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Shame, self-criticism and fears of compassion in Borderline Personality Disorder

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ABBREVIATION LIST

AAS	Adult Attachment Style
ACE	Adverse Childhood Events
AIC	Akaike Information Criterion
AMPD	Alternative Model of Personality Disorders
AWMF	Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften
BPD	Borderline Personality Disorder
BD	Bipolar Disorder
BIC	Bayesian Information Criterion
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CFT	Compassion Focused Therapy
DBT	Dialectical Behavioral Therapy
DSM-5	Diagnostic and Statistical Manual 5
e.g.	exempli gratia (lat.), for example (engl.)
FCS	Fears of Compassion Scale
FCFO	Fears of Compassion from Others
FCTO	Fears of Compassion Towards Others
FSC	Fears of Self-Compassion
FSCRS	Forms of Self-Criticizing/Attacking and Self-Reassuring Scale
GAD	Generalized Anxiety Disorder
GAF	Global Assessment of Functioning
HADS	Hospital Anxiety and Depression Scale
HC	Healthy Control
HIV	Human Immunodeficiency Virus
HS	Hated Self
ICD	International statistical Classification of Diseases and related health problems
i.e.	id est (lat.), that is (engl.)
IS	Inadequate Self
KSE	Kurzskala zur Sozialen Erwünschtheit
MBT	Mentalization Based Therapy
MDD	Major Depressive Disorder
NSSI	Non-Suicidal Self-Injury

OCD	Obsessive Compulsive Disorder
RMSEA	Root Mean Square Error of Approximation
RS	Reassured Self
RSES	Rosenberg Self-Esteem Scale
SAD	Social Anxiety Disorder
SB	Satorra–Bentler
SCS	Self-Compassion Scale
SCID 5	Structured Clinical Interview for DSM-5 Disorders
SCRS	Self-Critical Rumination Scale
SFT	Schema-Focused Therapy
SRMR	Standardized Root-Mean-square Residual
SWLS	Satisfaction with Life Scale
TDEQ-12	Theoretical Depressive Experiences Questionnaire - 12
TFP	Transference Focused Psychotherapy
TLI	Tucker-Lewis Index
US	United States of America
WHO	World Health Organization

PREFACE

Darstellung der Eigenleistung der Doktoranden bei kumulativen Dissertationen

Name der Doktorandin/des Doktoranden: Miriam Biermann (geb. Ostermann)
Titel der Dissertation: Shame, self-criticism and fears of compassion in Borderline Personality Disorder
Betreut durch: Prof. Dr. Martin Bohus

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Publikation 1 (Kapitel 2.1)
Titel: Psychometric properties of the German version of the Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS)
Autoren: Miriam Biermann, Martin Bohus, Paul Gilbert, Ruben Vonderlin, Sven Cornelisse, Bernhard Osen, Johannes Graser, Martin Brüne, Andreas Ebert, Nikolaus Kleindienst, & Lisa Lyssenko
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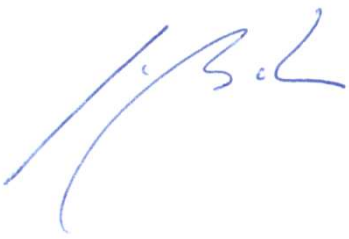

Prof. Dr. Martin Bohus
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1 INTRODUCTION

1.1 Borderline Personality Disorder

Borderline Personality disorder (BPD) is a severe mental disorder that is characterized by dysregulations in affect, self-concept and interpersonal functioning (American Psychiatric Association [APA], 2022b). Clinical symptoms include a profound pattern of instability in interpersonal relationships and self-image, repeated and marked mood changes throughout the course of a single day, with moment to moment fluctuations often triggered by environmental stressors, impulsive and self-damaging behavior including substances use, binge eat, promiscuity and non-suicidal self-injuries and suicidal threats, gestures, and attempts (Skodol, Stein, & Hermann, 2019). To date, four diagnostic classification systems are provided for BPD: the traditional criteria for diagnoses in section II of the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5; APA, 2022b), an alternative model in section III of the DSM-5 (APA, 2022a), and the models presented in the International Classification of Diseases, 10th and 11th revisions (ICD-10 and ICD-11; World Health Organization [WHO], 2016, 2019). The alternative model for personality disorders (AMPD) is a hybrid approach comprising two essential criteria to define any personality disorder: a) moderate or greater impairment in personality functioning (criterion A) and b) the severity on five broad pathological personality trait domains (criterion B) (APA, 2022a). There is preliminary evidence that the level of personality functioning is a good predictor of psychosocial functioning, although further research is needed (Buer Christensen et al., 2019). Impairments in personality functioning are manifested by difficulties in two or more areas of identity, self-direction, empathy, and intimacy. Pathological personality traits are organized into five trait domains (negative affectivity, detachment, antagonism, disinhibition, and psychoticism), each of which is further explicated by a set of trait facets reflecting aspects of the domain itself (Oldham, 2015). The clinician can diagnose BPD if the patient shows high levels in four or more of the seven pathological personality domains: emotional lability, anxiousness, separation insecurity, depressivity, impulsivity, risk-taking, and hostility (Bohus et al., 2021).

Two recent reviews on community point prevalence suggest that 0.7-1.2% and 0.7-2.7% adults suffer from BPD, respectively (Eaton & Greene, 2018; Ellison, Rosenstein, Morgan, & Zimmerman, 2018). Furthermore, Grant and colleagues estimated a life time prevalence for BPD of about 6% (Grant et al., 2008). Furthermore, BPD is even more present in clinical settings with about 11.8% of the adult psychiatric outpatients and approximately 22.4% of psychiatric inpatients suffering from BPD (Bohus et al., 2021). Co-occurring mental disorders are common in BPD with life time rates of about 85% for at least one further psychiatric disorder, especially mood disorder, anxiety disorder, substance use, eating disorder and somatoform disorder (Bohus et al., 2021). Furthermore, BPD is associated with a range of somatic disorders including cardiovascular diseases and stroke, metabolic disease including diabetes and obesity, gastrointestinal disease, arthritis and chronic pain, venereal diseases, and HIV infection as well as sleep disorders (Bohus et al., 2021). Medical health care utilization is very frequent with annual societal costs of about 11.126€ to 40.441€ per patient in Germany (Jacobi, Grafiadeli, Volkmann, & Schneider, 2021).

