria do not represent a specific content domain, but are common to the entire spectrum of PDs (Turkheimer et al., 2008). Thus, even though the exact relation between BPD and levels of personality functioning as operationalized in DSM-5 warrants further exploration, it seems reasonable to assume that BPD generally reflects high levels of severity of personality dysfunction (Morey et al., 2011).

1.2.3 Relatedness and self-definition in personality development

The third perspective on personality dysfunction included in this project is Blatt's (1974) psychodynamically based model of dependent (or "anaclitic") vs. self-critical (or "introjective") personality dimensions. This model was originally developed to describe two types of vulnerability to depression, which were assumed to arise when individuals emphasize interpersonal relatedness or self-definition at the expense of one another. Overemphasis on relatedness would result in dependency, characterized by a preoccupation with closeness and protective, gratifying interpersonal relationships and depressive symptoms occurring when these needs are frustrated (e.g., rejection by others). The self-critical personality type is characterized by a focus on self-evaluation, achievement, and autonomy, with depression triggered by experiences of failure or diminished competence.

Since a multitude of other theories relates to similar dimensions (e.g., attachment anxiety and attachment avoidance, Mikulincer & Shaver, 2007), Luyten and Blatt (2011, 2013) integrated these so-called "two-polarity models" into an overarching model of personality development and psychopathology. This model is based on the assumption that personality development evolves through a dialectic synergistic interaction between relatedness and self-definition across the life-span. The authors review a broad range of related research findings, arguing that temporary or chronic impairments regarding these two dimensions (and associated cognitive-affective schemas of self and others) underlie the descriptive features of Axis-I and -II psychiatric disorders, which can be localized as prototypes in a respective two-dimensional space (see Figure 1). It is further proposed that this may in part explain high comorbidity and causal relationships between "symptom" and "personality" disorders. Therefore, this approach does not merely relate to personality dysfunction, but rather lies at the junction of personality and psychopathology.

With the emphasis on impaired representations of self and others as the basis of personality functioning, this approach is in concordance with the DSM-5 LPFS. Furthermore, BPD (along with dependent and histrionic PDs) is typically located in the upper right half of the two-dimensional space between relatedness and self-definition, as BPD patients are

assumed to have greater concern with interpersonal relationships than with issues of self-definition (Luyten & Blatt, 2013). Another perspective on this question, taking into account considerable heterogeneity within BPD patients, is that the BPD diagnosis comprises more interpersonally oriented (“anaclitic”) as well as a more self-critical (“introjective”) types of patients (Levy, Edell, & McGlashan, 2007). This would also be in line with the notion that BPD criteria as a whole reflect disturbances in domains related to the self as well as to interpersonal relationships.

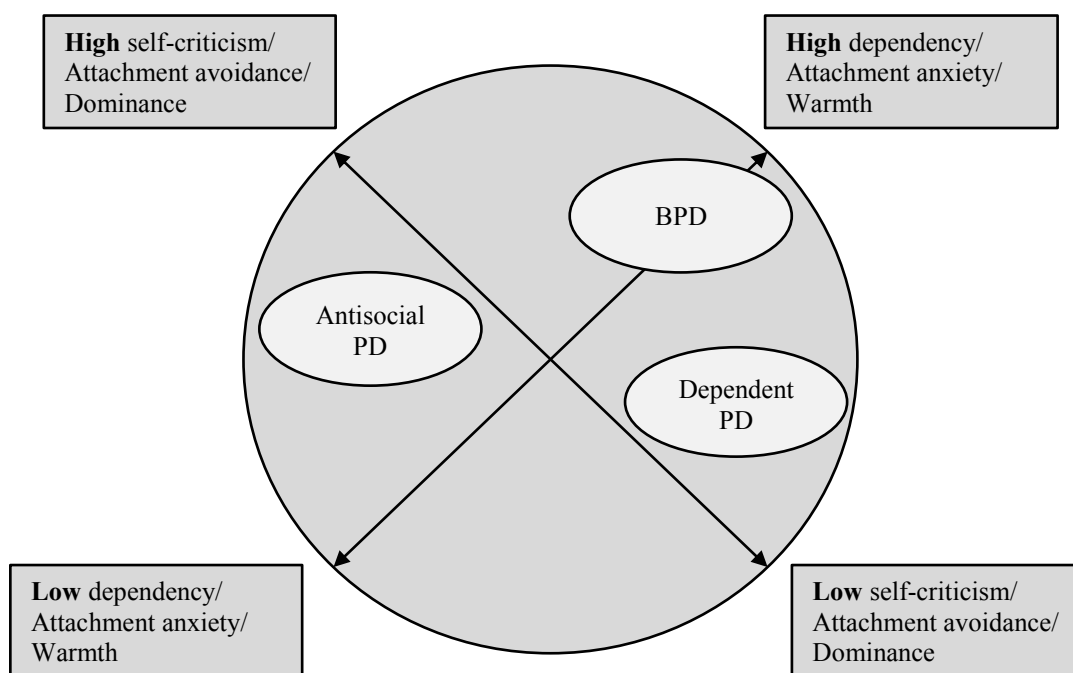


Figure 1: A combined dimensional/prototype approach to pathological personality development and psychiatric classification based on two-polarities models (adapted from Luyten & Blatt, 2011, 2013).

Even though Blatt’s (1974) theory has by now been integrated into the larger framework of relatedness vs. self-definition, the current dissertation project focuses on the original dimensions of dependency and self-criticism as measured by the Depressive Experiences Questionnaire (DEQ; Blatt, D’Afflitti, & Quinlan, 1976). The DEQ is the most widely used measure of these two dimensions. Since the development of the DEQ, a large body of research has demonstrated associations of the dependency and self-criticism factors with the onset, course, and clinical presentation of depression. These associations, as well as the role of the DEQ in previous research on depression in BPD, will be outlined in more detail at the end of the following section.

1.3 Implications of Personality Dysfunction for Depression

One issue with regard to personality dysfunction and depression is that of comorbidity. Since comorbidity implies the co-occurrence of two or more distinct disorders, in the present context this would refer to the co-occurrence of depression and PDs. The comorbidity of PDs in depression is generally high and has been shown to complicate depression (Ingram, 2009a). For instance, Brieger, Ehrt, Bloeink, and Marneros (2002) found that depressed individuals with two or more PDs had a substantially earlier age of onset of depression and lower quality of life. Other studies indicated that the presence of PDs increases the severity of depressive symptoms and the likelihood of suicidal behavior (Miller & Bagby, 2009). Concerning the efficacy of possible treatment, Newton-Howes, Tyrer, & Johnson (2006) found that PD comorbidity results in a poorer outcome with regard to depressive symptoms.

The possible pathways and mechanisms behind comorbidity of mental disorders are subject to a large body of studies, and several models of comorbidity have been formulated (e.g., Dolan-Sewell, Krueger, & Shea, 2001; Krueger & Markon, 2006). At the core of these models are basic considerations of whether the co-occurrence of Axis-I and –II diagnoses results from a direct causal relationship between disorders, from an indirect relationship through a common underlying factor, or from artifacts in how the disorders are conceptualized and classified (see Klein et al., 2009; Links, Ansari, Fazalullasha, & Shah, 2012). As implied by the latter, these questions also touch on the general critique of descriptive diagnoses and the distinction between Axis-I (“symptom”) and Axis-II (“personality”) disorders. Nevertheless, the causal processes behind comorbidity can only be illuminated by large-scale studies including a broad range of populations and longitudinal data, and possibly, as proposed by the Research Domain Criteria Initiative (e.g., Sanislow et al., 2010), by identification of genetic factors and biological markers.

The perspective of the current project is a different one: It relates to the question of whether the presence of BPD, overall personality dysfunction, and pronounced dependency or self-criticism affects the quality and severity of depressive symptoms. In relation to different models of comorbidity between depression and PDs, this question would relate to predictions in line with the so-called “pathoplasticity model”, in which personality serves as a modifier of presentation, course, or treatment outcome of depression. This model makes no assumptions on the etiological relationships between the two disorders. Still, it recognizes that psychopathology occurs in the larger context of an individual’s personality, and thus in its expression is influenced by an individual’s characteristic manner of perceiving, thinking, feeling, and relating to the environment (Cain et al., 2012; Widiger & Smith, 2008).

1.3.1 Borderline-depression

As already noted above, there is extensive comorbidity of Axis-I disorders in BPD. Depressive disorders are among the most frequent diagnoses: According to an overview by Lieb, Zanarini, Schmahl, Linehan, & Bohus (2004), 41–83% of BPD patients report a history of major depression, and lifetime prevalence of dysthymia ranges between 12–39%. In addition, several authors have noted that there are specific characteristics of the phenomenology of depression in patients with BPD (e.g., Gunderson & Phillips, 1991; Paris, 2010; Rohde-Dachser, 2010; Silk, 2010).

In a review of studies related to this issue, Silk (2010) subsumed that borderline-depression differed from that in non-BPD comparison groups regarding specific depression symptoms, dysphoric affects, and cognitions (e.g., higher levels of emptiness, hopelessness, or self-hatred). Furthermore, in some reports BPD patients with and without diagnoses of comorbid depressive disorders scored at comparable or even higher levels on measures of depression severity than patients with actual depression. BPD patients also tended to exhibit higher depression severity on self-rated compared to observer-rated scales. In addition, some authors argued that traditional symptom oriented depression scales only have limited capacity for capturing the subjective quality of depression (Blatt, Quinlan, Chevron, McDonald, & Zuroff, 1982; Blatt & Zuroff, 1992). Thus, since the DEQ (see section 1.2.3) assesses not only personality vulnerability to depression, but also the quality of day-to-day experiences related to the self and others frequently associated with depression, it has been utilized to examine the quality of depressive experiences in BPD but yielded inconsistent findings.

From a more theoretical perspective, the debate about the quality of depression in BPD is embedded in existing theoretical models of borderline pathology. Since many authors who described borderline-depression take a psychodynamic (in particular object-relational) perspective, the specific quality of depression in BPD has been regarded as an expression of a distinct pathogenesis of depression in these patients, differing from that in merely “neurotic” individuals (Westen, 2006; Westen et al., 1992; Rohde-Dachser, 2010). More specifically, from an object-relations standpoint, a symptom or syndrome such as depression can be the product of many different kinds of object-relational dynamics (Westen, 2006). For example, Rohde-Dachser (2010) regards the pronounced feelings of helplessness and loneliness in borderline-depression as mirroring a lack of stable positive object representations, as typical for patients with BPD. Similarly, Soloff, Cornelius, and George (1991) pointed out, that depression in borderline patients was part of an overall affective dysregulation, reflecting “a core characterologic inability to cope with specific interpersonal conflicts” (p. 24).

1.3.2 Overall personality functioning and depression

While borderline-depression has been a much-discussed subject in clinical literature and empirical studies, this does not hold true for depression in the context of impaired overall personality functioning. Furthermore, since personality functioning represents a rather broad concept, it does not offer specific predictions in relation to the quality of depression (unless one would focus on specific dimensions, e.g. of the LPFS). Nevertheless, since the different symptoms subsumed under the label of BPD might be closely linked to generally impaired personality functioning (see section 1.2.2), the same implications for depression severity as outlined for BPD might hold. In this regard, it seems reasonable to assume that overall personality functioning constitutes a non-specific underlying severity factor as described by Clark (2005), which in turn may predict the presence and severity of depressive symptoms. This assumption is indirectly supported by empirical findings reviewed by Bender and colleagues (2011), linking impaired personality functioning or organization assessed by different dimensional measures to higher severity of psychopathology

1.3.3 Dependent and self-critical depression

As noted in section 1.2.3, the two-polarities model of Blatt (1974, 2004) can be located at the intersection of personality and psychopathology. It makes predictions concerning the development, onset, and clinical features of depression. Thus, Blatt also distinguishes between anaclitic and introjective *forms* of depression. The former is usually characterized by interpersonal concerns involving care and approval, helplessness, tearfulness, and mood reactivity, while the latter is shaped by concerns of self-worth and guilt, anhedonia, social withdrawal, and a lack of reactivity (Klein et al., 2009). Empirically, extensive research with both clinical and nonclinical samples demonstrated that these two types of depression derive from different early life experiences, are precipitated by different types of current life events or stressors, have different symptom profiles, and are responsive to different types of therapeutic interventions. Nonetheless, associations between depression severity and self-criticism as measured by the DEQ are typically more pronounced than those with dependency (for overviews, see Blatt & Zuroff, 2009; Luyten et al., 2007; Zuroff, Mongrain, & Santor, 2004).

1.4 The Influence of Culture

As noted in the introduction, the relationship between personality variables and depression can also underlie the moderating influence of ancillary factors. Thus, study three of this dissertation engages in a cross-cultural comparison of the interrelations between

personality and depression. The following sections will briefly introduce methodological approaches in (inter)cultural psychological and psychopathological research and give a short overview regarding depression and personality across cultures.

1.4.1 Definition of culture and methodological approaches

In their classic definition, Kroeber & Kluckhohn (1952) describe *culture* as socially transmitted and historically derived ideas that are instantiated in practices, products, and institutions, and that may be considered products of action and as conditioning elements of further action. This definition includes the idea that culture exists in the heads of its members (e.g., values), in the world surrounding them and cultural artifacts (e.g., advertisement), as well as in patterns of behavior (e.g., social scripts) (Chentsova-Dutton & Tsai, 2009).

Similarly, Triandis (1996) concluded that almost all definitions of culture agree that it is reflected in shared cognitions, standard operating procedures, and unexamined assumptions. Based on this synthesis, he specified the more specific construct of “cultural syndromes”, defined as shared attitudes, beliefs, norms, role and self-definitions, and values of members of each culture that are organized around a common theme. As such, they represent dimensions of cultural variation that can be used as parameters describing cultures and utilized in psychological theories. Examples for cultural syndromes that became well-established within the last 20 years are the individualism-collectivism dimension (Hofstede, 1980), or the societal values and motives specified by Schwartz (2004).

Matsumoto & Yoo (2009) refer to this development in intercultural psychology as the phase of “identifying meaningful dimensions of cultural variability”. They describe how this phase was followed by the so-called “cultural studies” era, in which research was aimed at identifying the consequences of cultural syndromes in the minds of individuals. As opposed to cultural syndromes, which still characterized culture on the level of countries and not individuals, this approach opened up new possibilities for psychological research. One well-known example for this is the seminal work of Markus & Kitayama (1991), linking individualism-collectivism on the cultural level with the view of the self on the psychological level, as described by the concept of independent and interdependent “self-construal”.

From a practical perspective, intercultural psychological research nearly always results in comparisons between individuals from different cultures, relying on country as a proxy for culture. Combining this approach with measures of psychological variables related to cultural syndromes, culture can – methodologically speaking – be described as a nominal variable of group-membership containing a complex set of context variables (Freund et al., 2012). Thus, several authors stated that intercultural psychological research should not only examine

differences between cultural groups, but also uncover active psychological ingredients hypothesized to cause between-country differences (e.g.; Poortinga, van de Vijver, Joe, & van de Koppel, 1987). According to Matsumoto & Yoo (2009), this would represent the most recent phase in intercultural psychological science, that of “linkage-studies”.

1.4.2 Intercultural research on psychopathology

As summarized by Marsella & Yamada (2007), research on culture and psychopathology deals with the basic questions of 1) the role of cultural variables in the etiology of psychopathology, 2) the extent to which mental disorders are culture-bound, 3) cultural variations in rates and distribution of psychopathology, 4) cultural variations in classification of psychopathology, 5) cultural variations in phenomenology, course, and outcome of psychopathology, and 6) the assessment of psychopathology across cultures.

These questions are closely related to three more general orientations in intercultural psychology, that of absolutism, relativism and universalism. The *absolutist* position assumes that human phenomena are basically the same and qualitatively comparable across cultures (e.g., any mental illness is exactly the same in all cultures). In contrast, the *relativist* approach holds that all human behavior is culturally patterned, seeking to avoid a possible ethnocentric bias. The third perspective, *universalism*, lies between these two approaches in that it assumes that basic psychological processes are common to all members of the species, but that culture influences the development and display of these processes (Berry, Poortinga, Segall, & Dasen, 2002).

Chentsova-Dutton & Tsai (2009) outlined three influential approaches placing differing emphasis on the questions and concepts described above. First, the *ethnographic* position assumes that even if individuals across cultures experience the same symptoms of a predefined mental disorder, their meanings and implications might vary considerably. Thus, this perspective emphasizes careful consideration not only of the phenomena themselves, but also their culturally shaped interpretations. In consequence, most ethnographic studies are based on interviews and behavioral observations. Taking a different angle, the *biomedical* approach assumes that a disorder exists across cultures if individuals report having the familiar symptoms and if associated factors show similar cross-cultural relations to the disorder. Thus, the majority of biomedical research focuses on prevalence rates as well as risk and protective factors, and is based on structured diagnostic interviews or self-report surveys. Third, an emerging *cultural-clinical* approach seeks to understand meaningful connections between culturally influenced psychological variables (e.g., self-construal) and their

contribution to the shaping of mental disorders across cultures (Ryder, Ban, & Chentsova-Dutton, 2011).

Finally, two methodological approaches need to be distinguished: level vs. structural oriented. Whereas *level-oriented* comparisons deal with differences in the absolute magnitude of variables across cultures, *structure-oriented* comparisons examine whether the relationship of a set of variables observed in one culture can be observed in another (Leung & Van de Vijver, 1997). Therefore, with regard to depression and personality dysfunction, optional research strategies are to compare mean levels of these variables between cultures, and/or correlates of these constructs within each culture.

1.4.3 Depression and personality dysfunction across cultures

There are considerable bodies of literature on depression as well as on personality across cultures, which cannot be adequately summarized here. Hence, I will give a brief overview of the most robust findings concerning depression and their implications for associations between personality dysfunction and depressive symptoms across cultures. Furthermore, findings on cultural interactions with biological and genetic markers of depression (see for example Chentsova-Dutton & Ryder, 2013) will not be depicted here, since they lie beyond the scope of this thesis.

In their comprehensive overview of depression across cultures in the current Handbook of Depression (Gotlib & Hammen, 2009), Chentsova-Dutton and Tsai (2009) conclude that ethnographic studies provide compelling evidence that culture shapes views of the causes, manifestations, and ways of coping with depressive symptoms. At the same time, biomedical approaches confer remarkable differences in the prevalence of major depression across cultures: One in seven individuals living in Europe, North America or Australia will develop depression in their lifetimes, while the same risk applies to only one in 25 individuals in East Asian countries (Chentsova-Dutton, 2009). The factors accounting for these differences are complex and include variables such as stress levels, standards of living, and reporting biases. Furthermore, cultural-clinical psychology studies examined the associations of specific cultural dimensions to depression. One of the most replicated findings from this research is that of cultural differences in the affective (vs. somatic) presentation of distress, stemming from differing cultural norms of expressing distress and health-care structures affecting communication between patients and clinicians (Ryder et al., 2008).

On the other hand, several risk-factors (i.e., female gender, high levels of stress, economic disadvantage, lack of a stable partnership) show pronounced intercultural similarity in their association to depression (Chentsova-Dutton & Tsai, 2009). Additionally, research

shows that across cultural groups, stable and supportive relationships protect against the development of depressive symptoms in the face of stress (e.g., Calvete & Connor-Smith, 2006). Other studies from the field of cultural-clinical psychology suggest that the depressiogenic effect of particular factors might depend on cultural variables. For example, the goal of pursuing positive emotions (“positivity-norms”) seems to serve as a protective factor, but also confers vulnerability to depression if one fails this cultural imperative in Western contexts. In contrast, negative feelings or information about oneself do not serve as an emotional (and potentially depressiogenic) blow in East-Asian countries, where it is more common to engage in less self-affirmation or positive views about the future (Chentsova-Dutton, 2009).

Based on these findings, the authors conclude that cultural factors also play an important role in the etiology and expression of depression. In particular, shared cultural models of the self, social relationships, and communicating distress allow individuals across cultures to effectively cope with stressors. Conversely, failure to feel, think and behave in culturally normative ways is associated with higher vulnerability to depression. Still, with regard to causality it remains unclear whether symptoms of depression might instead be disrupting individuals’ abilities to monitor and comply with cultural norms in the first place (Chentsova-Dutton & Tsai, 2009; Chentsova-Dutton, 2009).

As noted in section 1.2, the concept of personality also relates to highly generalized ways of feeling, thinking, and behaving. Moreover, the declaration of these patterns as “personality dysfunction” largely depends on the societal norms enclosed in respective cultures (Mulder, 2012; Ryder, Sunohara, & Kirmayer, 2015). Thus, in analogy to the findings on positivity norms outlined above, the consequences of personality features for the development of depressive symptoms are very likely to be influenced by cultural context.

2. RESEARCH QUESTIONS

2.1 Specific Quality and Severity of Symptoms in Borderline-Depression?

Section 1.3.1 gave an overview of previous findings regarding the quality and severity of depression in BPD. However, despite its clinical relevance and implications for a person-centered perspective on unipolar depression, existing research on the nature of depression in BPD is not conclusive. In particular, extant studies on borderline-depression are highly diverse with regard to the depression characteristics and samples taken into focus. For example, some studies included BPD patients with diagnosed comorbid depressive disorders, while others investigated BPD patients without comorbid depression. Thus, it is not clear which characteristics of borderline-depression (e.g., depression severity) relate to which kinds of patients, hindering the generalization of findings. Other issues, such as higher depression severity in BPD patients on self-report scales or scales with specific content, are – due to the multitude of potential instruments – difficult to resolve within single studies. The review of Silk (2010) provided the first overview regarding empirical findings and implications of BPD specific depression experience. However, its non-systematic and qualitative nature potentially limits the validity and generalizability of conclusions.

Thus, the purpose of study one was to provide a systematic review and meta-analytic examination of depression experience in BPD patients as compared to depressed individuals without BPD. Advantages of this approach lie in 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 and the examination of potential moderating variables. In particular, the first research question of study one is whether borderline-depression is indeed characterized by a specific quality of depression experience, including different depression symptoms, negative or impaired affectivity, self-evaluation, and interpersonal experiences. The second research question asks whether overall depression severity differs between BPD patients and depressed controls, and if possible differences vary as a function of study quality, gender, age, measures used to assess depression severity, and current comorbid depressive disorders in BPD patients.

2.2 Specific Dynamics of Affect in Borderline-Depression?

Study two was designed to examine dynamic characteristics of affect in borderline-depression. Even though the majority of the literature on borderline-depression does not discuss dynamic aspects (e.g., duration of affective states) of depression experience, these might be distinct in patients with BPD for several reasons. First, from an object relations

standpoint, the fragmented and unstable representations of self and others in BPD may leave these individuals particularly vulnerable to emotional swings, for example when significant others are momentarily disappointing (Westen, 2006). Second, affective instability is regarded a core feature of BPD, playing a prominent role in major clinical theories (e.g., Clarkin, Lenzenweger, Yeomans, Levy, & Kernberg, 2007; Linehan, 1993). Third, it was proposed that the affective disturbance characterizing BPD can be distinguished from that in depression by higher intensity of negative mood as well as more frequent and abrupt mood changes, at least partly triggered by specific external events (e.g., Goodman, New, Treibwasser, Collins, & Siever, 2010).

In consequence, the main research question of study two pertains to affective instability and reactivity, which are assumed to be higher in depressed patients with comorbid BPD than in those without any comorbid PD diagnoses. Going beyond cross-sectional assessment methods, AA-methodology was utilized to capture changes in affect and the occurrence of daily events over time. Drawing on these data, it was also explored whether specific events were related to mood changes in the two clinical groups, and how individuals subjectively perceived their own emotional reactivity.

2.3 Cross-Cultural Differences in Implications of Personality Dysfunction for Depression?

The implications of overall personality functioning, dependency, and self-criticism for depression were outlined in section 1.3, suggesting higher depression severity in case of pronounced personality dysfunction, dependency, or self-criticism. However, as noted above, the consequences of particular risk-factors for depression need not be the same in different cultural contexts. In particular, different factors can confer different consequences as a function of specific characteristics of the sociocultural environment. In fact, several authors (e.g., Caldwell-Harris & Ayçiçeği, 2006) have posited that the fit between an individual's personality and the values of his or her society can partly predict psychological distress ("culture-clash hypothesis"). Moreover, only few studies examined dependency and self-criticism in non-Western samples, and there is a call for more research on overall personality functioning (Bender et al., 2011). It is not known whether the basic self-other dimensions at the core of these concepts relate to the severity of psychopathology in the same way across cultures.

Therefore, the main goal of study three was to examine their associations to depression severity among individuals in Chile and Germany. In keeping with a level oriented approach, one research question of this study asks whether the mean levels of personality functioning,

dependency, and self-criticism are the same in both cultural groups. Furthermore, as suggested by previous research including Latin-American samples (e.g., Kolstad & Horpestad, 2009), it was predicted that Chileans would show higher interdependent self-construal. Based on this assumption, the main structure-oriented hypothesis was that – in line with the culture-clash hypothesis - higher dependency would predict higher depression severity in Germany but not in Chile. In contrast, high self-criticism and impaired personality functioning were assumed to be transcultural risk-factors for depression, predicting higher depression severity in both cultures alike.

3. EMPIRICAL STUDIES

3.1 Study I

Quality and Severity of Depression in Borderline Personality Disorder: A Systematic Review and Meta-Analysis.

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). 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.

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 & Philips, 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.

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, Gergley, 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.

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., Wixom, Ludolph, & Westen, 1993; Levy, Edell, & McGlashan, 2007). 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).

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, & Ernbaugh, 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.

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.

Methods

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).

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 quantitative 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

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.

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.

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.

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

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, McLure, & 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.

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

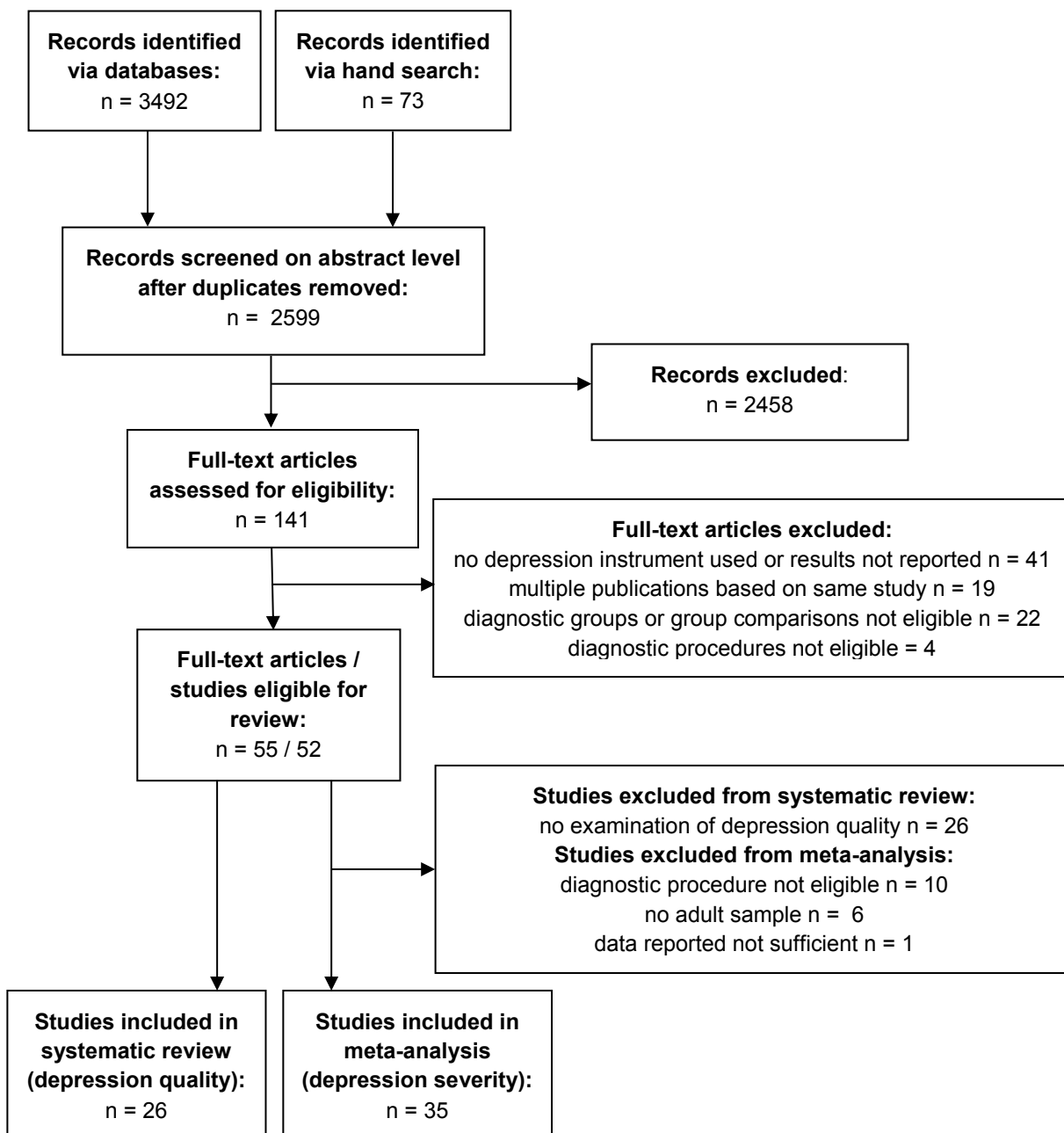


Figure 1: Flow diagram of study selection.

meta-analysis on depression severity³. 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.

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 $ICC = .802$.

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.

Data Analytic Strategy

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 study⁴. 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.

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 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

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 & Asperg 1979) over the SCL-90-Depression subscale.

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).

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 then 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.

Results

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.

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, Lorr, & 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.

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.

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.

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.

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 et al., 1982; Snyder & Pitts, 1986) 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.

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.

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.

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.

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.

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.

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.

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.

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.

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 studies⁵ 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

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.

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 ($m = 8.67$, $min = 5.0$, $max = 11.5$) 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.

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 ($p = .134$).

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.

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 in 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.

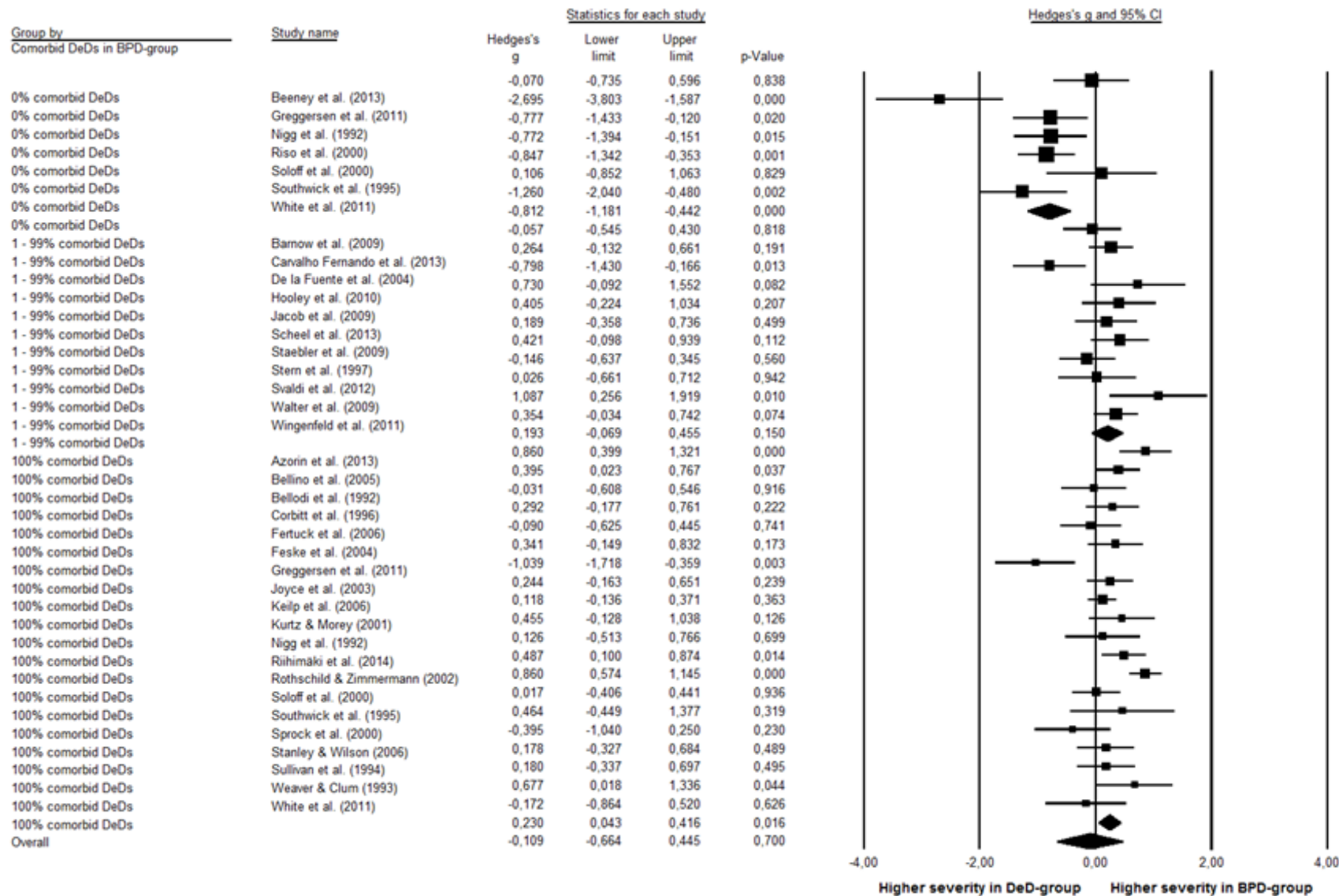


Figure 2. Forest-plot of between-group effect sizes of depression severity as compared between BPD and DeD patients, grouped by comorbidity status in the BPD sample. *Note.* The squares represent the effect sizes for each study, the size of the square the relative weighing of the study in the analysis.

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.

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 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 (i.e., less insight, higher derealization-depersonalization, and higher paranoia), but rather tap into the 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.

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, Wassermann, & 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 Santangelo et al., 2014; Trull et al., 2008).

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 improvement 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.

3.2 Study II

Affective Instability and Reactivity in Depressed Patients with and without Borderline Pathology

Abstract

The quality of depression in Borderline Personality Disorder (BPD) was reported to differ from that in patients with Major Depressive Disorder (MDD) only. While affective instability is regarded a core feature of BPD, little is known about affect dynamics in “borderline-depression”. We assessed affective instability and reactivity in 20 MDD patients with BPD, and 21 MDD patients via Ambulatory Assessment. Participants reported on current affect, daily events, and attribution of affective states to events five times per day over a seven-day period. The results do not indicate higher affective instability in BPD. BPD patients reported less subjectively perceived affective reactivity, while actual associations between events and affect were not different between groups, except for one finding: In BPD patients, overall mood was lower after being alone. These findings question affective instability and suggest impaired attribution of mood changes and less tolerance of being alone as specific for depression in BPD.

Introduction

Depressive disorders are among the most frequent comorbidities in patients with Borderline Personality Disorder (BPD; Leichsenring, Leibing, Kruse, New, & Leweke, 2011). This may not only be due to common etiological risk factors, but also to an overlap between symptom sets defining both disorders, for example affective disturbances or suicidal ideation. However, some authors emphasized a specific phenomenology of depressive syndromes in BPD, often referred to as “borderline-depression” (e.g., Gunderson & Philips, 1991; Paris, 2010; Silk, 2010). To date, differences in the quality of depression between depressed patients with and without BPD were investigated in a number of cross-sectional studies (e.g., Levy, Edell, & McGlashan, 2007; Rogers, Widiger, & Krupp, 1995). A recent systematic review and meta-analysis concluded, that the experience of depression in BPD is characterized by elevated hostility and self-criticism, with BPD patients with a current depressive disorder exhibiting higher depression severity than patients with depression only (Köhling, Ehrenthal, Levy, Schauenburg, & Dinger, in press).

Beyond overall symptom expression reflected by mean differences, little is known about dynamic aspects of depression experience in BPD. Considering the prominent role of affective dysregulation in major clinical theories (e.g., Clarkin, Lenzenweger, Yeomans, Levy, & Kernberg, 2007; Linehan, 1993), this lack of research is surprising. In the diagnostic criteria for BPD listed in DSM-5 (American Psychiatric Association [APA], 2013), criterion six is defined as “affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than a few days)”. Furthermore, some authors propose that the affective disturbance characterizing BPD can be distinguished from that in depression by higher intensity of negative mood and more frequent and abrupt mood changes, at least partly triggered by external events (Goodman, New, Treibwasser, Collins, & Siever, 2010; Nica & Links, 2009). At the same time specific experiences, such as rejection or abandonment, may be of particular importance with regard to the affective states of patients with BPD (Gunderson & Lyons-Ruth, 2008; Koenigsberg, 2010).

Traditional approaches to the study of affective dysregulation in BPD comprise retrospective self-ratings, expert interviews, and experimental paradigms related to the assessment of emotional reactivity (e.g., Jacob et al., 2009; Koenigsberg et al., 2002). A different method that is especially suited to capture within-person processes is Ambulatory Assessment (AA; see for example Fahrenberg, Myrtek, Pawlik, & Perrez, 2007). Consisting of repeated measurements over time, often in naturalistic settings, AA offers important

advantages: First, memory biases that affect retrospective reporting can be significantly minimized by assessing experiences in the present moment (Schwarz, 2007), which is especially relevant for patients with BPD (Ebner-Priemer et al., 2006; Solhan, Trull, Jahng, & Wood, 2009). A second advantage of AA is the enhancement of ecological validity by assessing variables in real time and real life. Finally, multiple assessments over a range of different situations can help to identify situational variables that may explain variability, and automatic, non-conscious processes can be made explicit in the data (Myin-Germeys et al., 2009).

Previous studies using AA reported heightened instability of negative affect, emotional valence and distress in individuals with BPD as compared to healthy controls (HCs; Ebner-Priemer et al., 2007; Santangelo et al., 2014; Stein, 1996). Nevertheless, Russell, Moskowitz, Sookman, Zuroff, and Paris (2007) found enhanced variability of positive, but not negative affect in the BPD group. Findings on associations between affective instability and BPD features in healthy or non-specific patient samples are mixed: While in two studies BPD features were positively related to less day-to-day carryover of mood, unstable self-esteem and negative affect (Tolpin, Gunthert, Cohen, & O'Neill, 2004; Zeigler-Hill & Abraham, 2006), another study found a near-zero correlation between dimensional borderline scores and mood variability (Farmer, Nash, & Dance, 2004). Among studies with clinical control groups, only two examined affective instability in patients with BPD compared to a depressed control group (Cowdry, Gardner, O'Leary, Leibenluft, & Rubinow, 1991; Trull et al., 2008). Both reported elevated affective instability (i.e., more variability and random between-day fluctuations of overall mood, instability in hostility, fear, and sadness) in BPD patients.