1.2 The course of BPD symptomatology

Epidemiological studies suggest that the onset of BPD occurs in adolescence and shows a peak of symptom severity during young adulthood. Furthermore, diagnosis in adolescents has shown stability, reliability, and validity similar to that of diagnosis in adults (Bohus et al., 2021). In contrast to the longstanding assumption of a chronic, unchanging persistence of this disease over the lifespan, longitudinal prospective studies of the last two decades suggest that most patients experience remission of the disorder that is, no longer meeting BPD diagnostic criteria for at least two years. Results from a prospective study of 290 patients with BPD interviewed every two years for up to 16 years suggest that rates of remission were 35% after two years, 91% after 10 years and 99% after 16 years (Zanarini, Frankenburg, Hennen, Reich, & Silk, 2006; Zanarini, Frankenburg, Reich, & Fitzmaurice, 2010, 2012). With regard to recovery which was defined as a Global Assessment of Functioning (GAF) score of 61 or higher, which comprises symptomatic remission and having at least one emotionally sustaining relationship with a close friend or life partner/spouse and being able to work or go to school consistently, completely or on a full-time basis, of those who achieved recovery, 34% lost their recovery. Of those who achieved a 2-year remission of symptoms, 30% had a symptomatic recurrence, and of those who achieved a sustained remission, which was defined as no longer meeting BPD diagnostic criteria for at least four years, only 15% experienced a recurrence. Analysis of subsyndromal phenomenology of BPD over the course of 10 years suggests that symptoms of impulsivity (e.g., self-mutilation and suicide efforts) and active attempts to manage interpersonal difficulties (e.g., problems with demandingness/entitlement and serious treatment regressions) seemed to resolve the most quickly. In contrast, affective symptoms including chronic dysphoria (e.g., anger and loneliness or emptiness) and interpersonal symptoms reflecting abandonment and dependency issues (e.g., intolerance of aloneness and counter dependency problems) seemed to be the most stable (Zanarini et al., 2007). These results are in line with a reconceptualization of BPD as a hybrid of stable personality traits and intermittently expressed symptomatic/acute behaviors (Skodol et al., 2005). In contrast, results from another 10-year longitudinal study suggest an overriding single-factor unity of the BPD construct: any of the BPD's three major phenotypes i.e., affective, behavioral, or interpersonal, showed a distinctive pattern of stability (Gunderson et al., 2011).

What is evident across several longitudinal prospective studies is that good social and vocational functioning is more difficult to attain than substantial symptomatic reduction and that social integration remains seriously unsatisfactory in the majority of the subjects concerned (Lis & Bohus, 2013). A recent analysis on long-term social functioning showed that only 50 % of the individuals achieved both, remission from BPD symptoms and good social and vocational functioning for a period of minimum two years (Zanarini et al., 2010). This finding indicates that up to 50 % of the treated clients leave with a GAF score lower than 60, indicating persistent serious social problems. Furthermore, impairments in psychosocial functioning remained still severe and persistent with only a small improvement of 4 points on the 100-point Global Assessment of Functioning Scale over 10 years (Gunderson et al., 2011; Skodol et al., 2019; Zanarini et al., 2010) and more severe than in many other psychiatric disorders such as Major Depressive Disorder (MDD) or other personality disorders (Gunderson et al., 2011). In addition, a previous study on trajectories and predictors of functional outcomes for suicidal women with BPD (N = 99) during a treatment outcome study of Dialectical Behavior Therapy (DBT) demonstrated that only 38.8% of participants were

considered recovered at 24-month follow-up with regard to life areas of work, school, housing and partnership (Wilks, Korslund, Harned, & Linehan, 2016).

The recommended guideline-based treatment for BPD is structured, disorder-specific psychotherapy (S3-Guideline; Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften [AWMF], 2022). Several manualized treatments for BPD have been empirically validated, including dialectical behavior therapy (DBT; Linehan, 1987), transference-focused psychotherapy (TFP; Kernberg, Yeomans, Clarkin, & Levy, 2008), mentalization-based therapy (MBT; Bateman & Fonagy, 2010), and schema-focused therapy (SFT; Young, 1999), with DBT and MBT being most studied (Storebø et al., 2020). A recent review investigated the effects of psychological therapies for BPD in 75 randomized controlled trials comparing different psychotherapeutic interventions with treatment-as-usual, waiting-list, no treatment and active treatment (Storebø et al., 2020). Results suggest beneficial effects of BPD tailored therapies compared to treatment-as-usual on the severity of BPD symptoms, suicidality, self-harm and depression whilst also improving psychological functioning. Furthermore, results indicate that DBT may be better than usual treatment at reducing BPD severity, self-harm and improving psychosocial functioning and MBT appears to be more effective than treatment as usual at reducing self-harm, suicidality and depression. With regard to the comparison to waiting-list, psychotherapy was more effective at reducing BPD symptoms, improving psychosocial functioning, and depression, whereas there were no clear differences for outcomes of self-harm, and suicide-related outcomes. However, due to the low-quality evidence of included studies, further investigation is required (Storebø et al., 2020).

In light of the results on remission and recovery from BPD, these therapies seem to focus mainly on reducing the obvious, severe behavioral and experiential impairments (e.g. reducing NSSI and impulsivity) whereas psychosocial deficits are in contrast rarely the focus of treatment (Zanarini et al., 2010). However, further development of effective treatments focusing on social functioning requires an even better understanding of the pathomechanisms underlying the impairments. One factor that directly influences vocational and social functioning is the self-concept, that is, the idea of who we are, and how we feel about ourselves, especially with regard to our social role and status (Bailey, 2003).

1.3 The processing of self-related information

1.3.1 Self-concept

Self-concept is an individual's idea of the self. It is constructed from beliefs we hold about oneself and the responses of others (Bailey, 2003). This definition indicates that the self-concept has two sources of information that we use to build up a self-concept: Direct appraisals of 'what we are like' can be abstracted from our own reactions to past events and experience and appraisals that result from the perception of how we are seen by others, the 'social self-concept' (Gallagher, 2000). Due to its importance for social and humanistic psychology there are several self-concept theories. One of the most influential self-concept theories is based on a humanist psychological approach of Rogers (Rogers & Dymond, 1954). This theory suggests that the self-concept is made up of three different parts: the ideal self, the self-image and self-esteem. The ideal self is assumed to represent the person you want to be. This person has the attributes or qualities you are either working toward or want to possess. It is who you