AA studies on emotional reactivity in BPD are heterogeneous with regard to designs and variables. Some researchers investigated the relationship between affective states and contextual stimuli at the same time-point. They found higher negative and less positive affect during aversive interpersonal experiences and less emotional benefits when in high social proximity in BPD patients compared to HCs (Berenson, Downey, Rafaeli, Coifman, & Paquin, 2011; Gadassi, Snir, Berenson, Downey, & Rafaeli, 2014; Sadikaj, Russell, Moskowitz, & Paris, 2010). Results of studies that examined affective changes following different events were less coherent: Stiglmayr et al. (2005) found experiences of rejection, being alone and failure to account for 39% of events preceding states of tension in BPD. Nevertheless, comparisons to HCs were inconclusive due to a small sample of events in this group. Glaser, Van Os, Mengelers, & Myin-Germeys (2008) reported stronger changes in positive and negative affect associated with stressful events and activities in BPD compared to

HCs. In relation to high BPD features in non-clinical populations, one study (Tolpin et al., 2004) did not find changes in affect or self-esteem in reaction to daily stressors, while another (Zeigler-Hill & Abraham, 2006) found self-esteem and feelings of rejection, but not affect to vary with interpersonal stress. The only study that compared affective reactions of BPD patients to those of depressed patients was conducted by Tomko et al. (2014). The authors analyzed expressions of anger in randomly sampled audio recordings of daily social interactions, and found no indications for elevated anger during interpersonal interactions in BPD.

To the best of our knowledge, there is no AA study that examined whether affective instability and reactivity also shape the experience of current depression in BPD, as compared to patients with depression only. Furthermore, the specific aspects of affective dysregulation distinguishing patients with BPD from other clinical groups (i.e., specific events preceding mood changes, subjective appraisal of affective instability) are still understudied (Santangelo et al., 2014). Thus, the goal of the present study was to test whether currently depressed patients with and without BPD comorbidity differ with regard to affective instability and reactivity, utilizing AA methodology. In particular, we aimed to examine the effect of different daily events on affective states along with the subjective perception of mood reactivity in individuals. Based on previous research and clinical theories, we hypothesized that the BPD group would 1) exhibit higher affective instability, and 2) stronger emotional reactivity, as reflected by the subjective perception of participants as well as associations between reported events and affects.

Methods

Participants

Participants were 41 adult female inpatients at the University Hospital of Heidelberg, Germany, who all met DSM-IV criteria for current Major Depressive Disorder (MDD). Since there is evidence that personality pathology may best be conceptualized as a dimensional rather than typological construct, (e.g., Bender, Morey, & Skodol, 2011), we also included patients with subthreshold BPD fulfilling four DSM-IV (APA, 1994) diagnostic criteria into the BPD group ($n = 20$). Patients in the MDD-only group ($n = 21$) did not meet criteria for any comorbid personality disorders (PDs). General exclusion criteria were psychotic and bipolar disorders, acute substance dependence, and neurological disorders.

The two groups did not differ with regard to age or current psychotropic medication, but patients in the BPD group were diagnosed with a higher number of Axis-I and -II

disorders (see Table 1). All patients were treated in a multimodal psychotherapy hospital setting, including different forms of individual and group psychotherapy. Most patients were admitted as inpatients to the hospital. However, because one clinical unit combines full inpatient treatment with a day-clinic setting, six participants in the MDD group were day-clinic patients. These participants took part in the same therapy schedule as those in the inpatient setting (starting at 8 a.m. in the morning), but left the clinic to stay at home at 4 p.m. in the afternoon on all five weekdays (see Dinger et al., 2014).

Of a total of 45 patients initially included in the study, one patient (MDD group) dropped out due to the subjective burden of the AA protocol, and one patient (BPD group) ended her participation because of premature treatment termination. The data-sets of another two patients (one BPD, one MDD) were excluded because AA reports were filled in retrospectively at a later time-point (“back-filling”), resulting in the final sample of 41 patients.

Measures

DSM-IV diagnoses

Structured Clinical Interview for DSM-IV Axis-I Disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 1997). The SCID-I was used to assess Axis-I psychiatric disorders. The SCID-I is a well-studied and frequently used diagnostic interview and has demonstrated very good psychometric properties ($\kappa_s > .70$, First et al., 1997).

Structured Clinical Interview for DSM-IV Axis-II Disorders (SCID-II; First, Spitzer, Gibbon, Williams, & Benjamin, 1997). Criteria of PDs as defined on Axis-II of DSM-IV were assessed with the SCID-II interview. The SCID-II is a widely used inventory for assessing Axis-II disorders and has shown good interrater reliability ($\kappa_s > .65$, First et al., 1997).

Depression and personality functioning

Hamilton Rating Scale for Depression, 17 items version (HRSD; Hamilton, 1960). The HRSD is an expert-rating scale of depression severity over the previous week. Reliability and validity were demonstrated in several studies (e.g., Potts, Daniels, Burnam, & Wells, 1990) and the HRSD is used extensively in treatment and outcome studies of depression. HRSD ratings in this study were based on a short interview after SCID-I and II assessments. Two master-level psychologists rated HRSD-items based on video or audio recordings of the interviews. Interrater reliability was excellent ($ICC > .75$; Fleiss, 1981) with $ICC(2,2) = .89$ (Shrout & Fleiss, 1979). The mean value of both ratings was used in all subsequent analyses.

Table 1: Demographics, Diagnoses and Clinical Characteristics of the Study Sample.

	BPD (N = 20)	MDD (N = 21)	Difference Test
Age <i>M (SD)</i>	26.2 (6.5)	27.1 (6.7)	$t(39) = 0.48, p = .634$
Ethnicity <i>N (%)</i>			
Caucasian ^a	19 (95.0)	20 (95.2)	
Asian	1 (5.0)	0 (0.0)	
Hispanic	0 (0.0)	1 (4.8)	
Highest Educational Degree <i>N (%)</i>			
University Degree	3 (15.0)	4 (19.0)	
Abitur ^b	7 (35.0)	12 (57.1)	
Basic Secondary Education ^c	9 (45.0)	5 (23.8)	
No Degree	1 (5.0)	0 (0.00)	
Day-Clinic Setting <i>N (%)</i>	0 (0.0)	6 (28.6)	$\chi^2(1) = 6.69, p = .010$
Current Psychotropic Medication <i>N (%)</i>	12 (60.0)	9 (42.9)	$\chi^2(1) = 1.21, p = .272$
Number of Diagnoses Axis-I <i>M (SD)</i>	4.2 (1.3)	2.5 (1.0)	$t(39) = -4.43, p < .001$
Affective Disorders <i>N (%)</i> ^d	20 (100.0)	21 (100.0)	
Anxiety Disorders <i>N (%)</i>	19 (95.0)	13 (61.9)	
Eating Disorders <i>N (%)</i>	9 (45.0)	7 (33.3)	
Somatoform Disorders <i>N (%)</i>	5 (25.0)	4 (19.0)	
Substance Related Disorders <i>N (%)</i>	6 (30.0)	0 (0.0)	
Number of Diagnoses Axis-II <i>M (SD)</i>	1.8 (0.7)	0 (0.0)	$t(39) = -10.93, p < .001$
Borderline PD / Subthreshold BPD <i>N (%)</i>	15 (75.0) / 5 (25.0)	0 (0.0)	
Avoidant PD <i>N (%)</i>	4 (20.0)	0 (0.0)	
Dependent PD <i>N (%)</i>	2 (10.0)	0 (0.0)	
Depressive PD <i>N (%)</i>	9 (45.0)	0 (0.0)	
HRSD <i>M (SD)</i>	23.8 (4.1)	21.1 (4.1)	$t(39) = -2.03, p = .049$
BDI <i>M (SD)</i>	35.2 (8.4)	29.1 (8.1)	$t(39) = -2.35, p = .024$
OPD-SQ <i>M (SD)</i>	2.6 (0.4)	2.0 (0.4)	$t(39) = -4.37, p < .001$

Note. *M* = Mean, *SD* = Standard Deviation, HRSD = Hamilton Rating Scale for Depression, BDI = Beck Depression Inventory, OPD-SQ = OPD-Structure Questionnaire; ^aof which one person (5%) in the MDD group was of Arab origin; ^bhighest possible high-school degree in German educational system qualifying for university entrance (nine years of education after primary school); ^cfive to six years of education after primary school, not qualifying for university entrance; ^dnumber of individuals with one or more diagnoses in each category (e.g., anxiety disorders).

Beck Depression Inventory-II (BDI-II; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI-II is a widely used questionnaire for the assessment of depression severity. It consists of 21 items corresponding to the criteria for MDD listed in DSM-IV. Participants rate depression symptoms throughout the past two weeks on a likert-scale ranging

from 0 to 4. The BDI-II has demonstrated good psychometric properties in a number of evaluation studies (Beck, Steer, & Brown, 1996).

Operationalized Psychodynamic Diagnosis System Structure-Questionnaire (OPD-SQ, Ehrental et al., 2012). The OPD-SQ is a questionnaire assessing personality functioning in accordance with the Levels of Structural Integration Axis (LSIA) of the OPD system (OPD Taskforce, 2008). The LSIA is similar to the Levels of Personality Functioning Scale of the DSM-5 (APA, 2013) and assesses disturbances of the self and interpersonal functioning (Zimmermann et al., 2012). Originally, the LSIA is rated on the basis of a semi-structured interview. The OPD-SQ was developed as a more economic method, taking into account the patients' subjective experience. It consists of 95 items rated on a 5-point scale, forming eight subscales. The mean of the subscales serves as an overall severity index, with higher scores indicating higher impairment. A reliability study has shown an internal consistency of Cronbach's $\alpha = .96$ for the overall scale (Ehrental et al., 2012). The OPD-SQ correlates in the expected direction with measures of personality and attachment, number of DSM-IV PD diagnoses, as well as expert-ratings of the LSIA (Dinger et al., 2014).

Procedure and Ambulatory Assessment

Participants were recruited as soon as possible after intake and completed the initial diagnostic interview, questionnaires and AA protocol within the first three weeks of treatment. All interviews were conducted by the first author, who received intensive SCID training before starting the recruitment and continuous supervision during the study. Participants received a small monetary award of 20 Euros for completing the study at discharge, and another 15 Euros for completion of follow-up questionnaires six months later (not reported here). Patients gave written informed consent, and the study was approved by the local ethics committee of the Medical Faculty at the University of Heidelberg.

Ambulatory assessment protocol

After completing the diagnostic assessment, patients received a study smartphone and an introduction to the AA reports. They were instructed to fill in one test report at the end of the day to become familiar with the assessment. The actual AA protocol started the following morning. Participants were prompted five times daily for seven consecutive days, including 5 weekdays and the weekend. The times of day at which prompts were administered were adjusted to the therapy schedules. Thus, patients were able to answer reports without interrupting therapy sessions. Even though the time-points of the prompts were accordingly fixed, we distributed prompts over a number of different time-points ranging from 07:45 A.M.

to 09:30 P.M. which varied between days. All time intervals between prompts were set between two and four hours. Participants were prompted via text-messaging and completed the AA reports online. Data were stored at the University Hospital, data transmission and storage was encrypted. The internet-based system automatically time-stamped reports, making it possible to monitor the compliance of participants online. If participants did not answer several reports in one day, we contacted them and aimed to clarify reasons for non-compliance.

Ambulatory assessment reports

Affect and overall mood. Subjects were asked to report how they felt just before the prompt on ten items with different affect adjectives. The intensity of affect was rated on a 7-point scale (1 = *not at all*, 7 = *extremely*). To balance the assessment of affective states with regard to valence and arousal, positive (*happy*, *content*, and *relaxed*) and negative affects (*sad*, *anxious*, and *angry*) were derived from the affective circumplex-model (Larsen & Diener, 1992). We furthermore added the affects *empty*, *lonely*, *guilty*, and *tense*, which are of relevance for depression experience in BPD (Silk, 2010). Items were aggregated into a negative and positive affect scale. We calculated indices for the between (R_{KF}) and within persons (R_C) reliability using MIXED methods (Shrout & Lane, 2012). R_{KF} , which is the reliability of the average ratings from all items and all days, was $R_{KF} = .98$ for positive and $R_{KF} = .99$ for negative affect. R_C , which indicates the reliability of day-to-day changes in affect, was $R_C = .81$ for positive and $R_C = .80$ for negative affect. These reliability values can be regarded as moderate to substantial (Shrout, 1998). Subjects were also asked to indicate their *overall mood* on a scale ranging from 1 (*very bad*) to 7 (*very good*).

Events. At each prompt, participants were asked to indicate if one of the following events had occurred since the last report: 1) *positive interaction with others*, 2) *negative interaction with others*, 3) *being alone*, 4) *feeling rejected*, 5) *feeling like failing*, 6) *other positive event*, and 7) *other negative event*. The items 3-5 were taken from a study of Herpertz (1995), in which these events were the most prevalent precursors of self-injury. If subjects indicated the occurrence of a negative or positive “other event”, they were asked to provide a brief description. Each item was answered with *yes* or *no*, allowing participants to report more than one event. All events were dummy-coded, with 1 indicating event occurrence and 0 indicating non-occurrence. Entries under “other events” were rated and categorized by the first author and a research assistant. If the event described clearly belonged to one of the other categories (e. g., positive interaction with others), this category was coded 1. Ambiguous cases requiring clarification were resolved by consensus. All of the following statistical

analyses were based on the resulting categories 1-5, excluding the categories 6 and 7 due to a lack of specificity.

Subjective affective reactivity. After reporting the occurrence of events, subjects were asked to indicate whether – in their subjective experience – one of these events had an influence on their current mood. Answering options to this question were: 1) *my current mood is still influenced by one of the events reported at previous assessments*, 2) *my current mood was influenced by one of the events reported just now*, or 3) *my current mood was not influenced by any event*. Participants could choose only one of these alternatives.

Data Analysis

Affective instability indices

Affective instability as a process of extreme and frequent fluctuations of mood over time is best assessed with indices taking into account the temporal dependency of measurements, along with the extremity of response (Jahng, Wood, & Trull, 2008). One index of instability recommended by previous investigators is based on squared successive differences (SSDs; e.g., Ebner-Priemer et al., 2007). SSDs are calculated as the squared differences between consecutive observations, with higher SSDs reflecting higher instability. Thus, compared to measures of variability (e.g., within person standard deviation) SSDs do not only capture the overall dispersion of an individual's scores, but also their amplitude, frequency, and temporal dependency.

In sampling protocols with equivalent lengths of time between assessment points, SSDs have the same meaning across all occasions. However, for protocols where observations are irregularly spaced over time, a positive correlation between time intervals and the magnitude of successive changes can inflate SSDs without necessarily reflecting greater instability. Therefore, Jahng and colleagues (2008) recommended adjusting SSDs by the length of the respective time intervals (ASSDs). As there is high variation of time intervals in the current study, we utilized ASSDs as a measure for instability by dividing SSDs through the minutes between measurement occasions. In the analyses presented below, all ASSDs were calculated as within days.

Statistical procedures

We used t- and χ^2 -Tests for independent groups to examine group differences in demographic and clinical characteristics. Furthermore, analyses with AA data in which the dependent variable was nominally scaled (event occurrence and subjective reactivity), were not conducted via multilevel modeling as described below. For these variables, we calculated

frequency rates per person. Since these frequency rates were not normally distributed, we compared groups with the non-parametric Mann-Whitney-Test. All statistical analyses apart from the multilevel models were performed with the SPSS software, version 21.0 (IBM Corp., 2012).

Because of the nested data-structure, we used multilevel modeling for analyses of the continuous AA data. Multilevel models estimate within- and between-person effects simultaneously, and do not assume independence of data points. Furthermore, multilevel models can handle varying time intervals between prompts and missing data (Raudenbush & Bryk, 2006). We used the Hierarchical Linear Modeling software (HLM 7.01; Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2011), and report parameter estimates with robust standard errors, estimated via restricted maximum likelihood. Full random effects models (intercepts and slopes were allowed to vary) are presented in the results section. In the equations below, i represents time-points and j represents participants. BPD status was dummy-coded (MDD group = 0; BPD group = 1).

Results

Preliminary Analyses

Clinical characteristics of the study sample

Results on overall depression severity and personality functioning are depicted in Table 1. BPD patients were characterized by higher depression severity as determined via expert-rating (HRSD) and self-report (BDI). With regard to personality functioning as measured by the OPD-SQ, individuals in the BPD group also exhibited higher impairment than individuals with MDD only.

Ambulatory assessment data and compliance

To minimize the inclusion of reports based on back-filling, we excluded 19 reports (ten in the BPD and nine in the MDD group) that were answered less than 15 minutes before the following report. Due to technical problems, two participants (one BPD, one MDD) filled in ten instead of five reports within one day, respectively. In those cases, we only kept the reports of the scheduled time-points, to keep datasets comparable across patients and days. For three participants (all BPD), the AA protocols were interrupted due to technical problems. Thus, two of the seven days for each of the three participants were not consecutive. For analyses that were not within days, we excluded these reports. Finally, two participants (one

BPD, one MDD) responded to prompts for eight instead of seven days in total, which were all kept in the dataset for subsequent statistical analyses.

After data cleaning, the AA dataset consisted of 1363 reports in total. The number of reports per person did not differ between BPD ($M = 33.40$, $SD = 2.79$) and MDD ($M = 33.10$, $SD = 3.22$) patients ($t(39) = -0.33$, $p = .745$). Compliance rates, defined as the percentage of answered prompts per person, were equally high in both diagnostic groups (BPD = 94.8%, MDD = 93.9%, $t(39) = -0.35$, $p = .726$). There was no group difference ($t(1073) = -0.86$, $p = .392$) in minutes between within-day reports of patients with BPD ($M = 200.19$, $SD = 65.74$) and MDD only ($M = 196.54$, $SD = 70.98$). Within the whole sample, the lengths of within-day time intervals between reports ranged from a minimum of 17.73 to a maximum of 574.92 minutes.

Reported affect and events

To examine mean levels of positive affect (PA), negative affect (NA), and overall mood (OM) in diagnostic groups, we conducted three separate multilevel models with affect variables (PA, NA, and OM) as the respective Level 1 criterion and BPD status as predictor at Level 2. BPD status significantly predicted levels of PA ($t(39) = -2.53$, $p = .015$) and OM ($t(39) = -2.50$, $p = .017$), with BPD patients experiencing less PA ($\gamma_{01} = 2.90$, $SE = 0.23$) and lower OM ($\gamma_{01} = 3.44$, $SE = 0.19$) than those in the MDD group (PA: $\gamma_{01} = 3.49$, $SE = 0.19$; OM: $\gamma_{01} = 3.91$, $SE = 0.13$). There was a trend for BPD patients to experience higher levels of NA ($\gamma_{01} = 3.45$, $SE = 0.29$) than MDD patients ($\gamma_{01} = 2.93$, $SE = 0.21$, $t(39) = 1.80$, $p = .080$).

Throughout the AA protocol, participants reported 981 positive and 341 negative interactions with others, 555 occasions at which they were alone, 279 times of feeling rejected, and 562 times of feeling like failing. The diagnostic groups differed significantly with regard to the percentage of prompts at which positive interactions with others were reported ($U = 115.50$, $z = -2.47$, $p = .013$), with BPD patients reporting this event less often (Mdn = 70.6%) than patients with MDD only (Mdn = 90.0%). There were no significant group differences with regard to the other four events.

Affective Instability

First, we tested the hypothesis that BPD patients exhibit higher affective instability than patients with MDD only. We conducted three multilevel models, with ASSDs of PA, NA and OM as the dependent variables on Level 1 and BPD status as Level 2 independent variable:

Level 1 Model (within persons):

$$\text{ASSD}_{ij(t)} \text{ (PA, NA, or OM)} = \beta_{0j} + r_{ij}. \quad (1a)$$

Level 2 Model (between persons):

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{BPD status}) + u_{0j}. \quad (1b)$$

Estimated means of ASSDs and fixed effects are depicted in Table 2. There was no significant effect of BPD status on ASSDs with regard to PA, NA, or OM. Thus, individuals in both groups were characterized by comparable levels of affective instability.

Table 2: Adjusted Squared Successive Differences as a Function of BPD Status.

	Estimated Mean		Estimate	Fixed Effects			
	BPD (N = 20)	MDD (N = 21)		SE	t	d.f.	p
Overall Mood	0.88	0.78					
Intercept			0.78	0.07	11.51	39	<.001
BPD Status			0.10	0.12	0.84	39	0.407
Positive Affect	0.74	0.68					
Intercept			0.68	0.07	9.77	39	<.001
BPD Status			0.05	0.11	0.45	39	0.657
Negative Affect	0.48	0.43					
Intercept			0.43	0.05	8.28	39	<.001
BPD Status			0.05	0.09	0.52	39	0.608

Note. SE = Standard Error; number of reports used in this analysis was 1075.

Subjective Reactivity

As can be seen in Figure 1, the proportion of reports at which participants indicated that their current mood was still influenced by an event reported at previous prompts was small, with no significant difference between groups ($U = 194.50$, $z = -0.406$, $p = .693$). However, individuals in the BPD group reported significantly less triggering of mood states by one of the events that occurred since the last prompt ($U = 128.50$, $z = -2.126$, $p = .033$), and significantly more often that their current mood was not influenced by any event ($U = 113.00$, $z = -2.531$, $p = .011$). Therefore, contrary to our hypothesis, BPD patients perceived themselves to be less emotionally reactive than patients with MDD only.

Associations between Affect and Events

In accordance with hypothesis two, we also examined emotional reactivity as reflected by associations between event occurrence and affect. We conducted a series of multilevel

models to test whether variance in participants' OM could be explained by the occurrence of specific events, controlling for the influence of OM at the previous prompt. Models were run separately for all five event categories. The dependent variable was OM at time t , and the

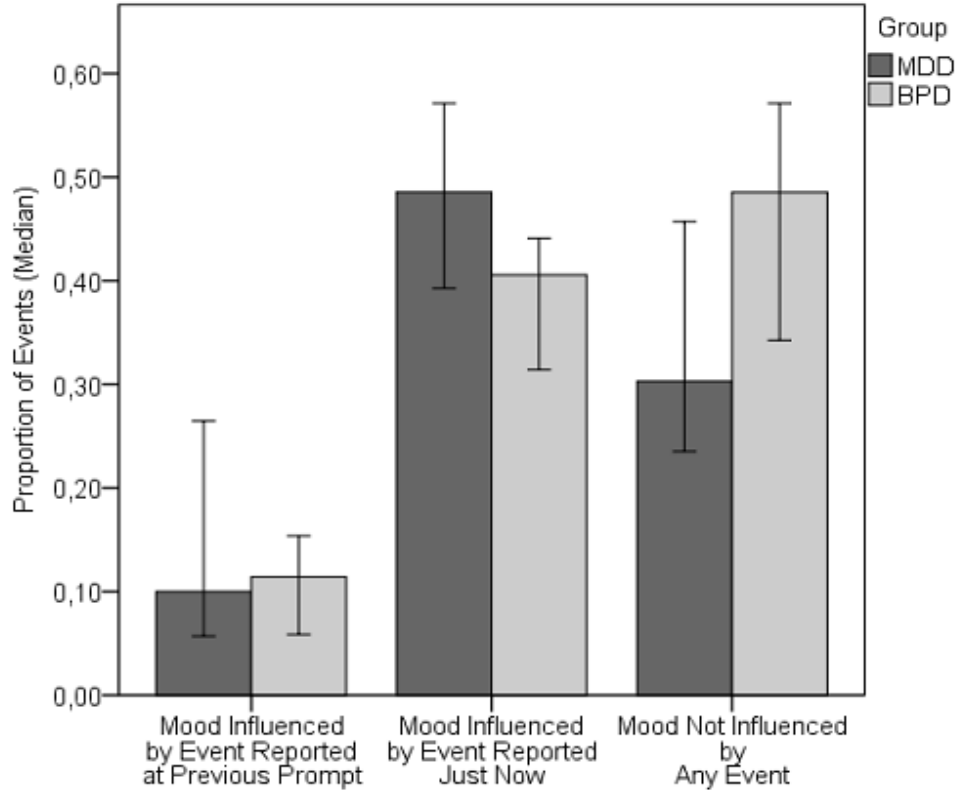


Figure 1: Influence of previous events on current mood reported by individuals at each prompt. The values represent the proportion of reports (per person) at which one of three options was indicated. Error bars represent confidence intervals (95%).

Level 1 predictors were event occurrence and OM at the preceding prompt, $t-1$ (grand-mean centered). To test moderation of affective reactivity by BPD status, we added BPD status as a Level 2 predictor, including respective cross-level interactions with predictors at Level 1:

Level 1 Model (within persons):

$$OM_{ij(t)} = \beta_{0j} + \beta_{1j}(\text{event occurrence since last report}) + \beta_{2j}(OM_{t-1}) + r_{ij}. \quad (2a)$$

Level 2 Model (between persons):

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{BPD status}) + u_{0j}, \quad (2b)$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(\text{BPD status}) + u_{1j}, \text{ and} \quad (2c)$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}(\text{BPD status}) + u_{2j}. \quad (2d)$$

Coefficients for all five models are presented in Table 3.

Table 3: Overall Mood Reactivity to Events as a Function of BPD Status.

Fixed Effects	Estimate	SE	t	d.f.	p
Event: Positive Interaction with Others					
Intercept	3.16	0.13	24.73	39	<.001
x BPD Status	-0.25	0.18	-1.40	39	.175
Slope Overall Mood _{t-1}	0.25	0.04	7.03	39	<.001
x BPD Status	-0.01	0.06	-0.08	39	.933
Slope Event Occurrence	0.82	0.12	6.74	39	<.001
x BPD Status	0.11	0.18	0.64	39	.525
Event: Negative Interaction with Others					
Intercept	4.08	0.09	43.07	39	<.001
x BPD Status	-0.27	0.15	-1.87	39	.069
Slope Overall Mood _{t-1}	0.23	0.04	6.29	39	<.001
x BPD Status	0.06	0.06	0.97	39	.337
Slope Event Occurrence	-0.96	0.12	-8.17	39	<.001
x BPD Status	-0.04	0.18	-0.23	39	.821
Event: Being Alone					
Intercept	3.89	0.10	40.83	39	<.001
x BPD Status	-0.05	0.14	-0.38	39	.704
Slope Overall Mood _{t-1}	0.25	0.03	7.50	39	<.001
x BPD Status	0.00	0.06	0.07	39	.947
Slope Event Occurrence	-0.18	0.09	-1.95	39	.058
x BPD Status	-0.52	0.15	-3.49	39	.001
Event: Feeling Rejected					
Intercept	4.00	0.10	39.09	39	<.001
x BPD Status	-0.25	0.14	-1.75	39	.089
Slope Overall Mood _{t-1}	0.23	0.04	6.22	39	<.001
x BPD Status	0.02	0.06	0.25	39	.802
Slope Event Occurrence	-0.79	0.17	-4.70	39	<.001
x BPD Status	-0.30	0.26	-1.14	39	.259
Event: Feeling Like Failing					
Intercept	4.22	0.09	44.62	39	<.001
x BPD Status	-0.16	0.16	-0.95	39	.348
Slope Overall Mood _{t-1}	0.22	0.03	7.63	39	<.001
x BPD Status	0.04	0.05	0.75	39	.457
Slope Event Occurrence	-1.05	0.11	-9.47	39	<.001
x BPD Status	-0.16	0.19	-0.83	39	.413

Note. SE = Standard Error; number of reports used in this analysis was 1315.

Overall, OM was significantly related to event occurrence, with higher OM after the occurrence of positive events and lower OM following negative events. Contrary to our hypothesis, the extent of emotional reactivity was not moderated by BPD status for the majority of event categories, indicating no difference in reactivity between both diagnostic

groups for these events. However, in comparison to MDD patients, patients in the BPD group reported significantly lower mood after being alone⁶.

Discussion

The majority of results in the current study were in contrast to our hypotheses of higher affective instability and reactivity in the BPD group. Surprisingly, depressed patients with BPD comorbidity less often attributed their own mood states to recent events than patients with depression only. This result might, on the one hand, denote that emotional reactivity actually is less specific for BPD than previously assumed. In line with this interpretation, BPD patients in a previous AA study by Links, Eynan, Heisel, and Nisenbaum (2008) indicated in only 32% of reports that their current mood was triggered by a specific event. Nevertheless, their study did not include a control group. Furthermore, for the present study it needs to be considered that BPD patients were diagnosed with current MDD that could have reduced affective reactivity. In addition, BPD patients were more severely depressed than depressed controls, which might account for the circumstance that subjective reactivity in the BPD group was actually lower - as opposed to equally high - than in the MDD group. However, empirical findings on the influence of depression severity on emotional reactivity do not yet allow for any final conclusions. Previous investigations yielded contradictory results, with depressed individuals exhibiting lower reactivity than HCs in laboratory based studies, while AA studies in naturalistic settings found greater reactivity to positive events (Thompson et al., 2012).

On the other hand, associations between affect and events that occurred since the last prompt as indicated by multilevel regression models need to be taken into account when interpreting the results discussed above. In fact, these associations rather suggest that the two diagnostic groups are highly similar in their affective reactions to positive and negative events. The only exception was the event of being alone, which was associated with even higher reactivity in BPD patients. One potential explanation for this discrepancy between findings on affective reactivity could be difficulties in the attribution of mood changes in

⁶ We also tested equivalent models with PA and NA as dependent variables. These models yielded the same pattern of significant effects as for OM, with an increase in PA and decrease in NA following positive, and increase in NA and decrease in PA after negative events. As in the model presented above, only reactivity to being alone was moderated by BPD status, with higher reactivity in BPD patients with regard to both PA and NA.

individuals with BPD. This would be in line with theoretical assumptions of impairments regarding social cognition and the perception of one's own internal states in patients with BPD ("mentalizing", e.g., Fonagy & Bateman, 2008). It could be hypothesized, that seemingly unpredictable, not understandable mood shifts are likely to induce feelings of helplessness, and thus become more prominent in the clinical presentation of BPD patients. Correspondingly, a previous AA study reported a positive correlation between the inability to label emotions and distress in BPD (Ebner-Priemer et al., 2008). To this effect, difficulties in the attribution of mood changes could also pertain to specific problems of emotion regulation in BPD, such as a lack of emotional awareness and clarity (Glenn & Klonsky, 2009). Nevertheless, it has to be kept in mind that a truly "objective" result – and therefore, discrepancies between "objective" and "subjective" reactivity – are generally difficult to determine, in particular when data are based on self-reports.

While most AA studies on affective reactivity in BPD focused on interpersonal stimuli, the only event to which BPD patients in our study reacted more intensely than MDD patients was the experience of being alone. In the BPD group, overall mood was significantly lower when patients were alone between the current and the preceding prompt compared to when they were not alone. Since we controlled for the influence of affective state at the previous report, we can rule out the possibility that this effect was due to an already lowered mood at the preceding prompt leading to social withdrawal. Our result is in line with the high interpersonal dependence and fears of abandonment described in the diagnostic criteria (APA, 2013) and psychodynamics-based theoretical accounts of BPD (e.g., Gunderson, 1996; Clarkin et al., 2007). In addition, since BPD patients in this study were more severely depressed, negative mood might have been experienced more intensely without compensation or distraction through the presence of others. This could again have been increased by a limited access to emotion regulation strategies and difficulties engaging in goal directed behavior, which were found in relation to BPD features and the experience of negative affect in previous investigations (Salsman & Linehan, 2012).

Still, it is worth noting that BPD patients in our study did not show enhanced affective reactivity to general positive or negative interpersonal events, which contradicts some findings of previous AA studies (Berenson et al., 2011; Gadassi et al., 2014; Sadikaj et al., 2010). Several reasons could account for this discrepancy: First, the current study included a clinical control group. This can result in smaller differences compared to studies with healthy controls, but provides a stronger test of the specificity of this feature for BPD. In addition, findings of AA studies in naturalistic settings could also result from systematic differences in

the day-to-day lives of individuals regarding the number of social contacts or difficult interactions (Koval, Pe, Meers, & Kuppens, 2013). Therefore, the findings in our study could also be due to highly similar environments, since participants were in the hospital most of the time. Finally, one must consider how affective reactivity was examined methodologically: Since the concept of reactivity implies mood changes following certain stimuli, measuring affect and stimuli at the same point in time (time-contingent) does not provide information about change or causality. In our study, affect and events were assessed at the same time point, thus affective state might have influenced the reporting of events. Nevertheless, we statistically controlled for the influence of affect at the previous prompt and asked about preceding events. Another advantage of time-contingent protocols is that individuals can serve as their own “control group” regarding the occurrence and non-occurrence of events. Nevertheless, for future studies on affective reactivity a combination of event- and time-contingent protocols is to be recommended (see Shiffman, 2007).

Our finding of no difference in affective instability between BPD and MDD patients contradicts the notion of affective instability as a core criterion of BPD (Linehan, 1993). This adds to some recent AA-based research including clinical control groups (Santangelo et al., 2014): General instability of affect might not be specific for BPD, but a transdiagnostic attribute of psychological disorders. It would also be in line with studies finding higher affective instability in MDD patients as compared to healthy controls, even though overall findings on affective instability and depression are mixed (Koval et al., 2013). On the other hand, this result is in contradiction to previous AA studies comparing BPD patients to depressed controls. Still, these studies are not entirely comparable to the current investigation: For example, Trull et al. (2008) only included BPD patients fulfilling the DSM-IV criterion of affective instability, and MDD patients who did not fulfill this criterion. In the study of Cowdry and colleagues (1991), mood was assessed only one time per day with a visual analogue scale. Furthermore, the sampling frequency in AA protocols should generally match the timely pattern of the process to be examined (Shiffman, 2007). Thus, an average time interval of two hours in the current study might still have been too long to capture the possibly more rapid changes of mood in BPD (Ebner-Priemer & Sawitzki, 2007). Still, the most specific attributes of the current study are the focus on BPD patients with current depression and the highly similar environments due to inpatient treatment, which might have reduced affective reactivity and instability in BPD patients likewise.

Besides the methodological aspects discussed above, several limitations should be noted: This study was based on a limited sample size and sampling period, and is thus

possibly underpowered to detect small to moderate effects with regard to affective instability and reactivity. Therefore, null-findings should be interpreted carefully and replication is warranted. In addition, despite the numerous advantages of AA methodology, results in our study are based on self-reports. Future studies should complement protocols with physiological or behavioral measures. Finally, while the hospital setting provided a certain degree of standardization of environmental factors, it also implicates that findings might not be extended to the everyday lives of BPD and MDD patients.

With regard to the sample, it should be noted that the BPD group contained five patients who fulfilled only four of the five criteria needed for a definite BPD diagnosis. Nevertheless, and possibly due to the exclusion of PDs in MDD patients, there were significant group differences in personality functioning as indicated by the OPD-SQ. Another issue is that an exclusively female sample limits generalization to populations with mixed gender. On the other hand, diagnostic groups were highly comparable with regard to age, gender and psychotropic medication, thus ruling out confounding influences of these factors. Furthermore, generalization to non-depressed BPD patients might be questionable. Finally, patients with BPD were more severely depressed than patients with MDD. This should be taken into account as a possible confounding influence, but is in line with recent meta-analytic findings that comorbid depression in BPD goes along with elevated severity (Köhling et al., in press), and therefore could also be regarded as a naturalistic feature of depressed patients with BPD.

Despite these limitations, this study has significant implications with regard to the dynamics of affect in “borderline-depression” as compared to depression without comorbid personality pathology. It seems that the specific quality of depression in BPD is not characterized by generally elevated affective instability and reactivity, but rather by a limited awareness of possible triggers of mood states and specific reactivity to being alone. Possible explanations for these findings could lie in an impaired perception of emotional processes, pronounced interpersonal reliance, and high depression severity in individuals with BPD. In future research, finer grained aspects of subjective experience and different types of situational variables should be taken into account when studying the affective experience of depressed patients with BPD.

3.3. Study III

Dependency, Self-Criticism and Personality Functioning as Predictors of Depression Severity in Chile and Germany – A Cross-Cultural Study

Abstract

The current study investigated the associations of dependency, self-criticism and personality functioning with depression severity among German and Chilean women. We hypothesized that the implications of dependency for depression vary across cultures, while self-criticism and impaired personality functioning are transcultural risk-factors for depressive symptoms. Nonclinical as well as currently depressed participants were recruited in both countries, and completed the Self-Construal Scale (SCS), Center for Epidemiological Studies Depression Scale (CES-D), Depressive Experiences Questionnaire (DEQ), and an inventory assessing overall personality functioning (OPD-SQ). The final sample consisted of 30 Chilean and 30 German women, matched for age and depression severity. Chileans exhibited higher interdependent and independent self-construal, and there was a trend for lower self-criticism, higher dependency and more impairment in personality functioning in this group. In addition, culture moderated the relationship between dependency and depression, with higher dependency predicting higher depression in German but not in Chilean women. Self-criticism and impaired personality functioning were positively related to depression in both countries. Implications of these findings for the complex interplay between personality vulnerability factors and environmental conditions are discussed.

Introduction

There is a long history of clinical theories and research linking disrupted personality development to psychopathology. With regard to depression, excessive dependency and self-criticism were identified as major personality dimensions conferring vulnerability to depressive symptoms (e.g., Dinger et al., 2015; Luyten et al., 2007). According to this approach, the integration of relatedness and self-definition is fundamental for adaptive personality development, while it is also acknowledged that sociocultural factors may have an impact on the meaning and consequences of these dimensions (Luyten & Blatt, 2013). In fact, there is evidence from cross-cultural research that the fit between an individual's personality style and the values of his or her society can be related to psychological distress ("culture-clash hypothesis"; e.g., Caldwell-Harris & Ayçiçeği, 2006; Ryder, Sunohara, & Kirmayer, 2015; Triandis, 2000). Another, more broad characterization of maladaptive personality development is the concept of overall personality functioning, as recently incorporated into DSM-5 (American Psychiatric Association [APA], 2013). Reflecting essential commonalities between personality disorders (Morey et al., 2011; Bender, Morey, & Skodol, 2011), personality functioning might be a transcultural risk factor for poor mental health. Nevertheless, research on the impact of culture on personality vulnerability factors and their relation to psychiatric symptoms is still rare.