envision yourself to be if you were exactly as you wanted. Self-image refers to how you see yourself at this moment in time, an idea of 'Who am I' (Khun & McPortland, 1954). Attributes like physical characteristics, personality traits, and social roles are incorporated into the self-image and all contribute to your self-concept.
Self-esteem comprises how much you like, accept, and value yourself. Self-esteem is a multidimensional construct. Independently of gender, it is composed of self-evaluations in regard to social contact, to criticism, to physical appearance as well as to academic and physical abilities (Rentzsch, Wenzler, & Schütz, 2016). The function of self-esteem is rooted in the evolutionary importance of being and remaining part of a social group. Against this background, Leary and Baumeister (2000) assume in their 'socio meter' theory that self-esteem is a socio meter, that is an internal monitor of the degree to which one is valued or devalued as a relational partner. In consequence, a drop in self-esteem signals an actual threat of losing social rank and being excluded from the social group, i.e. from an evolutionary perspective a threat for survival (Leary & Baumeister, 2000). This implies that assumptions about how one is perceived by others and how others behave towards one have a direct influence on the self-concept. In accordance, low self-esteem has been linked to reduced physical and mental health (Mann, Hosman, Schaalma, & De Vries, 2004). Research in developmental psychology has shown that evaluation of oneself becomes more comprehensive during childhood and adolescence (Harter, 1990) and social comparison information is increasingly integrated in the self-perception (Butler, 1992). Thus, an individual's self-concept becomes more differentiated and perceptions of relative competences and short-comings more realistic (Marsh & Ayotte, 2003).

1.3.2 Self-conscious emotions

In their socio meter theory of self-esteem, Leary and Baumeister (2000) assume that self-esteem is affectively laden, meaning that certain emotions occur in response to processing information related to one's self. Many conceptualizations suggest that there are emotions specifically linked to the processing of self-related information (M. Lewis, 1995; Tracy, Robins, & Tangney, 2007). These so-called self-conscious emotions comprise for example shame and guilt, jealousy, pride but also self-contempt or self-disgust (e.g., M. Lewis, 1995; Sznycer, 2019; Tracy & Robins, 2004; Tracy et al., 2007). Self-conscious emotions are those affected by how we see ourselves and how we think others perceive us. They require self-awareness, elaborate cognitive processes including complex self-representations, self-reflection and self-evaluation (Buss, 2001; M. Lewis, 1995; Tangney, 1999). With respect to the link to psychosocial functioning, these emotions are assumed to affect self-related cognitive processes during social interactions (Winter, Bohus, & Lis, 2017). Self-conscious emotions drive people to behave in moral, socially appropriate ways in their social interactions and intimate relationships (e.g., Baumeister, Stillwell, & Heatherton, 1994; Leith & Baumeister, 1998) and to work hard in achievement and task domains (e.g., Stipek, 1995; Weiner, 1985). Previous research has demonstrated the close links of self-conscious emotions to a variety of physical and mental health related outcomes (e.g., Kemeny, 2003; Muris & Meesters, 2014). In particular, the self-conscious emotion shame seems to play a prominent role in the context of mental health (Vizin & Unoka, 2015).

1.3.3 Shame and Self-Criticism

Shame is an emotion activated by negative judgements of the self (H. Lewis, Block, 1971; Tangney, Miller, Flicker, & Barlow, 1996; Tangney, Stuewig, & Mashek, 2007). It arises after one has failed to meet social or own standards and norms regarding what is appropriate and desirable (Kaufman, 2004; Nathanson, 1987). In many emotion theories shame is described as a potentially destructive, highly aversive, and potentially maladaptive emotion as it immediately influences self-esteem and gives rise to feelings of inferiority, weakness and worthlessness (Dost & Yagmurlu, 2008; Tangney, 1995; Tangney et al., 1996). In contrast, more recent approaches increasingly emphasize the adaptive function of shame as automatically signaling the potential loss of social status or motivating the individual to regain it (Ausubel, 1955; Dost & Yagmurlu, 2008; Gruenewald, Dickerson, & Kemeny, 2007; Scheel, Bender, Tuschen-Caffier, & Jacob, 2013; Tangney, 1995, 1999; Tangney et al., 1996). The most common and widely researched conceptualization of shame sees different facets of shame as primarily grounded in the duration and frequency of the shame experience: Here, shame proneness or “trait shame”, which is the tendency to experience shame across a range of socially relevant situations (M. Lewis, 1995), is distinguished from state shame that is restricted to a moment in time. It is assumed that shame proneness is stemming from internal, global and stable attributions of negative events to the self, whereas state shame is a more transitory affective state (Rüsch et al., 2007).

A self-evaluative process which is closely related to the feeling of shame is self-criticism. Self-criticism is the scrutiny and censorship of an individual’s thoughts, emotions, and behaviors (B. Shahar et al., 2012; Whelton & Greenberg, 2005). In the face of failure or distress, self-criticism is particularly related to a self-blaming attributional style, including maladaptive negative thoughts about the self and negative self-conscious emotions such as shame or self-related disappointment, anger and contempt (Gilbert, Clarke, Hempel, Miles, & Irons, 2004). The most destructive and pathological form of self-criticism is self-attacking that is harsh cognitive, emotional, and behavioral attacks, linked to feelings of disgust and hatred, the desire to hurt or eliminate parts of the self and non-suicidal self-injuries (e.g., Gunnarsson, 2021; Halamová et al., 2018). With regard to the clinical context, several studies have shown that both shame and self-criticism are of transdiagnostic relevance. Extended shame and self-criticism have been linked to a variety of psychological symptoms and mental disorders (Carden, Saini, Seddon, Watkins, & Taylor, 2020; S. Kim, Thibodeau, & Jorgensen, 2011; López-Castro, Saraiya, Zumberg-Smith, & Dambreville, 2019; Luoma, Chwyl, & Kaplan, 2019; Nechita, Bud, & David, 2021; Rüsch et al., 2007; Weingarden & Renshaw, 2015; Werner, Tibubos, Rohrmann, & Reiss, 2019). Most of the studies on self-criticism have used the Forms of Self-Criticizing/-Attacking and Self-Reassuring Scale (FSCRS) to measure self-criticism. The original FSCRS is an English-language self-report questionnaire that assess manifestations of different dimension of self-criticism and self-reassurance in response to situations of failure and distress on 22 items. The FSCRS conceptualizes self-criticism as a multidimensional construct with different forms, differentiating between three forms of self-related process dimensions which form the three subscales of the FSCRS: (a) self-criticism about inadequacy, (b) self-hatred and (c) self-reassurance (Gilbert et al., 2004). The *inadequate self* subscale assesses the desire to correct or improve certain aspects of the self whereas the *hated self* subscale examines the desire to hurt, persecute or attack the self. In contrast, the *reassured self* subscale assesses an individual’s ability

to reassure himself in case of failure or distress (Gilbert et al., 2004). The FSCRS is an internationally used self-report measure that has demonstrated satisfactory psychometric properties in different populations (e.g., Castilho, Pinto-Gouveia, & Duarte, 2015; Gilbert et al., 2004; Kupeli, Chilcot, Schmidt, Campbell, & Troop, 2013; Rose & Rimes, 2018). The FSCRS has already been translated and validated in several languages (Halamová et al., 2018; Sommers-Spijkerman, Trompetter, Ten Klooster, et al., 2018). As the FSCRS has proven to be a valid and reliable measure, further translations and validations are needed. Up to date, there is no German version of the FSCRS.