Personality and Vulnerability to Depression

In the original formulation of dependent ("anaclitic") and self-critical ("introjective") personality dimensions, Blatt (1974) assumed that vulnerability for depression would arise if individuals emphasize interpersonal relatedness or self-definition at the expense of one another. Overemphasis on the relatedness dimension results in dependency, characterized by a preoccupation with closeness and protective, gratifying interpersonal relations to others. Depressive symptoms may occur when these needs are frustrated (e.g., rejection by others). The self-critical personality type, on the other hand, is characterized by a focus on self-evaluation, perfectionism, achievement, and autonomy. In these individuals, depression may be triggered by experiences of failure or diminished competence. Based on this model, the Depressive Experiences Questionnaire (DEQ) was developed to measure these two dimensions (Blatt, D'Afflitti, & Quinlan, 1976). The factors of dependency and self-criticism have since been replicated across different samples in several cultures. Furthermore, a large body of research has demonstrated associations to the onset, course, and clinical presentation of depression, even though associations between depression severity and self-criticism are

typically more pronounced than those with dependency (for overviews, see Luyten et al., 2007; Luyten & Blatt, 2013; Zuroff, Mongrain, & Santor, 2004).

The levels of personality functioning scale (LPFS) of the DSM-5 was derived from several extant models of personality organization (e.g., psychodynamic, cognitive-behavioral, interpersonal, and trait), related measures, and empirical studies. It was concluded that maladaptive mental representations of oneself and others serve as the common substrates for personality pathology (see Bender et al., 2011). Thus, the LPFS combines ratings of the regulation of the self and of interpersonal relationships into an overall index of impairment. A similar approach for measuring severity of personality dysfunction is provided by the Levels of Structural Integration Axis (LSIA) of the Operationalized Psychodynamic Diagnosis (OPD) system (OPD Task Force, 2008). The OPD-LSIA describes personality dysfunction as impairments of four basic regulatory functions in a self-other framework, covering many aspects identified as core dimensions of personality functioning in the DSM-5 LPFS (see Zimmermann et al., 2012).

Recent research (Hopwood et al., 2011) suggests that in assessing personality pathology general severity is the most important predictor of concurrent dysfunction. Furthermore, a high comorbidity between DSM-IV personality disorders and Axis-I diagnoses (APA, 1994) has been well documented (e.g., Grant et al., 2004; Jackson & Burgess, 2004). Consistently, the majority of findings concerning the relationship between personality functioning and psychiatric symptoms indicated higher severity of psychopathology in the presence of higher personality dysfunction (e.g., Lowyck, Luyten, Verhaest, Vandeneede, & Vermote, 2013). Thus, with regard to depression, we suggest that high impairment in personality functioning as operationalized by the OPD-LSIA represents a general vulnerability-factor for depressive symptoms, comparable to other established risk-factors such as negative life-experiences or lack of a stable partnership (see Chentsova-Dutton & Tsai, 2009).

Individualism-Collectivism and Personality

One of the most investigated dimensions characterizing cultures is that of individualism-collectivism (Hofstede, 1980; Triandis, 2001). The related model of Markus & Kitayama (1991) describes the consequences of individualism and collectivism for self-concept and relationships at the individual level, contrasting independent and interdependent views of the self (“self-construal”). In individualistic cultures, dominant motives are autonomy and self-definition. The resulting independent self-construal organizes behavior mainly by reference to personal thoughts and feelings. Furthermore, the maintenance of a

positive and distinctive self-image and the attainment of personal goals are of special value. In contrast, individuals in collectivistic cultures show an interdependent self-construal, with emotions and motives significantly shaped by consideration of others. Sociocultural norms encourage a special concern with relationships, group membership is a central aspect of identity, and life satisfaction derives from carrying out social roles and obligations (Oyserman, Coon, & Kemmelmeier, 2002; Triandis, 2001).

Earlier studies on self-construal mainly compared individuals from North-American and East-Asian countries (see Oyserman et al., 2002). With the extension of research to other cultures, the notion of a dichotomy between independence and interdependence, reliably determined by individualistic or collectivistic orientation of cultures, has been taken into question (e.g., Harb & Smith, 2008; Matsumoto, 1999). In consequence, some authors assume that individualist and collectivist motives are not mutually exclusive. For example, Kagitcibasi (2005) proposed that different aspects of “relatedness” and “separateness” coexist within cultures and individuals, resulting in specific blends of individualism-collectivism and independence-interdependence.

Implications of Cultural Context for Personality and Mental Health

Cultural variables like individualism-collectivism can interact with mental-health phenomena in various ways. One perspective proposes that individualism fosters psychopathologic phenomena in analogy to idiocentrism (e.g., narcissism), while collectivism brings forward psychological symptoms along the lines of allocentrism (e.g., internalizing disorders), as previously discussed by Luyten & Blatt (2013) or Caldwell-Harris & Ayçiçeği (2006). Beyond differences in mean levels, culture might also have a moderating effect on the associations between certain variables. Congruent with the culture-clash hypothesis, recent studies suggest that the emergence of psychological distress in the presence of specific personality styles might at least partly depend on discrepancies between personality and cultural norms. In one study on Australian and South Korean students, shy and less sociable individuals in Korea showed better social and emotional adjustment than comparably reserved students in Australia. The authors highlight that in Korea reticent attitudes are more valued and associated with positive virtues, like gentleness and consideration for others (Kim, Rapee, Oh, & Moon, 2008). Similarly, Caldwell-Harris & Ayçiçeği, (2006) found that for students in a highly individualistic environment (Boston, U.S.A.), individualism scores were positively correlated with scales measuring psychiatric symptoms, while collectivism scores were negatively correlated with the same scales. For students in a more collectivist culture (Istanbul, Turkey), correlational patterns were opposite. Correspondingly, a recent study by

Balkir, Arens, & Barnow (2012) demonstrated that relationship satisfaction predicted low levels of depressive symptoms in Turkish women, while the same was true for autonomy satisfaction in German women.

Dependency, Self-Criticism, and Personality Functioning in Non-Western Cultures

Only few studies examined dependency and self-criticism in non-Western samples. Of these, two tested the psychometric properties of the Chinese and Japanese versions of the DEQ (Kuwabara, Sakado, Sakadao, Sato, & Someya, 2004; Yao, Fang, Zhu, & Zuroff, 2009), and one examined the intergenerational similarity of dependent and self-critical depression vulnerability in Arab Jordanian mothers and their adolescent children (Ahmad & Soenens, 2010). Overall, the three-factor structure (dependency, self-criticism, and efficacy) as proposed by Blatt (1974) and specific associations between the DEQ factors and depression were highly similar to data obtained in the west. Nevertheless, contrary to findings in North American samples, self-criticism rather than dependency was the first factor emerging in principal components analyses in the studies of Kuwabara et al. (2004) and Yao et al. (2009), suggesting that the variance explained by each factor might vary across cultures. In one cross-cultural study, Abu-Kaf & Priel (2008) compared DEQ-scores and their associations to depressive symptoms in Bedouin and Jewish students. Contrary to expectations, the presumably more collectivistic Bedouin students reported higher self-criticism. Furthermore, only the relationship between self-criticism and depression was moderated by culture, with a significantly stronger association between self-criticism and depression severity in the Bedouin sample. With regard to personality functioning, we are not aware of any studies comparing mean levels and relations to psychiatric symptoms across cultures. Correspondingly, there has been a call for more research in this field (Bender et al., 2011).

The current Study

The aim of the present study is to address the implications of dependency, self-criticism and personality functioning for depressive symptoms in different cultural contexts. The cultures taken into focus are Germany and Chile. To the best of our knowledge, there are no published studies comparing these two countries with regard to self-construal. According to the original classification of Hofstede (1980), Germany would be regarded an individualistic and Chile a collectivistic society. From this perspective, we would expect individuals in Germany to be higher in independent self-construal and individuals in Chile to be higher in interdependent self-construal. Nevertheless, previous studies comparing individuals from Latin American countries to those from Western Europe or Northern

America concluded that participants from Latin America might present with high independent self-construal as well (e.g., Friedlmeier, Schaefermeier, Vasconellos, & Trommsdorf, 2008; Kolstad & Horpestad, 2009; Oyserman et al., 2002; Santamaria, de la Mata, Hansen, & Ruiz, 2010). This is in line with the assumption of relatedness/interdependence and separateness/independence as two dimensions existing simultaneously within individuals (e.g., Kagitcibasi, 2005).

Based on the theoretical accounts and empirical results delineated above, we tested the following hypotheses: First, we expected individuals in Chile to show higher levels of interdependent self-construal, but similar levels of independent self-construal as compared to individuals in Germany. Second, we expected higher dependency in Chilean than in German participants and no difference between the cultural groups with regard self-criticism. Given that overall personality functioning relates to both, relatedness and self-definition, we did not expect to find group differences on this variable. Third, in concordance with the culture-clash hypothesis, culture was expected to moderate the association of dependency, but not self-criticism or personality functioning to depression severity. In particular, we expected to find a stronger association between dependency and depression in Germans than in Chileans.

Methods

Participants and Procedure

Initially, we recruited 30 participants in Chile and 134 participants in Germany. Participants in Chile consisted of ten women who were in psychotherapeutic treatment for current depression and 20 women from the general population, both in the city of Santiago de Chile. Patient participants were recruited from an outpatient center for the treatment of depression provided by the public health care system, while non-patient participants were recruited via personal contacts of the second author. In Germany, the sample consisted of 28 depressed women currently in psychotherapeutic treatment and 106 non-clinical participants, who were recruited via personal contacts of the first author. Both clinical and non-clinical German participants were recruited in the city of Heidelberg and its periphery. All participants answered the study questionnaires via paper and pencil, except for the non-patient participants in Germany, who filled in questionnaires through an online-platform. The study was approved by the local ethics committee of the Chilean (Psicomédica Clinical & Research Group, Santiago de Chile) and German (Medical Faculty Heidelberg) institutions. Participants gave written informed consent to their participation. To avoid a confounding influence of gender, we only included female participants. Furthermore, we only included individuals who

were of German or Chilean nationality and whose first language was German or Spanish, respectively.

For the final sample, individuals from Germany were matched to those from Chile with regard to age and depression severity to rule out systematic differences between the two groups. This procedure is also in line with the “just minimal difference” sampling strategy recommended for intercultural studies, aiming to adjust samples to each other with regard to non-cultural variables in order to isolate the influence of cultural factors (Cohen, 2007). The rationale of the matching procedure was to allocate to each Chilean a German individual with the highest similarity in age and overall depression score. Deviations in age between two matched individuals ranged from zero to six years, deviations in depression scores ranged from zero to eight points. After matching, the sample consisted of 30 Chilean and 30 German women, including ten patient participants in Chile and nine patient participants in Germany. For mean values of age and depression, see Table 1.

Instruments

Self-Construal Scale (SCS; Singelis, 1994)

The SCS is a self-rating instrument measuring the strength of independent and interdependent self-construal (Markus & Kitayama, 1991) on an individual level. The SCS consists of 30 items (expanded version) rated on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Of these, 15 items form the scale for independent and 15 items form the scale for interdependent self-construal. According to Singelis (1994), the instrument demonstrated good construct and predictive validity. Reliabilities in the current study were $\alpha = .60$ (Germans) and $\alpha = .42$ (Chileans) for the interdependence, and $\alpha = .73$ (Germans) and $\alpha = .63$ (Chileans) for the independence scale. In the current samples, we used the German version of the SCS by Freund et al. (2012) and the Spanish version by Singelis, Yamada, & Barrio (2006).

Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977)

The CES-D is a 20-item questionnaire designed to assess symptoms of depression in the general population. Respondents indicate how often depressive symptoms occurred during the last week on a 4-point scale ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*). Possible scores range from 0 to 60, with higher scores indicating higher symptom levels. A cutoff-score of 16 or higher (Radloff, 1977) has been widely used as an indicator of clinical depression. The CES-D was used in clinical as well as non-clinical populations, and has demonstrated good reliability and validity across different cultures (Mackinnon,

McCallum, Andrews, & Anderson, 1998; Radloff, 1977). In the present study, we used the German version of the CES-D (Hautzinger & Bailer, 1993) and the Chilean Spanish adaptation of Fuentealba, Bravo, & Urrutia, (2004). Internal consistency was $\alpha = .94$ in the German and $\alpha = .95$ in the Chilean sample.

Depressive Experiences Questionnaire (DEQ; Blatt et al., 1976)

The DEQ is a 66-item self-report measure, with each item rated on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The DEQ yields scores on three factors: Dependency, self-criticism and efficacy. In the current study, only the dependency and self-criticism scales are examined, because they represent vulnerability factors for depression. The DEQ has demonstrated acceptable to good reliability and validity in a variety of contexts (Blatt, 2004). We used an unpublished adaptation into Chilean Spanish by Rost and Dagnino (2010) and the German version of the DEQ developed by Beutel and colleagues (2004). According to Blatt et al. (1976), each of the 66 items' standardized scores is multiplied by the factor weight coefficient based on the original U.S. college sample to obtain the dependency and self-criticism scores. However, despite high correlations with Blatt's (1976) factors, the German DEQ scale scores deviate from the U. S. scores in absolute values (Beutel et al., 2004), and there are no norms available for Chilean populations. Therefore, scales in our study were based on the scoring system of Beutel and colleagues (2004). In the current sample, internal consistencies were $\alpha = .58$ (Germans) and $\alpha = .70$ (Chileans) for dependency, and $\alpha = .86$ (Germans) and $\alpha = .78$ (Chileans) for self-criticism.

Operationalized Psychodynamic Diagnosis System Structure Questionnaire (OPD-SQ; Ehrental et al., 2012)

The OPD-SQ assesses personality functioning in accordance with the OPD-LSIA. It contains 95 items which are rated on a 5-point scale (0 = *strongly disagree*, 4 = *strongly agree*). These items form eight subscales, describing four basic functional capacities in relation to the self and others ("objects"): *perception* of the self and objects, *regulation* of the self and objects, internal and external *communication*, and *attachment* to internal and external objects. The overall mean serves as a general severity index, with higher scores indicating higher impairment. An evaluation study has shown an internal consistency of $\alpha = .96$ for the overall scale. The OPD-SQ correlates in the expected direction with measures of personality and attachment, number of DSM-IV personality disorders diagnoses, and expert ratings of the LSIA (Dinger et al., 2014; Ehrental et al., 2012). While the German Version of the OPD-SQ was evaluated in a number of previous studies (Dinger et al., 2014; Zimmermann et al., 2015),

it was translated into Chilean Spanish for the first time in this study. The first translation (conducted by the bilingual author G.d.I.P.) was back-translated by another bilingual language expert. Finally, the German version, Chilean translation, and back-translation were compared item-by-item in a joint collaboration of the current authors (J.K., C.U., U.D. and G.d.I.P) and the final version was modified where necessary. In the present study, internal consistency of the OPD-SQ total score was $\alpha = .97$ in the German, and $\alpha = .95$ in the Chilean sample.

Statistical Analyses

Since individuals in the Chilean and German samples were matched for age and depression, we used the paired-samples t-test to examine group differences. Significance level was set at $\alpha = .05$ (two-tailed). Associations between variables were determined via Pearson correlations. We furthermore conducted multiple regression-analyses to test the effects of personality variables, culture and their interaction on depression. Culture was dummy-coded with “1” for Chile and “-1” for Germany. DEQ scales and the OPD-SQ score were converted into z-scores, and interaction terms were calculated by multiplying z-scores with the dummy-coded culture variable, respectively. All analyses were conducted with the IBM SPSS software, version 21.0.

Results

Mean Differences

To test hypotheses one and two, we compared mean levels of interdependent and independent self-construal, dependency, self-criticism, and personality functioning. Means, standard deviations, and test statistics are presented in Table 1. Levels of both, interdependent and independent self-construal were significantly higher in the Chilean sample. In addition, we conducted paired-samples t-tests to examine discrepancies between interdependence and independence scores within the two samples. Within Germans, there was a significant difference between the two dimensions, with higher scores in independent than interdependent self-construal ($t(29) = 2.17, p = .038$). Within the Chilean sample, there was no significant difference between scores on the two scales ($t(29) = -0.24, p = .810$).

There was a trend for Germans to experience less dependency and more self-criticism than Chileans. Nevertheless, both differences failed to reach statistical significance. Similarly, the group-difference regarding impairments in personality functioning only approached statistical significance, with a trend for higher impairment in Chileans.

Table 1: Age, Depression, Interdependence, Independence, Dependency, Self-Criticism and Personality Functioning in German and Chilean Women.

	Germans (n = 30)		Chileans (n = 30)		Group comparison	
	M	SD	M	SD	t(29)	p
Age	37.80	13.38	38.07	13.44	0.58	.564
CES-D	23.50	13.74	23.07	13.89	-0.60	.552
SCS Interdependence	4.23	0.58	5.41	0.52	8.62	<.001
SCS Independence	4.66	0.71	5.38	0.63	3.99	<.001
DEQ Dependency	-0.06	0.69	0.43	0.96	2.01	.053
DEQ Self-Criticism	0.64	1.39	0.15	1.17	-1.80	.083
OPD-SQ	1.60	0.64	1.87	0.63	1.94	.062

Note: M = Mean; SD = Standard Deviation; SCS = Self-Construal Scale, DEQ = Depressive Experiences Questionnaire; OPD-SQ = OPD-Structure Questionnaire; CES-D = Center for Epidemiological Studies Depression Scale.

Moderation of Associations between Personality and Depression by Culture

Intercorrelations of study variables are depicted in Table 2. In order to test whether associations between personality vulnerabilities and depression severity differ in the two cultures (hypothesis 3), we tested three linear regression models. Depression severity was the dependent variable in all models. Coefficients for the predictor variables and interaction terms are depicted in Table 3.

Dependency significantly explained variance in depression, with higher levels of dependency predicting higher levels of depressive symptoms. However, the significant interaction term between culture and dependency indicates that this association was not the same across the two cultures. As illustrated in Figure 1, higher dependency predicted higher depression severity in German, but not in Chilean women. Self-criticism and overall impairment in personality functioning both significantly predicted depression severity, with higher levels of these variables associated with more depressive symptoms. This effect was the same in German and Chilean samples, as indicated by the non-significant interaction terms in both models.

Table 2: Correlations between Interdependence, Independence, Dependency, Self-Criticism, Personality Functioning, and Depression in Germans (n = 30) and Chileans (n = 30).

	SCS-Inter		SCS-Ind		DEQ-Dep		DEQ-SC		OPD-SQ		CES-D	
	G	C	G	C	G	C	G	C	G	C	G	C
SCS Interdependence		-										
SCS Independence	-.39*	-.15		-								
DEQ Dependency	.11	.23	-.26	-.35		-						
DEQ Self-Criticism	.42*	.10	-.58**	-.02	.34	-.09		-				
OPD-SQ	.25	.26	-.38*	.01	.55**	.21	.84***	.81***		-		
CES-D	.24	.13	-.40*	-.09	.51**	.09	.73***	.66***	.77***	.64***		-

Note: G = Germans; C = Chileans; SCS = Self-Construal Scale, DEQ = Depressive Experiences Questionnaire; OPD-SQ = OPD-Structure Questionnaire; CES-D = Center for Epidemiological Studies Depression Scale; SCS-Inter = SCS Interdependence; SCS-Ind = SCS-Independence; DEQ-Dep = DEQ Dependency; DEQ-SC = DEQ Self-Criticism; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed).

Table 3: Regression Analyses of Depression with Culture, Dependency, Self-Criticism and Personality Functioning as Predictors (n = 60).

	<i>B</i>	SE <i>B</i>	β
<i>DEQ Dependency</i>			
Constant	24.35	1.77	
Culture	-1.61	1.77	-.12
Dependency	4.98	1.87	.36*
Culture x Dependency	-3.80	1.87	-.27*
<i>DEQ Self-Criticism</i>			
Constant	23.36	1.33	
Culture	1.65	1.33	.12
Self-Criticism	9.78	1.36	.71***
Culture x Self-Criticism	0.39	1.36	.03
<i>OPD-SQ</i>			
Constant	23.44	1.31	
Culture	-2.25	1.31	-.17
Personality Functioning	9.85	1.33	.72***
Culture x Personality Functioning	-0.77	1.33	-.06

Note: SE = Standard Error; SCS = Self-Construal Scale, DEQ = Depressive Experiences Questionnaire; OPD-SQ = OPD-Structure Questionnaire; CES-D = Center for Epidemiological Studies Depression Scale; *p < 0.05, **p < 0.01, ***p < 0.001 (two-tailed).

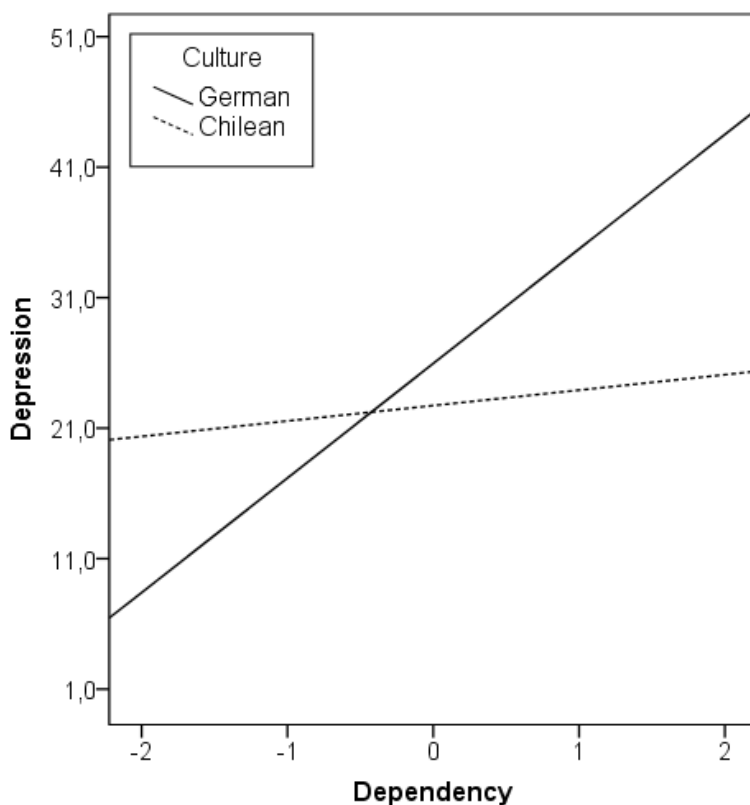


Figure 1: Interaction Effect of Culture and Dependency on Depression.

Discussion

The results of the current study indicate both cultural similarities and differences regarding the implications of personality vulnerabilities for depression. Our hypotheses on mean differences between individuals from Germany and Chile were partially supported: As expected, interdependent self-construal was higher in Chileans. Contrary to expectations, however, Chileans also reported higher independent self-construal. In addition, we found trends for lower dependency, higher self-criticism and less impairment in personality functioning in Germans compared to Chileans. Finally, our results yielded evidence for a moderating effect of culture on the relationship between dependency and depression: While higher dependency was associated with more depressive symptoms in Germans, this was not the case in Chilean individuals.

The findings of higher interdependence *and* independence in Chileans add to those reported by Kolstad & Horpestad (2009), questioning the classification of Chile as a predominantly collectivist country. From a sociocultural perspective, these results might be explained by socioeconomic changes, globalization and urbanization in a traditionally collectivistic culture. From a psychological and methodological perspective, they support the notion of an “autonomous-related” self, in which agency and interpersonal closeness co-exist

to similar extents within one individual (Kagitcibasi, 2005). Consistently, interdependence and independence were negatively correlated within German, but not within Chilean participants. Concerning associations with psychological distress, independence correlated negatively with self-criticism, personality functioning, and depression in Germany but not in Chile, suggesting differential adaptiveness of independence within the two cultures.

The trends for higher dependency and lower self-criticism in Chile might be echoing differences in interdependence, since collectivist socialization and parenting styles increase dependency and decrease autonomy (Durgel, Leyendecker, Yagmurlu, & Harwood, 2009; Triandis, 2001). Still, since both interdependence and independence were higher in Chileans, a direct determination of DEQ scores by self-construal seems unlikely. Furthermore, the negative correlation between self-criticism and independent self-construal within the German sample suggests that these scales assess rather different constructs. In particular, the concept of independent self-construal represents a positive, efficient and adaptive notion of self-directedness and autonomy, while self-criticism relates to harsh, potentially devaluating and thus more dysfunctional aspects of self-definition.

Surprisingly, there was a trend for higher overall personality dysfunction in the Chilean sample. While it is from our perspective not plausible that Chileans actually show lower levels personality functioning, a slight cultural bias inherent in this construct could be a possible explanation for this finding. Since the OPD-SQ is largely based on psychodynamic theories of personality structure (Ehrenthal et al., 2012; OPD Taskforce, 2008), self-object differentiation is included as an indicator of healthy personality organization. This might to some degree represent a culture-specific, individualistic ideal of healthy personality development, to which more interdependent views of the self do not necessarily conform. Nevertheless, the mean differences found with regard to dependency, self-criticism, and personality functioning represent trends in proximity to statistical significance, and thus rather small overall effects.

The moderation of the relationship between dependency and depression by culture is in line with the culture-clash hypothesis (Caldwell-Harris & Ayçiçeği, 2006; Ryder et al., 2015; Triandis, 2000). Nonetheless, since our analyses were correlational, we can only hypothesize possible mechanisms underlying this finding. Furthermore, it needs to be noted that the trend for higher dependency in the Chilean sample may imply a kind of “ceiling” or “saturation” effect: If the mean level of dependency was already high in Chilean individuals, even higher levels might not have made a critical difference for the emergence of depressive symptoms.

Concerning potential explanations for this finding relating to the culture-clash hypothesis, aspects of personality and culture could be “clashing” within individuals, and/or between them and their environment. Against the backdrop of higher interdependence in Chileans and a predominance of independence within the German sample, possible stigma and self-devaluation regarding a need for closeness and caring by others which does not conform to social norms could be one pathway of emerging depression. Another potential explanation can be derived from Blatt’s (1974) model of dependent vulnerability: If depressive symptoms in dependent individuals occur when relationship needs are frustrated, it may be possible that dependent needs are more likely to get satisfied – and possible depressive crises prevented - in a more relational society like Chile. Indeed, tighter social and familial networks in Chile as compared to Germany were reported in previous research (Georgas, Berry, van de Vijver, Kagitçibasi, & Poortinga, 2006).

Another interpretation is that a discrepancy between individual behavior and cultural norms might lead to stressors in the form of peer rejection or interpersonal problems, and thus lead to psychological distress (Caldwell-Harris & Ayçiçeği, 2006). Vice versa, features of dependency are likely to be gratifying in the Latin American cultural context, in particular since they might overlap with “simpatía”, a cultural social script emphasizing harmony seeking as well as expressing and sharing positive emotions towards others (Ramírez-Esparza, Gosling, & Pennebaker, 2008; Triandis, Marín, Lisansky, & Betancourt, 1984). Nevertheless, this mechanism could also operate the other way around: More adaptive and psychologically healthy individuals might generally be better equipped to adopt socially desirable personality features in the first place (Mulder, 2012). Finally, beyond differences in collectivism/interdependence, we cannot rule out that the interaction between culture and dependency was driven by other dimensions on which German and Chilean cultures differ. We can only speculate about possible third variables here. For example, another prominent difference distinguishing Chilean and German societies lies in more traditional values and conservative social orientations, including sex-role ideologies (Georgas et al., 2006; Schwartz, 2004), which could affect the social desirability of dependent vs. autonomous orientations in women.

Our finding of high correlations between self-criticism and depression in both samples is in line with research suggesting consistent relationship patterns between self-critical perfectionism and mental-health outcomes across cultures (DiBartolo & Rendón, 2012). Still, one specific explanation for our results may be drawn from previous studies on the DEQ, where it was repeatedly found that self-criticism, as compared to dependency, shows a more

stable connection to depression severity (see Zuroff et al., 2004; Luyten et al., 2007). Furthermore, while possible maladaptive consequences of dependency might be reduced by high social support in more collectivistic societies, this is not likely to work for self-critical tendencies. In particular, the self-criticism factor of the DEQ emphasizes a number of items depicting a negative self-image and discrepancies between the actual and the ideal self. These features possibly cannot be buffered by the social environment in both cultures alike. Moreover, in individuals with high independence and hence a strong imperative for achievement, discrepancies between the actual and the ideal self might inflict individuals with additional stress and potential depressive symptoms (Chentsova-Dutton & Tsai, 2009). Nevertheless, as demonstrated in a recent study by Abu-Kaf & Braun-Lewensohn (2015), self-criticism might lead to depression via differing pathways in different cultures (e.g., mediated by avoidant coping vs. a direct effect of self-critical standards).

Finally, overall personality functioning as a broader construct encompassing issues of self-definition and relatedness likewise seems to be a transcultural risk-factor for depression as well. In addition, possibly due to similar item content of the DEQ and OPD-SQ regarding negative self-perceptions, we found high positive correlations between personality dysfunction and self-criticism. This suggests that these two concepts are closely interrelated and may potentially indicate a common underlying factor.

Limitations and Future Directions

The findings of our study are constrained by several limitations. First, our cross-sectional data do not yield information about causality. This could only be overcome by longitudinal studies examining the temporal order of the occurrence of vulnerability factors and depressive symptoms. As already noted by Mulder (2012), extensive epidemiological cross-cultural research has been conducted with regard to schizophrenia and mood disorders, but not with a focus on personality pathology. Second, the strengths and weaknesses of our sample have to be acknowledged: On the one hand, our study is based on a small and exclusively female sample, mainly recruited from urbanized environments. Thus, replications of our results in larger, more representative samples are warranted. On the other hand, this restriction in combination with the matching strategy enhances the internal validity of our findings. Third, we chose a dimensional approach to depressive symptoms. Since there is evidence that cultural differences decrease in the presence of clinically significant psychopathology (e.g., Balkir et al., 2012, Draguns & Tanaka-Matsumi, 2003), our research should be complemented by study designs differentiating between healthy and clinical groups. Moreover, an extension of research to cultural groups other than Germans and Chileans, as

well as to other forms of psychopathology (e.g., anxiety or somatization) is necessary for further corroboration of the culture-clash hypothesis.

Another potential restriction of validity lies in the use of self-report questionnaires, since cultural differences in response styles (e.g., acquiescence) have been documented (Meisenberg & Williams, 2008). In addition, cultural comparisons of subjective likert-scales can be inflicted by a “reference-group bias”, since individuals from different cultures compare themselves to different reference groups when responding to items (Heine, Lehman, Peng, & Greenholtz, 2002). Moreover, the DEQ dependency as well as the SCS interdependence and independence scales have demonstrated poor reliabilities in our study. In fact, problems with the factor structure of these scales have been discussed before (e.g., Blatt, Zohar, Quinlan, Zuroff, & Mongrain, 1995; Hardin, Leong, & Bhagwat, 2004). Thus, especially with regard to the SCS, other factor solutions or alternative measures of cultural syndromes should be considered in future research (see for example Christopher, Norris, D’Souza, & Tiernan, 2012). Finally, even though the OPD-SQ has demonstrated good correspondence with expert-ratings of personality functioning (Dinger et al., 2014), we recommend cross-cultural investigations of personality functioning and its implications on the basis of expert-ratings as operationalized in the DSM-5 (APA, 2013).

Conclusions

This study is one of the first to examine the relations between personality vulnerabilities and depression across cultures. Our results add to the literature suggesting that a mismatch between personality style and cultural norms can be a risk factor for poor mental health (e.g., Kim et al., 2008). In particular, the adaptiveness of dependency seems to vary across cultures, while the implications of negative self-evaluation and broader concepts of personality dysfunction might be more universal. With regard to personality pathology, these results underline the need to account for the sociocultural context in the question of what exactly constitutes a healthy personality (see also Ryder et al., 2015; Leising & Zimmermann, 2011). Concerning the psychotherapeutic treatment of depression, it needs to be considered that interventions aimed at augmenting autonomy might not be of equal relevance within different sociocultural populations.

4. CONCLUSIONS

There is a long history of clinical theories and empirical research on the linkage between personality disruptions and depression. The primary focus of the present dissertation project was to elucidate the implications of borderline pathology, impairments in overall personality functioning, dependency, and self-criticism for the phenomenology and severity of depressive experience. A second aim was to examine how some of these relationships are moderated by features of the sociocultural environment.

Taken together, the question of whether the comorbidity of borderline pathology is meaningful for the clinical presentation of depression can be answered with “Yes”. This is consistent with a pathoplastic effect of personality on psychopathology and challenges the “uniformity myth” regarding the syndrome of depression (Hammen & Gotlib, 2009). At the same time, an intercultural perspective highlights that some personality features may be more universal in their relation to depression severity than others. The current studies’ central findings, general strengths and limitations, as well as implications for diagnosis and treatment of depression are summarized below.

The results of the systematic review and meta-analysis support a distinct quality of depression regarding the domains of the self (higher self-criticism) as well as affective experience related to other persons (elevated anger/hostility). In addition, depression was more severe in depressed patients with BPD than in those without. These findings correspond to the basic functional impairments related to the self and interpersonal relationships encompassed by BPD diagnostic criteria and support the notion that BPD implies high impairment in overall personality functioning, which in turn implies higher general severity of psychopathology. Furthermore, this is in line with findings indicating that BPD is associated with both, internalizing and externalizing liabilities (James & Taylor, 2008). At the same time, this textualization of depressive experience in BPD questions the notion of the self-definition vs. relatedness framework (Luyten & Blatt, 2011, 2013), which has previously suggested that BPD is closer to the dependency than to the self-criticism spectrum. On the contrary, the systematic review showed very clearly, that more pronounced self-criticism is an important feature of borderline pathology. Nonetheless, the question of whether the findings of the current studies indicate simultaneously high impairments in both, self- and relationship-domains, or rather pertain to different subtypes of patients subsumed under the label of BPD, remains.

While the systematic review did not support the notion of enhanced dependency in borderline-depression, the finding of study two of higher emotional reactivity to being alone

in depressed patients with BPD comorbidity might actually point in this direction. One factor which might explain this discrepancy is that the sample in study two was exclusively female. Since higher relatedness in women is well-documented (see Luyten & Blatt, 2013), the assumption of higher interpersonal dependency in borderline-depression might hold for female BPD patients only. Another prominent finding of study two was that of subjectively perceived higher affective reactivity in the BPD group, while actual associations between affects and daily events did not support this notion. As discussed in more detail in study two, this finding implies impairments in the attribution of affective states – rather than generally enhanced emotional reactivity - in depressed patients with BPD.

Finally, it needs to be noted that several assumptions with regard to a distinct nature of depression in BPD were not supported by studies one and two. This includes elevated anxiety or tension, the presence of depressive symptomatology in BPD regardless of a current depressive disorder, and higher depression severity in BPD patients on specific depression scales. Furthermore, we did not find generally enhanced affective instability or reactivity in depressed patients with BPD.

With regard to the question of whether the implications of personality dysfunction for depression severity are moderated by cultural context, the answers yielded by study three could be summarized by a tentative “Yes”. Its results suggest that the universality of the consequences of a specific personality dimension seem to depend on the broadness of the respective concept, as well as on its potential for mismatch with certain features of the surrounding culture. Specifically, dependency was found to predict higher depression severity in a cultural group with less pronounced interdependent self-construal only. In contrast, higher self-criticism and overall personality dysfunction were related to more severe depressive symptoms to similar degrees in both countries. These results extend previous research conducted in the Chilean-German Doctoral Program, which demonstrated enhanced dependency and lower self-criticism in Chilean compared to German individuals, but did not examine the actual consequences of these dimensions for the experience for depressive symptoms (Rost, 2010). Finally, these findings also highlight the role of cultural norms and values for the diagnostic declaration and subjective experience of specific personality features as “dysfunctional” (see also Leising & Zimmermann, 2011).

4.1 Major Strengths and Limitations

To the best of my knowledge, this dissertation project comprises the first systematic and meta-analytic account of extant research regarding the quality and severity of depression in BPD. In addition, study two is most likely the first AA-based account of affect dynamics in

depressed patients with and without borderline pathology. Nonetheless, the studies conducted in this project show certain strengths and weaknesses, which have to be taken into account when addressing the interpretation and implications of findings.

The major strength of study one is its systematic and meta-analytic approach, synthesizing results of numerous studies based on a large overall sample of individuals. As a main limitation, it has to be noted that results are based on cross-sectional, naturalistic studies, which cannot disentangle the mechanisms behind the comorbidity and phenomenology of BPD and depression. Other notable limitations of this study as well of study two are partly inherent in the concept of and literature on borderline-depression itself. These include high heterogeneity and unclear boundaries of – as well as high overlap between – BPD and depression, hampering the interpretation of findings. For example, even though elevated anger was frequently designated as a specific feature of borderline-depression (e.g., Hartocollis, 1977), it is quite questionable whether anger can actually be subsumed under the term “depression” at all. Furthermore, depressed patients without BPD constitute a rather heterogeneous comparison group, which might include individuals with numerous forms of personality pathology apart from BPD. Nevertheless, this potential problem was depleted by only including patients without PDs in the depressed comparison group of study two. Finally, future studies should aim to utilize dimensions of personality functioning instead of the categorical BPD diagnosis to avoid tautology between diagnostic entities and elucidate issues of heterogeneity within BPD patients (see for example Kopala-Sibley et al., 2012).

The main assets of study two lie in the advantages of an AA-based study design as summarized in section 2.2. Its main limitations lie in the low sample size and power, both with regard to the study participants and number of reports sampled in the AA-protocol. Furthermore, the limitation to female individuals in an inpatient setting on the one hand enhances internal validity, but on the other hand compromises generalizability of findings to other environments and male patients. In addition, other domains of experience (e.g., self-esteem, see for example Santangelo et al., 2014) or empirically validated, mutually exclusive sets of events might reveal further distinct features related to affect dynamics of depression in BPD. Thus, replication of a similar study design including larger samples of participants and reports – possibly in outpatient settings and with an extended set of variables – could be a meaningful endeavor for future research.