The presented findings indicate a close link between self-conscious emotions and self-criticism to the self-concept and in turn to the processing of self-relevant information. The results suggest that increased levels of negative self-conscious emotions, self-criticism, reduced self-esteem and a negative self-image, i.e. processes of the so-called threat system of the human being (Gilbert, 2014) show negative relationships to the psychosocial functioning level. However, not only does a high level of negative self-related inner states seem to be related to the level of psychosocial functioning, but also the fear of affiliative feelings seems to be of particular importance in self and interpersonal functioning.

1.3.4 Fears of compassion and its relation to self- and interpersonal functioning

A concept that has been closely linked to elevated levels of shame and self-criticism is the fear of compassion. Fear of compassion comprises the tendency to be afraid of affiliative feelings and behaviors towards oneself, towards others and of receiving affiliation from others. Compassion, a concept that has attracted particular interest in research for the past 20 years, stems from the Latin word *compati* which means to suffer with (e.g., Lopez, 2011). A previous review has shown the close link between compassion to physical and mental well-being (Strauss et al., 2016).
Supportive affiliative and helpful relationships provide major benefits for survival and reproduction (Cacioppo & Patrick, 2008; Gilbert, 2015). It is assumed that there is an affiliative neurocircuitry that prompts affiliation and regulates social-approach behavior and does so in much the same way as occurs for other appetitive needs. That is, just as people have basic needs such as hunger, thirst, sexual drives, and other appetites, they also need to maintain an adequate level of protective and rewarding social relationships (H. S. Kim, Sherman, Ko, & Taylor, 2006; Taylor, 2006). Furthermore, among the most central processes that regulate emotion and sense of self are those linked to social roles such as status, sense of belonging and affiliation, and caring (Gilbert, 2014). Affiliative emotions, that arise from experiencing validation, care and support from others, have major impact on how people process and respond to threats and emotions associated with threats in social contexts and beyond (Gilbert, 2014). Several studies suggest that healthy individuals develop a stable sense of well-being and self-esteem in the context of nurturing and soothing interpersonal relationships over the course of development (Stanley & Siever, 2010). With regard to the underlying biological factors, previous research has found neuropeptides, including the opioids, oxytocin, and vasopressin, to serve a crucial role in the regulation of affiliative behaviors (Stanley & Siever, 2010). For example, opioids have been implicated in feelings of soothing or pleasure as well as in the distress of social separation and exclusion, and oxytocin has been implicated in the establishment of trust and affiliative behaviors. Hence, facilitating affiliative and prosocial processing, has become a target in mindfulness and compassion based therapeutic interventions (Desbordes et al.,

2012; Germer, Siegel, & Fulton, 2005; Gilbert, 2015; Jazaieri, 2018; Jazaieri et al., 2013; Weng et al., 2013; Weng, Schuyler, & Davidson, 2017).
However, impairments in affiliation-related brain networks and neuropeptides seem to be potentially important for pathophysiology of a range of mental disorders (Bora, Yucel, & Allen, 2009).
There are two major conceptually different theoretical explanations of impairments in the processing of affiliative emotions and the link to the pathology of mental disorders with different implications for therapeutic treatments: One approach assumes that people have an innate 'affiliative system', which is central to the regulation of threat and develops through learning experiences of warmth and security (Gilbert, 2009). However, a lack of experiencing affiliative processes in childhood due to early insecure attachment experiences, neglect, abuse, traumatization and excessive shame have been identified as predictors for an underdeveloped affiliative and soothing system. Therapeutic interventions aim primarily at the post-maturation of this system through subsequent experiences of warmth and compassion (Gilbert, 2010). The other conceptual approach assumes that the need for soothing, safeness and care are innate but become associated with fear, loneliness, sadness and grief at an early age due to emotional or physical abuse or neglect or sexual abuse (Harter, 2015; Howe, 2017; Liotti, 2004; Matos, Duarte, & Pinto-Gouveia, 2017). Therefore, the experience of an affiliative emotion later in life may reactivate these conditioned emotional responses and thus elicit these same feelings of shame, threat, anger, sadness, loneliness and grief (Matos, Duarte, & Pinto-Gouveia, 2017). Treatment approaches involve reconditioning through exposure to affiliative emotions and the disengagement with negative experiences of abuse, humiliation and abandonment (Bandura, 1961; Bohus et al., 2019; Mauer, Neergaard, & Linstad, 2017).

Several studies have demonstrated that these changes in affiliative processes also comprise elevated fears of compassion for oneself, towards and from others (Gilbert & Mascaro, 2017; Matos, Duarte, & Pinto-Gouveia, 2017) which in turn directly impact self and interpersonal functioning. Social approach is accompanied by activating the human 'threat system' rather than the 'soothing system'. These impairments in turn influence how we perceive our interaction partners and feel and behave in interpersonal relationships and vice versa. In consequence, fears of compassion are closely related to issues with trust and social cooperation (Gilbert, 2015).
Gilbert, McEwan, Matos, and Rivis (2011) have developed the Fears of Compassion Scale (FCS), a self-report questionnaire that captures the three dimensions of fear of compassion i) for oneself, ii) for others, and iii) from others. The FCS is an internationally used instrument that has demonstrated promising validity and reliability across multiple studies (see Kirby, Day, & Sagar, 2019 for review). A recent meta-analysis has demonstrated positive correlations between mental health difficulties (self-criticism, shame, depression, anxiety, distress and well-being) and fears of self-compassion ($r = .49$), fears of compassion towards others ($r = .30$) and fears of compassion from others ($r = .48$). The strongest links have been found between shame, self-criticism and depression to fears of self-compassion and fears of compassion from others with stronger correlations in clinical than nonclinical populations (Kirby et al., 2019). Results of previous studies suggest that the engagement in close relationships and particularly compassionate experiences or behaviors are related to fears of being seen as weak or self-indulgent, of being judged or rejected or becoming too upset or overwhelmed by the needs of oneself or others (Gilbert & Mascaro, 2017; Vitaliano, Zhang, & Scanlan, 2003). Furthermore, previous research indicates that individuals with high levels of self-criticism and shame

experience increases in stress rather than soothing or safe effects during situations promoting compassionate feelings (Longe et al., 2010; Rockliff, Gilbert, McEwan, Lightman, & Glover, 2008; Rockliff et al., 2011). In addition, strong fears of compassion have been shown to impede engagement, progress and outcome in psychotherapy (e.g., Gilbert et al., 2011; Kelly, Carter, Zuroff, & Borairi, 2013; Merritt & Purdon, 2020).