Finally, study three provides one of - as yet - few cross-cultural comparisons regarding the consequences of personality features for psychopathology. In addition, apart from merely comparing individuals from two different countries on the variables of interest, it also takes

into account the cultural psychological variable assumed to explain possible differences (self-construal). Nevertheless, this study does not completely fulfill the criteria for what Matsumoto & Yoo (2009) referred to as linkage studies, since a test of mediation of the identified moderation effect by self-construal was not conducted due to the limited sample-size. Second, as already noted with regard to study two, a generalization of results to male populations is questionable. Third, the cross-sectional nature of study three does not offer any information on developmental pathways or the order of occurrence of vulnerability factors and depressive symptoms. Thus, future studies should strive to underpin these findings by means of bigger sample-sizes, enabling the examination of possible gender-differences as well as potential multivariate mediation-moderation analyses (see for example Abu-Kaf & Brown-Lewensohn, 2015) or by longitudinal study designs.

4.2 Implications

As noted by Carroll (1989), to understand depression implies to understand psychiatry. To this effect, it needs to be acknowledged that the current project only contributes a small piece to the overall puzzle of the relationship between personality dysfunction and depressive symptoms. In particular, the presented findings indeed support the pathoplasticity-model, but by no means exclude other (causal) interrelations between personality and psychopathology, as posited by different models of comorbidity.

Nevertheless, following the rationale that a distinct phenomenology of symptoms points to specific processes in the development of psychopathology, the current findings indicate that functional impairments in the regulation of the self and interpersonal relationships might play a more prominent role in the formation of depressive symptoms in patients with than in patients without BPD. As pointed out by Westen (2006), a symptom or syndrome such as depression can be the product of many different kinds of object-relational dynamics, and appropriate treatment requires attention to these processes. This supports the notion that depression is a heterogenous class comprising numerous conditions with varying capacities of responding to different interventions (Parker, 2005). Consequently, depressed patients with pronounced personality dysfunction could be more likely to benefit from treatments developed for PDs, such as transference-focused or schema therapy (Luyten & Blatt, 2007). Furthermore, the results of the cross-cultural study underline previous findings suggesting that interpersonal experiences and behavior typically associated to depression in individuals from Western countries might not be generalized to other cultural contexts, such as Chile (Zimmermann, 2010). Thus, with regard to individual diagnosis and psychotherapeutic treatment, certain features – such as personality functioning or cultural

background – should always be taken into account for a sufficient comprehension of why a particular individual experiences depressive symptoms at a particular situation and point in time.

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Appendix: Supplementary material Study I**Appendix A:** References of studies fulfilling basic inclusion criteria**Appendix B:** Table of study characteristics**Appendix C:** Table of study results on depression severity and quality**Appendix D:** Funnel plot of standard error by Hedges' g

Appendix A

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Appendix B

Authors (year) ^a	Sample ^b	% Female	Age mean (SD) ^c	Group differences in gender and age	Comorbid DeDs in BPD groups ^d	DeD diagnoses in DeD group	Comorbid PDs in DeD group ^e	Study specifics / limitations
Akiskal et al. (1985)	24 BPD 30 DeD	BPD: 50% DeD: 43.3%	BPD: 36 (11) DeD: 46 (12)	None	0%	100% major depressions (90% uni- and 3% bipolar)	NR	Diagnostic assessment not eligible for MA; no depressive episodes for at least one year in BPD group
Azarin et al. (2013)*	19 BPD 474 DeD	BPD: 68.4% DeD: 71.3%	BPD: 41.17 (11.25) DeD: 46.44 (11.41)	BPD: age ↓	100% MDD (78.9% bipolar spectrum)	45,5% MDD 55.5% bipolar disorder with depressive episode	NR	-
Barnow et al. (2009) ^{†*}	51 BPD 23 DeD	BPD: 90.2 % DeD: 91.3 %	BPD: 27.1 (7.4) DeD: 28.9 (8.0)	None	87% affective disorders (bipolar disorders excluded)	100% MDD	NR (cluster B PDs excluded)	-
Beeber et al. (1984)	13 BPD 10 DeD	NR	NR	NR	100% MDD	100% MDD	NR	Data reported not sufficient for MA
Beeney et al. (2013) ^{†*}	23 BPD 13 DeD	BPD: 100% DeD: 100%	BPD: 31.84 (9.10) DeD: 32.12 (8.80)	None	0%	100% MDD	0%	No depressive episodes for 6 months in BPD group; MDD subjects meeting more than two cluster B criteria excluded
Bellino et al. (2005)*	45 BPD 74 DeD	BPD: 62.2% DeD: 62.2%	BPD: 33.2 (14.7) DeD: 39.7 (14.2)	BPD: age ↓	100% MDD	100% MDD	100%	-
Bellodi et al. (1992) ^{†*}	15 BPD 45 DeD	BPD: 80% DeD: 46.1 %	BPD: 30.1 (6.5) DeD: 44.3 (11.9)	BPD: age ↓	80% MDD 20% bipolar disorder with depressive episode	65.3 % MDD 35,6% bipolar disorder with depressive episode	73.4%	-
Burgess (1991)	27 BPD 17 DeD	NR	BPD: 33.8 (8.7) DeD: 35.3 (10.2)	NR	0%	100% MDD	0%	Diagnostic assessment not eligible for MA
Carvalho Fernando et al. (2013)*	49 BPD 48 DeD	BPD: 89.8% DeD: 54.2%	BPD: 28.6 (9.0) DeD: 33.2 (8.9)	BPD: female ↑	42.9% MDD	100% MDD	NR (cluster B PDs excluded)	-

Corbitt et al. (1996) ^{†*}	30 BPD 44 DeD	BPD: 77% DeD: 59%	OA: 34.9 (10.6)	BPD: female ↑ (age NR)	100% MDD	100% MDD	0%	Varying sample sizes for different instruments (HRSD: 30 BPD , 44 DeD; BDI: 20 BPD, 34 DeD; BHS: 25 BPD, 34 DeD)
de Bonis et al. (1998) [†]	17 BPD 12 DeD	BPD: 88.2% DeD: 75%	BPD: 30.23 (7.65) DeD: 38.58 (7.18)	BPD: age ↓	100% MDD	100% MDD	58.3%	Diagnostic assessment not eligible for MA; QSD: measure of depressed mood excluding anxiety
De la Fuente et al. (2004)*	20 BPD 20 DeD	BPD: 70% DeD: 75%	BPD: 32.40 (6.90) DeD: 35.85 (4.39)	None	60% RBD (MDD excluded)	100% MDD	0%	Patients with any comorbid DSM-II-R diagnoses excluded
Fertuck et al. (2006) ^{†*}	22 BPD 33 DeD	BPD: 72.7% DeD: 69.7%	BPD: 33.8 (10.0) DeD: 50.0 (14.2)	BPD: age ↓	100% MDD	100% MDD	0%	-
Feske et al. (2004)*	20 BPD 77 DeD	BPD: 95% DeD: 67.5%	BPD: 37.7 (13.0) DeD: 58.3 (18.2)	BPD: age ↓ female ↑	100% MDD	100% MDD	0%	Only patients with minimum HRSD score of 20 included
Greggerson et al. (2011)*	12 BPDa 44 BPDb 22 DeD	BPDa: 100% BPDb: 100% DeD: 100%	BPDa: 26.8 (5.0) BPDb: 30.0 (7.9) DeD: 36.9 (8.4)	BPDa+b: age ↓	BPDa: 100% MDD BPDb: 0%	100% MDD	NR	-
Hansenne et al. (2002)	20 BPD 20 DeD	BPD: 70% DeD: 70%	BPD: 30.5 (10.2) DeD: 46.1 (13.2)	BPD: age ↓	80% MDD	100% MDD	0%	Diagnostic assessment not eligible for MA
He et al. (2010)	22 BPDa 19 BPDb 22 DeD	BPDa: 77.3% BPDb: 73.7% DeD: 50%	BPDa: 27.27 (10.10) BPDb: 31.63 (12.32) DeD: 25.05 (7.60)	None	BPDa: 100% MDD BPDb: 0% MDD	100% MDD	NR	Diagnostic assessment not eligible for MA; MDDs in BPD and DeD groups treatment resistant (criteria defined by authors)
Hooley et al. (2010) ^{†*}	13 BPD 10 DeD	BPD: 100% DeD: 100%	OA: 25.21 (4.48)	None	38.5% MDD	100% Dys	0%	-
Horesh et al. (2003a)	20 BPD 20 DeD	BPD: 55% DeD: 55%	BPD: 16.72 (1.41) DeD: 16.73 (1.72)	None	0%	100% MDD	NR	Adolescent sample; only patients with suicide attempts included
Horesh et al. (2003b) [†]	33 BPD 32 DeD	BPD: 78.8% DeD: 75%	OA: 15 (2.3)	None	30.3% MDD 33.3% Dys	100% MDD	NR	Adolescent sample
Horesh et al. (2008) [†]	20 BPD 19 DeD	BPD: 95% DeD: 68.4%	BPD: 16.43 (1.67) DeD: 16.26 (1.01)	BPD: female ↑	0%	100% MDD	0%	Adolescent sample; patients with suicide attempt excluded
Ille et al. (2014) ^{†*}	17 BPD 21 DeD	BPD: 94.1% DeD: 47.6%	BPD: 28.2 (8.6) DeD: 47.4 (11.5)	NR	NR	100% MDD	NR	-

Jacob et al. (2009)*	26 BPD 15 DeD	BPD: 100% DeD: 100%	BPD: 30.5 (8.8) DeD: 40.6 (8.1)	BPD: age ↓	39% MDD 46% Dys	100% MDD	NR (cluster B PDs excluded)	-
Joyce et al. (2003) ^{†*}	30 BPD 100 DeD	BPD: 60% DeD: 64%	BPD: 27.8 (8.8) DeD: 33.4(11.4)	BPD: age ↓	100% MDD	100% MDD	0%	-
Keilp et al. (2006) ^{†*}	87 BPD 188 DeD	BPD: 78.2% DeD: 53.7%	NR	BPD: age ↓ female ↑	100% MDD	100% MDD	44.1%	-
Wilson et al. (2007) [†]	72 BPD 71 DeD	BPD: 76.4% DeD: 57.7%	BPD: 32.4 (8.8) DeD: 38 (10.5)	BPD: age ↓	100% MDD	100% MDD	0%	-
Klug & Huber (2009)	33 BPD 36 DeD	BPD: 100% DeD: 100%	BPD: 28.7 (6.6) DeD: 28.6 (3.7)	None	19% MDD	100% MDD	NR	Diagnostic assessment not eligible for MA
Kontaxakis et al. (1987)	13 BPD 13 DeD	BPD: 0% DeD: 0%	BPD: 26.4 (7.1) DeD: 43.3 (9.8)	BPD: age ↓	0%	100% MDD	NR	Diagnostic assessment not eligible for MA
Kurtz & Morey (2001) ^{†*}	21 BPD 24 DeD	BPD: 61.9% DeD: 75%	BPD: 35.9 (8.3) DeD: 38.2 (7.7)	None	100% MDD	100% MDD	Mean number of PDs = 2.17	-
Levy et al. (2007) [†]	29 BPDa 10 BPDb 17 DeD	OA: 57.1%	OA: 19.9 (6.0)	BPDa+b: age ↓	BPDa: 100% MDD/Dys BPDb: 0% MDD/Dys	100% MDD / Dys	NR	Sample includes adolescents; rates for MDD and Dys NR
McNamara et al. (1984)	10 BPD 10 DeD	BPD: 100% DeD: 70%	BPD: 28.1 (3.8) DeD: 27.4 (5.1)	BPD: female ↑	NR	100% MDD	60%	Diagnostic assessment not eligible for MA
Nigg et al. (1992)*	30 BPDa 31 BPDb 26 DeD	BPDa: 77% BPDb: 80% DeD: 61%	BPDa: 29 (8) BPDb: 26 (8) DeD: 40 (12)	None	BPDa: 100% MDD BPDb: 0% MDD	100% MDD	NR	-
Westen et al. (1992) [†]	16 BPDa 17 BPDb 14 DeD	BPDa+b: 77.4% DeD: 65.6%	BPDa+b: 28.03 (7.11) DeD: 40.13 (8.95)	BPDa+b: age ↓	BPDa: 100% MDD BPDb: 0% MDD	100% MDD	NR	-

Pietrek et al. (2013) [†]	38/40 BPD 83/86 DeD	BPD: 90.2% DeD: 52.3%	BPD: 26.5 (6.8) DeD: 42.4 (12.1)	BPD: age ↓ female ↑	34.1% MDD	100% MDD	NR	Varying sample sizes: BDI: 38 BPD, 83 DeD; PANAS: 40 BPD, 86 DeD
Pinto et al. (1996) [†]	19 BPD 21 DeD	BPD: 100% DeD: 100%	BPD: 14.81 DeD: 14.95 Range OA: 13-17	None	100% MDD	100% MDD	NR	Sample includes adolescents
Riihimäki et al. (2014) ^{†*}	35 BPD 102 DeD	BPD: 86% DeD: 72%	BPD: 37.3 (13.7) DeD: 48.0 (12.7)	BPD: age ↓	100% DDs (rates of diagnoses NR, see study specifics)	100% DDs (rates of diagnoses NR, see study specifics)	35%	Inclusion criteria DDs (both groups): 1) current MDD, 2) dysthymia, 3) subsyndromal MDD with two to four current depressive symptoms (minimum one core symptom) and lifetime MDD, 4) minor depression similar to subsyndromal MDD but without MDD history
Riso et al. (2000)*	11 BPD 119 DeD	BPD: 54.5% DeD: 72.5%	BPD: 30.5 (9.4) DeD: 32.6 (10.0)	None	0%	47.1% double depression 37.8% MDD 15.1% Dys	27.7%	-
Rothschild & Zimmerman (2002)*	56 BPD 384 DeD	BPD: 69.6 % DeD: 67.2%	BPD: 33.4 (8.7) DeD: 39.8 (12.4)	BPD: age ↓	100% MDD	100% MDD	NR	HRSD score extracted from SADS
Scheel et al. (2013)*	25 BPD 25 DeD	BPD: 100% DeD: 100%	BPD: 28.9 (5.8) DeD: 33.9 (6.9)	Gender: None Age: NR	32% Dys	100% MDD 12% Dys	0%	Subjects with other PDs than BPD excluded
Snyder et al. (1982) [†]	29 BPD 22 DeD	BPD: 6.9% ^f DeD: NR	Range OA: 18-40	BPD: age ↓	NR	100% Dys	13.6%	Diagnostic assessment not eligible for MA; sample predominantly male
Snyder & Pitts (1986) [†]	29 BPD 23 DeD	BPD: 6.9% DeD: 8.7%	Range OA: 18-40	NR	NR	100% Dys	13%	Diagnostic assessment not eligible for MA; sample predominantly male

Soloff et al. (2000) ^{†*}	49 BPDa 32 BPDb 77 DeD	BPDa: 75.5% BPDb: 59.4% DeD: 59.7%	BPDa: 29.7 (7.9) BPDb: 26.0 (7.3) DeD: 41.5 (16.8)	BPDa+b: age ↓	BPDa: 100% MDD BPDb: 0% MDD	100% MDD	NR (cluster B PDs excluded)	-
Southwick et al. (1995) ^{†*}	16 BPDa 10 BPDb 12 DeD	OA: 15%	BPDa: 38.5 (4.6) BPDb: 38 (2.3) DeD: 45 (13)	BPDa+b: age ↓	BPDa: 100% MDD BPDb: 0% MDD	100% MDD	NR	Sample predominantly male
Sprock et al. (2000)*	18 BPD 17 DeD	BPD: 100% DeD: 100%	BPD: 37.6 (5.3) DeD: 32.7 (9.7)	None	72.2% MDD 27.8% Dys	100% MDD/Dys	0%	Rates MDD/Dys in DeD group NR
Staebler et al. (2009)*	30 BPD 27 DeD	BPD: 100% DeD: 100%	BPD: 28.5 (9.1) DeD: 39.1 (8.0)	BPD: age ↓	63% MDD	100% MDD	NR (cluster B PDs excluded)	-
Stanley & Wilson (2006) ^{†*}	29 BPD 31 DeD	BPD: 69% DeD: 55%	BPD: 28.41 (6.68) DeD: 32.26 (6.36)	BPD: age ↓	100% MDD	100% MDD	0%	-
Stern et al. (1997) ^{†*}	55 BPD 22 DeD	BPD: 83.6% DeD: 59.1%	BPD: 30.5 (9.2) DeD: 36.3 (8.3)	BPD: age ↓ female ↑	75.5% current affective diagnoses (including bipolar disorders)	95.5% MDD 4.5% depressed phase of bipolar I disorder	NR (cluster B PDs excluded)	Only patients with minimum BDI score of 19 included
Sullivan et al. (1994) ^{†*}	20 BPD 48 DeD	BPD: 25% DeD: 60%	BPD: 28.6 (7.7) DeD: 32.9 (11.6)	BPD: female ↓	100% MDD	100% MDD	0%	Only patients with minimum HRSD score of 14 included
Svaldi et al. (2012)*	15 BPD 16 DeD	BPD: 100% DeD: 100%	BPD: 35.13 (7.17) DeD: 46.38 (7.29)	BPD: age ↓	60% MDD	100% MDD	NR	Patients with eating disorders excluded
Unoka et al. (2009) ^{†*}	25 BPD 25 DeD	BPD: 80% DeD: 80%	BPD: 29.2 (7.5) DeD: 30.1 (9.3)	None	NR	100% MDD	80%	-
Walter et al. (2009)*	12 BPD 12 DeD	BPD: 75 % DeD: 83.3%	BPD: 26.3 (6.2) DeD: 32.3 (9.9)	None	58.3% MDD	100% MDD	0%	-
Weaver & Clum (1993)*	17 BPD 19 DeD	BPD: 100% DeD: 100%	BPD: 32 (7.9) DeD: 34 (11.8)	None	100% depressed (including unipolar, bipolar and dysthymic disorders)	100% depressed (including unipolar, bipolar and dysthymic disorders)	NR	Only patients with minimum ZSDS score of 0.50 included; significantly more bipolar patients in BPD group; rates for unipolar, bipolar and dysthymic disorders NR

White et al. (2011)*	20 BPDa 17 BPDb 25 DeD	BPDa: 100% BPDb: 100% DeD: 100%	BPDa: 29.00 (4.01) BPDb: 30.01 (3.11) DeD: 29.87 (3.01)	None	BPDa: 100% MDD BPDb: 0% MDD	100% MDD	68%	-
Wingenfeld et al. (2011)*	56 BPD 47 DeD	OA: 67%	OA: 30.76 (11.56)	NR	34% MDD 12% Dys	100% MDD (13% comorbid Dys)	23%	-
Wixom et al. (1993) [†]	35 BPD 17 DeD	BPD: 100% DeD: 100%	BPD: 15.6 (1) DeD: 15.3 (.92)	None	NR	100% MDD/Dys	NR	Adolescent sample; rates MDD/Dys in DeD group NR

Note. BPD = Borderline personality disorder; DeD = Depressive disorder; SD = Standard deviation; OA = Overall sample (if data not reported separately for diagnostic groups); ↑ = higher; ↓ = lower; MDD = Major depressive disorder; Dys = Dysthymic disorder; RBD = Recurrent brief depression; PD = Personality disorder; MA = Meta-analysis.