1.4 Impairments in the processing of self-related information in BPD

1.4.1 Self-concept and the role of negative self-conscious emotions in BPD

Disturbances of the self-concept is one of the core domains of BPD psychopathology. When assessing self-concept directly, individuals with BPD describe themselves in distinct, predominantly negative traits (Auerbach et al., 2016; Beeney, Hallquist, Ellison, & Levy, 2016; Vater, Schröder-Abé, Weißgerber, Roepke, & Schütz, 2015). The influence of the social context seems to play a crucial role with regard to the self-concept in BPD (Bender & Skodol, 2007). With respect to social domains, individuals with BPD characterize themselves as having low social competence and being inferior and dependent to others (Kopala-Sibley, Zuroff, Russell, Moskowitz, & Paris, 2012; Valentiner, Hiraoka, & Skowronski, 2014). According to the evaluative component of the self-concept, i.e. the self-esteem, studies consistently show that BPD is associated with low levels of trait self-esteem in comparison to health control persons (Kopala-Sibley et al., 2012; Winter et al., 2017) and other clinical populations (e.g., major depression, social phobia, narcissistic personal disorder; Abela, Payne, & Moussaly, 2003; Rüsch et al., 2007; Vater et al., 2013). Furthermore, levels of self-esteem are significantly reduced in individuals with BPD across different domains of self-esteem including social skills, social confidence, performance, physical appearance, and physical abilities (e.g., Kleindienst et al., 2014; Roepke et al., 2011). Additionally, there is evidence for the discrepancy between explicit and implicit self-esteem in BPD to be associated with BPD psychopathology: lower explicit in relation to implicit self-esteem was correlated with higher BPD symptom severity (Vater, Schröder-Abé, Schütz, Lammers, & Roepke, 2010). Moreover, the discrepancy between low explicit and high implicit self-esteem has been associated with depressive symptoms, suicidal ideation, and loneliness representing core symptoms of BPD psychopathology (Creemers, Scholte, Engels, Prinstein, & Wiers, 2012; Schröder-Abé, Rudolph, & Schütz, 2007). With regard to the DSM-5 criterion of self-concept instability in BPD, studies with repeated measurements across time to examine instability of self-concept in BPD are sparse. A previous study using ecological momentary assessment suggests high instability of explicit self-esteem over short time intervals (Santangelo et al., 2020).This finding is in line with results of temporal instability of explicit self-esteem in students high in BPD features (Hochschild Tolpin, Cimbolic Gunthert, Cohen, & O'Neill, 2004; Zeigler–Hill & Abraham, 2006). Several studies suggest that one possible explanation for low self-esteem in BPD is the lack in self-serving biases, which comprises biases in perception, evaluation and expectation that lead healthy individuals to protect a positive and consistent self-concept. Previous findings suggest that in contrast to healthy individuals who attribute positive events to their own abilities or personal traits, individuals with BPD tend to attribute them to factors outside their own person (Schilling, Moritz, Köther, & Nagel, 2015; Winter, Herbert, et al., 2015; Winter et al., 2018). Furthermore, several studies suggest that the negative self-concept seems to be rather resistant to change. Individuals with BPD did not use positive feedback about the own person to adjust their negative self-concept (Korn, La Rosée, Heekeren, & Roepke, 2016; Liebke et al., 2018). A recent study has shown that individuals with BPD

did not use feedback of social approval to adjust expectations of social acceptance. In contrast, despite already low baseline levels of the expectation of social acceptance, negative feedback reduced this expectation even more (Liebke et al., 2018).

To date, there have been few studies that have specifically examined self-criticism in BPD. Consistent with the findings of a generally close relationship between self-criticism and self-destructive impulses and feelings of self-disgust and self-hate, previous findings suggest an increased level of self-criticism in BPD (Kopala-Sibley et al., 2012; Morse, Robins, & Gittes-Fox, 2002; Southwick, Yehuda, & Giller, 1995). Kopala-Sibley et al. (2012) found high levels of self-criticism in BPD which was in turn related to feelings of inferiority during interpersonal situations. In addition, higher levels of self-criticism predicted larger affective variability in individuals with BPD (Vansteelandt et al., 2020). Moreover, a recent study suggests that a self-critical personality profile mediates the relationship between cumulative childhood maltreatment and BPD symptom severity in adolescents with BPD (Marchetti et al., 2022). Furthermore, reduction of self-criticism seems to be central to recovery in BPD: A recent study found a largely negative correlation between self-criticism and recovery from BPD symptoms (Donald, Lawrence, Broadbear, & Rao, 2019). Against the background of a presumed particular relevance of self-criticism in the context of mental disorders in general and with respect to the close link to severity of BPD symptoms as well as the relevance for the recovery from BPD further research on self-criticism is needed. Although self-criticism and shame are considered transdiagnostic constructs, there is currently no study that has investigated whether individuals with BPD differ from other clinical populations in the extent of self-criticism. The FSCRS (Gilbert et al., 2004) with its three subscales *inadequate self, hated self* and *reassured self* also enables a differentiated investigation of whether specific facets of self-criticism are particularly pronounced in BPD compared to other clinical populations.

With regard to self-conscious emotions, BPD has been consistently linked to generally higher levels of negative self-conscious emotions. A specification of the negative self-conscious emotions indicates that previous studies have especially focused on guilt, self-disgust and shame (Winter et al., 2017). When assessing guilt explicitly, individuals with BPD show higher level of guilt-proneness, the tendency to experience guilt across a variety of social situations compared to healthy control persons and individuals with social phobia (Rüsch et al., 2007). In contrast, when examining guilt more implicitly through asking for behavioral intentions in specific social situations results suggest lower levels of guilt together with higher levels of shame in those with high BPD features in a nonclinical sample (Peters & Geiger, 2016).

Furthermore, previous research suggests elevated levels of state self-disgust and self-disgust proneness in BPD especially with respect to their physical appearance and behavior but not disgust proneness in general (Ille et al., 2014; Schienle, Haas-Krammer, Schöggl, Kapfhammer, & Ille, 2013). During the exposition to angry, disgusted and neutral facial expression, individuals with BPD showed an increased activation of the amygdala and the somatosensory cortex but only toward approaching disgusted faces. Interestingly, their amygdala activation in this specific condition positively correlated with self-disgust scores (Schienle, Leutgeb, & Wabnegger, 2015).

Because of its particular importance for the self-concept and related processes of interpersonal functioning there has been increasing focus on the study of shame in the context of BPD (Buchman-Wildbaum et al., 2021; Crowe, 2004).

With regard to shame proneness, previous findings on explicit measures suggest that individuals with BPD report higher levels of shame compared to healthy individuals and other clinical samples such as major depression, social phobia, attention-deficit/hyperactivity disorder, and narcissistic personality disorder (Bach & Farrell,

2018; Chan, Hess, Whelton, & Yonge, 2005; Ritter et al., 2014; Rüsch et al., 2007; Scheel et al., 2014; Wiklander et al., 2012). With respect to implicit measures, higher levels of shame-proneness, as measured with an Implicit Association Test, compared with anxiety-proneness, could not be consistently linked to BPD (Ritter et al., 2014; Rüsch et al., 2007). However, with regard to state shame, findings are less consistent and, in addition, seem to depend more strongly on the respective measurement methodology and contextual factors as the cues used to trigger a shame response. Furthermore, it is discussed to what extent state shame is a specific emotional reaction that can be distinguished from general negative emotional response. While studies on self-report measures suggest a stronger shame response compared to healthy individuals and other clinical samples (Gadassi, Snir, Berenson, Downey, & Rafaeli, 2014; Mneimne, Fleeson, Arnold, & Furr, 2018; Ritter et al., 2014; Rüsch et al., 2007; Unoka & Vizin, 2017), experimental studies of state shame in BPD are scares and show mixed findings. Gratz, Rosenthal, Tull, Lejuez, and Gunderson (2010) found higher shame specific emotional reactivity and slower return to baseline levels of emotional arousal in BPD compared outpatients without a diagnosis of personality disorder during an experimental stress induction task. In contrast, Scheel, Schneid, et al., (2013) found elevated baseline levels of shame but no differences in the intensity of shame or return to baseline of shame but a prolonged anger reaction in a shame induction paradigm in individuals with BPD compared with Major Depressive Disorder and healthy control persons. Taken together, the findings point to a particular importance of shame. Most of the studies were conducted on the basis of self-reports, whereas experimental studies are rare and show rather mixed findings regarding a specific shame reaction that can be distinguished from other negative emotions. Further experimental research on shame in BPD is required that examines the link between shame and the processing of self-related information in BPD. Moreover, to our knowledge there is no previous study that has investigated the link between shame proneness and state shame levels in individuals with BPD.

These findings indicate impairments in self-concept regarding high levels of particularly negative self-conscious emotions such as shame, self-hatred and self-loathing, and self-criticism in BPD. However, previous findings have already demonstrated that the processing of supposedly positive, affiliative social cues is also altered in BPD.

1.4.2 Fears of Compassion and its relation to self and interpersonal functioning in BPD

According to Fonagy and Bateman (2007), the inability to make sense of self and others is at the core of Borderline Personality Disorder. It is assumed to be a result of disrupted attachment in early development, which may depend in part on the developing child's capacities and vulnerabilities as well as environmental influences (Stanley & Siever, 2010). Findings on affiliative processes in BPD can be viewed at different levels of investigation. With regard to social cognitive processes related, previous studies suggest a negative bias in evaluating social cues that signal willingness to affiliate in BPD (Kleindienst et al., 2014). For example, individuals with BPD experience a particular feeling of being socially excluded during situations when they are included by others or even in situations that are not influenced by the intentions of the members of group (Domsalla et al., 2014; Liebke et al., 2018; Renneberg et al., 2012). Research on social-cognitive processes related to these impairments indicate a deficit in the detection of positive emotions and that these alterations seem to persist even after symptomatic remission from BPD (Bertsch,

Hillmann, & Herpertz, 2018; Kleindienst et al., 2019). Furthermore, the generally low confidence in one's own social judgment seems to be particularly reduced in the context of social approval in BPD (Kaletsch et al., 2014). Moreover, these deviations in social cognitive processes are related to impaired expectations of being not liked or being socially rejected even after repeated feedback of being liked by others (De Panfilis, Riva, Preti, Cabrino, & Marchesi, 2015; Liebke et al., 2018). Additionally, these negative expectations are closely linked to pervasive experiences of loneliness as well as hostile behaviors even in situations of social acceptance which in turn increase the likelihood of real social exclusion (Domes, Schulze, & Herpertz, 2009; Foxhall, Hamilton-Giachritsis, & Button, 2019; King-Casas et al., 2008; Liebke et al., 2018; McCloskey et al., 2009; New et al., 2009).
A neuropeptide model of BPD suggests that in BPD interpersonal connectedness serves not only to preserve a key relationship but also, perhaps more importantly, to provide a sense of cohesiveness of self and to maintain a stable sense of self-esteem (Stanley & Siever, 2010). Moreover, it is assumed that the central mediating role of opioids in separation distress, relief and pleasure on reunion, self-soothing, and the pain of social exclusion and rejection might particularly contribute to the interpersonal vulnerabilities and intrapersonal pain of borderline personality disorder. Furthermore, Stanley and Siever (2010) hypothesize that a dysregulation of neuropeptides such as opioids and oxytocin may contribute to deficits in the maintenance of well-being, heightened separation distress, and mistrust in BPD.
With regard to fear compassion in BPD, there is only one study to date, that has investigated fears of compassion in individuals with BPD and additionally examined the link to levels of oxytocin. Results suggest elevated levels on all fears of compassion scales and lower oxytocin plasma levels in BPD compared to healthy controls. Additionally, fears of compassion from others was negatively associated with oxytocin plasma levels in individuals with BPD (Ebert, Edel, Gilbert, & Brüne, 2018).

To sum up, several findings point to impairments in affiliative processes in BPD, which in turn are closely related to a stable self-concept and close long-term interpersonal relationships. Furthermore, fear of compassion represents a major obstacle in psychotherapies to work on exactly these processes (Gilbert et al., 2011; Kelly et al., 2013; Merritt & Purdon, 2020). The Fears of Compassion Scales have shown to be a promising self-report measurement to address these obstacles. It is necessary to further investigate to what extent individuals with BPD experience elevated levels of fear of compassion and to what extent these fears represent a distinguishing feature to other clinical populations. In addition, it is important to monitor fear of compassion during the course of therapy in order to identify obstacles to therapy progress. However, up to date there is no a German translation and validation of the Fears of Compassion Scales.