[†] Study included in qualitative synthesis

* Study included in meta-analysis

^a Two publications depicted in one row are based on identical or overlapping samples (information retrieved from authors) but reported results from different outcome-measures; in those cases, results of most comprehensive sample were included in meta-analysis

^b If studies included two separate BPD groups (one with full and one with no comorbidity of DeDs), separate groups were denoted by BPDa and BPDb, respectively

^c If mean or SD were not reported, the least available information (e.g. range) is given

^d If exact diagnoses (e.g. MDD) were not reported, the original term used in primary studies (e.g. “current depression”) is given

^e In all studies, authors indicated that there were no comorbid BPDs in DeD groups; if exact rates for PDs are not reported, the least available information (for example mean number of PDs) is given

^f Snyder & Pitts, 1986 (not reported in Snyder et al., 1986)

Appendix C

Authors (year) ^a	Depression severity ^b	Depression quality
Akiskal et al. (1985)	BDI (SR): BPD (no DeD) > DeD	-
Azarin et al. (2013)	HRSD (ER): BPD (full DeD) > DeD	-
Barnow et al. (2009)	SCL-90-Dep (SR): BPD (part. DeD) = DeD	SCL-90 subscales: Interpersonal Sensitivity: BPD (part. DeD) > DeD, Anger/Hostility: BPD (part. DeD) > DeD, Anxiety: BPD (part. DeD) > DeD
Beeber et al. (1984)	HRSD (ER): BPD (full DeD) = DeD	-
Beeney et al. (2013)	BDI (SR): BPD (no DeD) = DeD	PANAS-X (subscales, state affect): Negative Affect: BPD (no DeD) = DeD, Hostility: BPD (no DeD) = DeD
Bellino et al. (2005)	HRSD (ER): BPD (no DeD) = DeD ZSDS (SR): BPD (no DeD) > DeD	-
Bellodi et al. (1992)	HRSD (ER): BPD (full DeD) = DeD SCL-90-Dep (SR): BPD (full DeD) = DeD	HRSD items: Depressed Mood: DeD > BPD (full DeD), Diminished Sexual Interest: DeD > BPD (full DeD), Insight: BPD (full DeD) > DeD, Depersonalization-Derealization: BPD (full DeD) > DeD, all other items: BPD (full DeD) = DeD SCL-90 subscales: Anger/Hostility: BPD (full DeD) > DeD, Interpersonal Sensitivity: BPD (full DeD) = DeD
Burgess (1991)	HRSD (ER): BPD (no DeD) = DeD	-
Carvalho Fernando et al. (2013)	BDI (SR): BPD (part. DeD) = DeD	-
Corbitt et al. (1996)	HRSD (ER): BPD (full DeD) = DeD BDI (SR): BPD (full DeD) > DeD	BHS: BPD (full DeD) > DeD
de Bonis et al. (1998)	QSD (SR): BPD (full DeD) = DeD	Valence of self (measured by simplified version of Kelly's repertory grid): BPD (full DeD) = DeD
De la Fuente et al. (2004)	HRSD (ER): DeD > BPD (part. DeD)	-
Fertuck et al. (2006)	HRSD (ER): BPD (full DeD) = DeD BDI (SR): BPD (full DeD) = DeD	BHS: BPD (full DeD) > DeD POMS total score of mood disturbance: BPD (full DeD) > DeD POMS scores: Anger-Hostility: BPD (full DeD) > DeD, Anxiety-Tension: BPD (full DeD) > DeD, Concentration: BPD (full DeD) = DeD, Depression-Dejection: BPD (full DeD) = DeD, Fatigue-Inertia: BPD (full DeD) = DeD, Vigor: BPD (full DeD) = DeD
Feske et al. (2004)	HRSD (ER): BPD (full DeD) = DeD	-
Greggersen et al. (2011)	BDI (SR): DeD > BPD (full DeD) > BPD	-
Hansenne et al. (2002)	HRSD (ER): BPD (part. DeD) = DeD	-
He et al. (2010)	PVP (SR): BPD (full DeD) > DeD > BPD	-

Hooley et al. (2010)	BDI (SR): BPD (part. DeD) > DeD	MASQ subscales: Anxious Arousal: BPD (part. DeD) > DeD, Anhedonia: BPD (part. DeD) = DeD
Horesh et al. (2003a)	BDI (SR): DeD > BPD (no DeD)	-
Horesh et al. (2003b)	BDI (SR): BPD (part. DeD) = DeD	BHS: BPD (part. DeD) = DeD
Horesh et al. (2008)	BDI (SR): BPD (no DeD) = DeD	BDI subcategory negative self-esteem: ^c DeD > BPD (no DeD)
Ille et al. (2014)	BSI-Dep (SR): BPD (DeD NR) > DeD	QASD (subscales): Personal Disgust: BPD (DeD NR) > DeD, Behavioral Disgust: BPD (DeD NR) = DeD
Jacob et al. (2009)	BDI (SR): BPD (part. DeD) = DeD	-
Joyce et al. (2003)	HRSD (ER): BPD (full DeD) = DeD MADRS (ER): BPD (full DeD) = DeD	SCL-90 subscales: Interpersonal Sensitivity: BPD (full DeD) > DeD, Anger/Hostility: BPD (full DeD) > DeD, Anxiety: BPD (full DeD) = DeD
Keilp et al. (2006) ^d	HRSD (ER): BPD (full DeD) = DeD BDI (SR): BPD (full DeD) = DeD	BHS: BPD (full DeD) > DeD
Wilson et al. (2007)	HRSD (ER): BPD (full DeD) = DeD BDI (SR): BPD (full DeD) > DeD	HRSD factors: Anxiety: BPD (full DeD) = DeD, Weight Change: BPD (full DeD) = DeD, Cognitive Symptoms: BPD (full DeD) = DeD, Diurnal Variation: BPD (full DeD) = DeD, Retardation: BPD (full DeD) = DeD, Sleep Disturbance: BPD (full DeD) = DeD
Klug & Huber (2009)	SCL-90-Dep (SR): BPD (no DeD) = DeD	-
Kontaxakis et al. (1987)	HRSD (ER): DeD > BPD (no DeD)	-
Kurtz & Morey (2001)	BDI (SR): BPD (no DeD) = DeD	BDI scores: Cognitive-Affective: BPD (no DeD) = DeD, Somatic-Performance: BPD (no DeD) = DeD
Levy et al. (2007)	SCL-90-Dep (SR): BPD (full DeD) = BPD (no DeD) = DeD	DEQ factors (separate BPD groups): Self-Criticism: BPD (full DeD) = BPD = DeD, Dependency: BPD (full DeD) = BPD = DeD, Anaclitic Neediness: BPD (full DeD) = BPD > DeD, Interpersonal Depression: BPD (full DeD) = BPD = DeD
McNamara et al. (1984)	HRSD (ER): BPD (no DeD) = DeD	DEQ factors (BPD groups combined): Self-Criticism: BPD (part. DeD) > DeD
Nigg et al. (1992)	HRSD (ER): BPD (part. DeD) = DeD > BPD	-
Westen et al. (1992) ^e	HRSD (ER), BPD groups combined: BPD (part. DeD) = DeD	DEQ factors (BPD groups combined): Dependency: BPD (part. DeD) > DeD, Self-Criticism: BPD (part. DeD) > DeD, Borderline-Depression: BPD (part. DeD) > DeD
		DEQ factors (separate BPD groups): Dependency: BPD (full DeD) = (BPD no DeD) = DeD, Self-Criticism: BPD (full DeD) = (BPD no

		DeD) = DeD, Borderline-Depression: BPD (full DeD) = (BPD no DeD) > DeD
Pietrek et al. (2013)	BDI (SR): BPD (part. DeD) > DeD	PANAS (subscale, preceding week): Negative Affect: BPD (part. DeD) > DeD
Pinto et al. (1996)	BDI (SR): BPD (full DeD) = DeD	PHCSCS: ^f BPD (full DeD) < DeD
Riihimäki et al. (2014)	HRSD (ER): BPD (full DeD) = DeD BDI (SR): BPD (full DeD) > DeD	HSC: BPD (full DeD) = DeD BAI: BPD (full DeD) > DeD BHS: BPD (full DeD) > DeD
Riso et al. (2000)	HRSD (ER): DeD > BPD (no DeD)	-
Rothschild & Zimmermann (2002)	HRSD (ER): BPD (full DeD) > DeD	-
Scheel et al. (2013)	BDI (SR): BPD (part. DeD) = DeD	-
Snyder et al. (1982)	HRSD (ER): BPD (DeD NR) = DeD ZSDS (SR): BPD (DeD NR) = DeD	HRSD items: Middle and Late Insomnia: DeD > BPD (DeD NR), Diurnal Variation: DeD > BPD (DeD NR), Paranoia: BPD (DeD NR) > DeD, all other items: BPD (DeD NR) = DeD BPRS items: Emotional Withdrawal: BPD (DeD NR) > DeD, Emotional Lability: BPD (DeD NR) > DeD, Hostility: BPD (DeD NR) > DeD ZSDS items and BPRS items measuring depressed mood and feelings of guilt or inferiority: BPD (DeD NR) = DeD
Snyder & Pitts (1986)	HRSD (ER): BPD (DeD NR) = DeD ZSDS (SR): BPD (DeD NR) = DeD	POMS scores: Anxiety-Tension: BPD (DeD NR) > DeD, Anger-Hostility: BPD (DeD NR) > DeD, Depression-Dejection BPD (DeD NR) = DeD ZSRSA: BPD (DeD NR) = DeD HAS: BPD (DeD NR) = DeD HRSD items: Somatic Symptoms: BPD (DeD NR) = DeD BPRS items: Hostility BPD (DeD NR) > DeD, Anxiety: BPD (DeD NR) = DeD, Tension: BPD (DeD NR) = DeD
Soloff et al. (2000)	HRSD (ER): BPD (full DeD) = DeD > BPD BDI (SR): BPD (full DeD) > BPD, both BPD groups = DeD	BHS: BPD (full DeD) = DeD > BPD

Southwick et al. (1995)	HRSD: (ER): BPD (full DeD) = BPD = DeD	DEQ factors: Self-Criticism: BPD (full DeD) = BPD > DeD, Dependency: BPD (full DeD) = BPD = DeD
Sprock et al. (2000)	CES-D (SR): BPD (full DeD) = DeD	-
Staebler et al. (2009) ^g	BDI (SR): BPD (part. DeD) = DeD SCL-90-Dep: BPD (part. DeD) = DeD ^g	-
Stanley & Wilson (2006)	HRSD: (ER): BPD (full DeD) = DeD BDI (SR): BPD (full DeD) > DeD	HRSD factors: Anxiety: BPD (full DeD) = DeD, Weight Change: BPD (full DeD) = DeD, Cognitive Symptoms: BPD (full DeD) = DeD, Diurnal Variation: BPD (full DeD) = DeD, Retardation: BPD (full DeD) = DeD, Sleep Disturbance: BPD (full DeD) = DeD
Stern et al. (1997)	BDI (SR): BPD (part. DeD) = DeD SCL-90-Dep: BPD (part. DeD) = DeD	SCL-90 subscales: ^h Anger/Hostility: BPD (part. DeD) = DeD
Sullivan et al. (1994)	HRSD (ER): BPD (full DeD) = DeD SCL-90-Dep (SR): BPD (full DeD) = DeD	SCL-90 subscales: Interpersonal Sensitivity: BPD (full DeD) > DeD, Anger/Hostility: BPD (full DeD) > DeD, Anxiety: BPD (full DeD) = DeD
Svaldi et al. (2012)	BDI (SR): BPD (part. DeD) = DeD	-
Unoka et al. (2009)	SCL-90-Dep (SR): BPD (DeD NR) = DeD	SCL-90 subscales: ⁱ Anxiety: BPD (DeD NR) = DeD
Walter et al. (2009)	BDI (SR): BPD (part. DeD) > DeD	-
Weaver & Clum (1993)	ZSDS (SR): BPD (full DeD) > DeD	-
White et al. (2011)	BDI (SR): BPD (full DeD) = DeD > BPD	-
Wingenfeld et al. (2011)	BDI (SR): BPD (part. DeD) = DeD	-
Wixom et al. (1993)	SCL-90-Dep (SR): BPD (DeD NR) = DeD	DEQ factors: Dependency: BPD (DeD NR) > DeD, Self-Criticism: BPD (DeD NR) > DeD

Note. DeD = Depressive disorder; BPD = Borderline personality disorder; BPD (full DeD) = currently depressed BPD sample; BPD (part. DeD) = BPD group with part of the sample currently depressed; BPD (no DeD) = non-depressed BPD sample; BPD (DeD NR) = BPD group with comorbidity of DeDs not reported; SR = Self-rating; ER = Expert-rating; BDI = Beck Depression Inventory; SCL-90-Dep = Symptom Checklist-90 Depression Subscale; ZSDS = Zung Self-Rating Depression Scale; HRSD = Hamilton Rating Scale for Depression; PANAS-X = Positive and Negative Affect Schedule (Expanded Form); QSD = Questionnaire of Severity of Depression; PVP = Plutchik-van Praag Depression Inventory; MADRS = Montgomery-Asberg Depression Rating Scale; CES-D = Center for Epidemiologic Studies Depression Scale; BHS = Beck Hopelessness Scale; POMS = The Profile of Mood States; MASQ = Mood and Anxiety Symptom Questionnaire; BSI-Dep = Brief Symptom Inventory Depression Subscale; QASD = Questionnaire for the Assessment of Self-Disgust; DEQ = Depressive Experiences Questionnaire; PANAS = Positive and Negative Affect Scale; PHCSCS = Piers Harris Childrens Self-Concept Scale; BAI = Beck Anxiety Inventory; HSC = Hopelessness Scale for Children; BPRS = Brief Psychiatric Rating Scale; ZSRSA = Zung Self-Rating Anxiety Scale; HAS = Hamilton Psychiatric Rating Scale for Anxiety.

^a Two publications depicted in one row are based on identical / overlapping samples (information retrieved from authors) but reported results from different outcome measures

^b If no statistical significance or only omnibus-tests were reported, significance of differences between BPD and DeD groups was tested with a t-Test for independent samples based on means, standard deviations and sample sizes using the Statistics Calculator Software Version 4.0 (Walonick, 1997-2013)

^c Including items on self-blame, shame, disappointment and self-criticism

^d Group differences in this study were tested via regression analysis (effect of BPD status on depression severity and hopelessness)

^e Analyses on DEQ subscales with female patients only, resulting in sample sizes of n = 26 for the BPD, and n = 11 for the DeD group

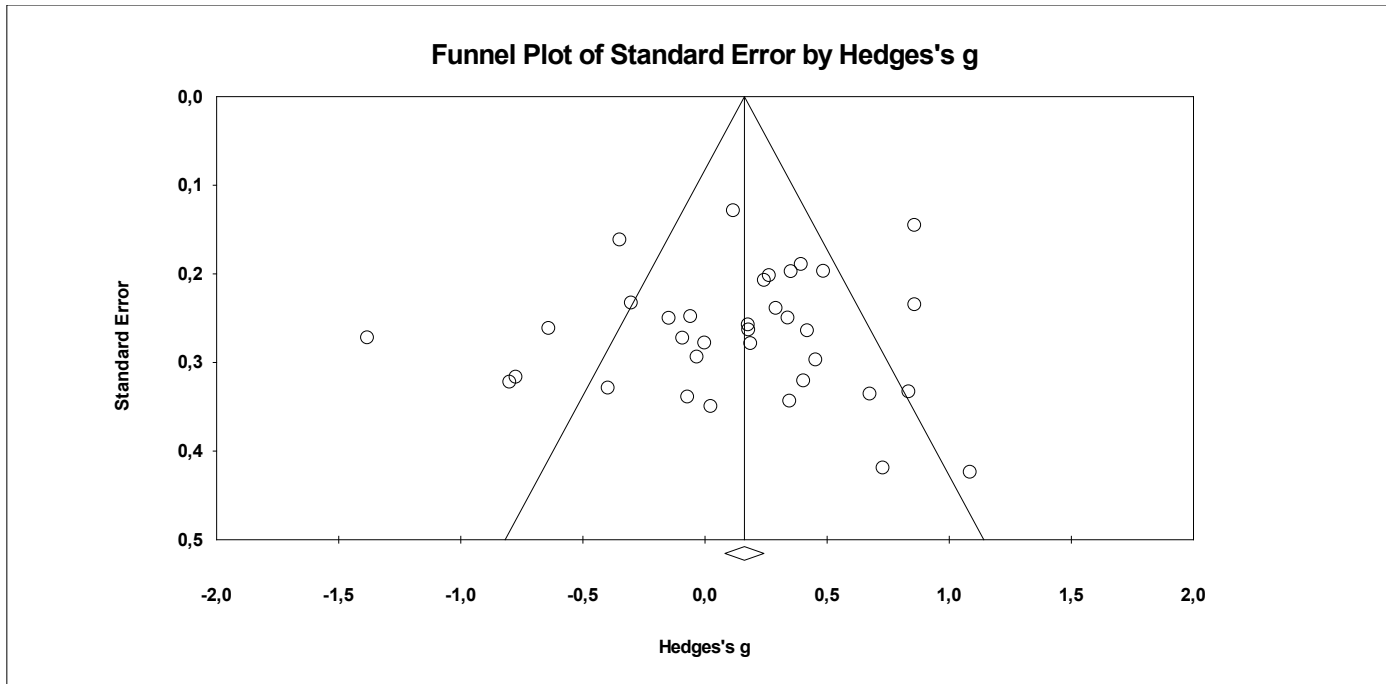
^f Lower scores on PHSCS denote poorer self-concept

^g Mean and standard deviation of SCL-90 depression subscale not reported, thus this study was not included in the meta-analysis

^h SCL-90: only results of depression and anger-hostility subscales reported

ⁱ SCL-90: only results of depression and anxiety subscales reported

Appendix D



**Erklärung gemäß § 8 Abs. 1 Buchst. b) und c) der Promotionsordnung
der Fakultät für Verhaltens- und Empirische Kulturwissenschaften**

**Promotionsausschuss der Fakultät für Verhaltens- und Empirische
Kulturwissenschaften**

der Ruprecht-Karls-Universität Heidelberg

**Doctoral Committee of the Faculty of Behavioural and Cultural Studies, of Heidelberg
University**

**Erklärung gemäß § 8 Abs. 1 Buchst. b) der Promotionsordnung der Universität
Heidelberg**

für die Fakultät für Verhaltens- und Empirische Kulturwissenschaften

**Declaration in accordance to § 8 (1) b) and § 8 (1) c) of the doctoral degree regulation of
Heidelberg University, Faculty of Behavioural and Cultural Studies**

Ich erkläre, dass ich die vorgelegte Dissertation selbstständig angefertigt, nur die angegebenen Hilfsmittel benutzt und die Zitate gekennzeichnet habe.

I declare that I have made the submitted dissertation independently, using only the specified tools and have correctly marked all quotations.

**Erklärung gemäß § 8 Abs. 1 Buchst. c) der Promotionsordnung
der Universität Heidelberg für die Fakultät für Verhaltens- und Empirische
Kulturwissenschaften**

Ich erkläre, dass ich die vorgelegte Dissertation in dieser oder einer anderen Form nicht anderweitig als Prüfungsarbeit verwendet oder einer anderen Fakultät als Dissertation vorgelegt habe.

I declare that I did not use the submitted dissertation in this or any other form as an examination paper until now and that I did not submit it in another faculty.

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First name Family name

Datum, Unterschrift

Date, Signature