1.5 Summary and questions

BPD is a severe mental disorder characterized by dysregulations in affect, self-concept and interpersonal functioning (APA, 2022b). Long-term studies on the course of BPD in US indicate that although approximately 40% of patients meet the remission criterion after 10 years (e.g., Gunderson et al., 2011; Zanarini et al., 2010) the vast majority of BPD patients are still extremely poorly socially integrated (Zanarini et al., 2010). Further studies are needed to investigate and understand the underlying pathomechanisms in order to develop better tailored treatments.

One domain that might be of particular relevance includes the processing of self-related information especially within social interactions. Several studies suggest alterations in self-related processes in BPD including self-concept, self-conscious emotions and affiliative information. With regard to self-concept, these alterations comprise a markedly predominantly instable and negative self-concept and low levels of self-esteem (e.g., Winter et al., 2017), highly reactive to self-relevant cues and interpersonal connectedness (Stanley & Siever, 2010). With respect to self-conscious emotions, individuals with BPD are prone to negative self-conscious emotions with a special relevance of shame and self-disgust (e.g., Winter et al., 2017). Previous findings suggest elevated shame proneness and state shame in BPD on self-report measures (e.g., Buchman-Wildbaum et al., 2021). However, to date experimental studies on state shame and the relationship to shame proneness in BPD are scarce. A construct that is closely related to shame and which is also elevated in BPD is self-criticism. Previous research has demonstrated the link between self-criticism and lower levels of recovery from BPD (Donald et al., 2019). However, further research is needed to further understand the significance of self-criticism in BPD and to examine the extent to which self-criticism is a feature that is specifically elevated in BPD compared to other clinical samples. Previous studies have used the Forms of Self-Criticizing/-Attacking and Self-Reassuring Scale (FSCRS; Gilbert et al., 2004), an internationally validated self-report questionnaire that assesses manifestations of self-criticism and self-reassurance in the light of failure or distress. Currently, there is no German translation and validation of this scale, which is necessary for further research in the German-speaking countries on this potentially relevant construct. Furthermore, to date, there is no previous study that has examined levels of self-criticism in BPD in comparison to other clinical populations.
Moreover, with regard to alterations in the processing of affiliative information, previous studies indicate that positive affection from other people is not accompanied by self-concept-enhancing social-cognitive processes or pleasant feelings in BPD (e.g., Stanley & Siever, 2010). Research in other clinical populations even suggests that impairments in the affiliative system can be associated with fear of feelings such as compassion (e.g., Gilbert, 2009). To measure fear of compassion, Gilbert et al. (2011) developed the Fears of Compassion Scales (FCS), a self-report questionnaire which has proven to be a reliable and valid measure in a range of clinical populations and is internationally used by now. However, until today there is only one study that has examined fears of compassion in BPD. Results show increased levels of fear of compassion for oneself, for others, and from others in BPD compared to healthy control persons (Ebert et al., 2018). These initial findings suggest a particular relevance of fear of compassion as part of impairments in the processing of affiliative information in BPD and should be further investigated. It would be important to examine to what extent individuals with BPD have particularly pronounced Fears of Compassion compared to other clinical populations in order to pay more attention to these alterations in treatment. However, to date, there is no German translation and validation of FCS and no comparison of different facets of fears of compassion between BPD and other clinical populations.

The present thesis examines maladaptive self-evaluative processes in BPD to add to the understanding of alterations in the processing of self-relevant information and psychosocial functioning in BPD. Here, different processing areas are examined in three research questions:

1) Do individuals with BPD exhibit mal-adaptive self-evaluation processes in the form of higher levels of self-criticism and self-attacking, fears of compassion and lower levels of self-reassurance to a greater extent than other clinical groups?

2) Are changes in compassion in BPD specific to the self, or can they also be demonstrated in interpersonal relationships as changes in compassion for others and from others to a greater extent than in other clinical groups?

3) 3) Is shame an emotional response to confrontation with oneself, or is it part of general elevated negative affect in individuals with BPD?

To answer question 1 and 2, we translated two well established self-report questionnaires so far not translated and validated in German language:

- the Forms of Self-Criticism/-Attacking and Self-Reassuring Scale (FSCRS; Gilbert et al., 2004), a well-established self-report questionnaire measuring self-criticism , self-attacking and self-reassuring with the three subscales inadequate self, hated self and reassured self to German (study 1)
- the Fears of Compassion Scales (FCS; Gilbert et al., 2011) with its three subscales Fears of Compassion for oneself, Fears of Compassion towards others and from others to German (study 2)

We analyzed their factor structure and psychometric properties and investigated changes in a sample of individuals with a primary diagnosis of BPD in comparison to a sample of psychiatric residential and outpatients, a sample from the general population, and a sample of healthy control participants.

To answer question 3, we investigated changes of shame reactivity in BPD using a paradigm that promotes self-awareness, self-reflection and self-evaluation compared to healthy control persons in an experimental study (study 3).

2 EMPIRICAL FINDINGS

2.1 Study 1: Psychometric Properties of the German Version of the Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS)

2.1.1 Abstract

Self-criticism is significantly associated with a variety of mental health difficulties affecting vulnerability, presentation, progress, and recovery. In contrast, self-reassurance is associated with good mental health, psychological well-being, and beneficial physiological processes. The 22-item Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS) is an internationally used self-report questionnaire for measuring manifestation and changes in different types of self-criticism and self-reassurance. It has been shown to be a valid and reliable measure in clinical and nonclinical samples. In the present study, a German translation of the FSCRS and its 3 subscales (hated self, inadequate self, reassured self) was provided, and the factor structure and psychometric properties were examined in 415 participants from 4 different population samples: (a) a sample from the general population, (b) a sample of psychiatric residential and outpatients, (c) a clinical sample of residential and outpatients with a primary diagnosis of borderline personality disorder (BPD), and (d) a sample of healthy control participants. Results from confirmatory factor analysis favored a 3-factor solution of the German FSCRS. Furthermore, findings indicate that the German version of the FSCRS and its subscales had good to excellent internal consistencies. Convergent validity was good for all 3 subscales as shown by medium to large correlations with established measures of self-criticism, self-compassion, self-esteem, satisfaction with life, symptoms of depression and anxiety, and secure attachment styles. Additionally, the 3 FSCRS subscales discriminated significantly between the clinical and nonclinical samples, with the BPD sample demonstrating significantly higher levels than the other samples on the hated self subscale.

2.1.2 Introduction

Self-criticism is a psychological process that consists of the scrutiny and censorship of personal behaviors, thoughts, and emotions, particularly in the face of failure or distress (B. Shahar et al., 2012; Whelton & Greenberg, 2005). Self-criticism entails a self-blaming attributional style, including maladaptive negative thoughts about the self and emotional states (such as self-related shame, anger, disgust, contempt, and disappointment; Gilbert et al., 2004). Self-attack is the most destructive and pathological form of self-criticism, as it comprises harsh cognitive, emotional, and behavioral attacks, including feelings of disgust and hatred and the desire to hurt or eliminate parts of the self, sometimes leading to non-suicidal self-harming behaviors (Halamová et al., 2018; Sommers-Spijkerman, Trompetter, Schreurs, & Bohlmeijer, 2018). The way people relate to themselves, such as self-evaluation, self-judgment, self-acceptance, and support, has a strong impact on an individual's general coping, resilience, and recovery (Blatt, Quinlan, Chevron, McDonald, & Zuroff, 1982; Ehret, Joormann, & Berking, 2015; Gilbert & Irons, 2005; Krieger, Berger, & grosse Holtforth, 2016; Mandel, Dunkley, & Moroz, 2015; Sbarra, Smith, & Mehl, 2012; G. Shahar, 2015; Terry & Leary, 2011; Zuroff, Santor, & Mongrain, 2005). Self-criticism is a transdiagnostic construct that is important in clinical and research contexts. Increased self-criticism and decreased self-compassion place certain individuals at an increased

risk of experiencing mental disorders (e.g., depression) repeatedly or chronically over the course of their lives (Ehret et al., 2015). In particular, self-criticism is related to depression (Cox, MacPherson, Enns, & McWilliams, 2004; Ehret et al., 2015; Zuroff et al., 2005), bipolar disorders (Francis-Raniere, Alloy, & Abramson, 2006), anxiety (B. Shahar et al., 2012), posttraumatic stress disorder (Cox, MacPherson, et al., 2004; Southwick, Yehuda, & Giller, 1991), eating disorders (Dolhanty & Greenberg, 2009; Fennig et al., 2008; Noordenbos, Aliakbari, & Campbell, 2014), psychosis and schizophrenia (Birchwood et al., 2004; Gilbert et al., 2001; Mayhew & Gilbert, 2008), personality disorders (Feliu-Soler et al., 2017; Keng & Wong, 2017; Lucre & Corten, 2013; Ronningstam, Weinberg, Goldblatt, Schechter, & Herbstman, 2018; Schanche, Stiles, McCullough, Svartberg, & Nielsen, 2011; Schmahl et al., 2014; Winter et al., 2017), suicidal tendencies (Fazaa & Page, 2003; Klomek et al., 2008; O'Connor & Noyce, 2008), and non-suicidal self-injurious behavior (Gilbert, 2010; Glassman, Weierich, Hooley, Deliberto, & Nock, 2007; Zelkowitz & Cole, 2019). Furthermore, successful reduction of self-criticism is a predictor of one's response to cognitive therapy (Rector, Bagby, Segal, Joffe, & Levitt, 2000). Otherwise, self-criticism is a major obstacle to progress within the specific process of psychotherapy due to intense negative affect, as well as disturbing and ruminative thoughts related to the self (Kannan & Levitt, 2013; Marshall, Zuroff, McBride, & Bagby, 2008). Due to the specific importance of self-criticism for the development and perseverance of psychopathology, first interventions have been developed to treat it (e.g., compassion focused therapy; Gilbert, 2010). In contrast, reassuring oneself is associated with good mental health, psychological well-being, and beneficial physiological processes (Ehret et al., 2015; Gilbert et al., 2008; Muris & Petrocchi, 2017; Neely, Schallert, Mohammed, Roberts, & Chen, 2009; M. Neff & Fiume, 2004; Zessin, Dickhäuser, & Garbade, 2015). Furthermore, self-reassurance is closely related to several aspects of self-compassion. These aspects of self-compassion include high levels of self-kindness, coping abilities, resilience, and perseverance, as well as low levels of self-criticism (Gilbert et al., 2004; Hermanto & Zuroff, 2016; Hermanto et al., 2016; Irons, Gilbert, Baldwin, Baccus, & Palmer, 2006; Kirby, 2017; Lyssenko et al., 2015, 2019) and secure attachment style. Due to the importance of self-criticism in clinical and research contexts, the Depressive Experience Questionnaire (DEQ; Blatt, D'Afflitti, & Quinlan, 1976) was developed to measure self-criticism and dependency as two primary dimensions of depression. Subsequently, other instruments were developed that varied in conceptual basis, structure, content, and application. Recently, a meta-analysis addressing the psychometric properties of English self-rating questionnaires of self-criticism reported on five questionnaires and five subscales of questionnaires assessing different types of self-criticism (Rose & Rimes, 2018). Two instruments demonstrated satisfactory psychometric properties: (a) the Forms of Self-Criticizing/Attacking and Reassuring Scale (FSCRS; Gilbert et al., 2004) and (b) the Self-Critical Rumination Scale (SCRS; Smart, Peters, & Baer, 2016). All remaining self-rating questionnaires and subscales addressed in this meta-analysis had poor methodological quality or received indeterminate or negative ratings for the measurement properties they studied (Rose & Rimes, 2018). The SCRS is a useful instrument to capture the ruminative and repetitive nature of self-critical thinking. However, the FSCRS focuses on self-criticism in response to difficult situations. It conceptualizes self-criticism as a multidimensional construct with different forms, distinguishing between (a) self-criticism about inadequacy and (b) self-hatred (Gilbert et al., 2004). To further explore the multidimensionality of self-criticism in clinical and nonclinical samples, we focused on the FSCRS, assessing three forms of self-to-self-relating process dimensions: (a) inadequate self, (b) hated self, and (c) reassured self. The subscales of inadequate

and hated self represent different forms of self-criticism: the desire to correct or improve certain aspects of the self (inadequate self) and the desire to hurt, persecute, and attack the self (hated self). The third subscale, the reassured self, assesses an individual's ability to reassure himself or herself in times of difficulty The FSCRS is an internationally used instrument that has proven to be valid and reliable in multiple studies (Cunha & Paiva, 2012; Gilbert et al., 2004; Kupeli et al., 2013; Petrocchi & Couyoumdjian, 2016; Pinto-Gouveia, Castilho, Matos, & Xavier, 2013). Due to its predictive quality for improvements in mental health, the FSCRS is often used to measure manifestation and changes in self-criticism in the clinical context (Gilbert et al., 2004; Krieger et al., 2016; B. Shahar et al., 2012; Sommers-Spijkerman, Trompetter, Schreurs, et al., 2018). Furthermore, the FSCRS has repeatedly demonstrated sensitivity to changes in the therapeutic context of interventions (such as compassion focused therapy; Gilbert & Procter, 2006; Krieger et al., 2016; B. Shahar et al., 2012; Sommers-Spijkerman, Trompetter, Schreurs, et al., 2018) that target the reduction of self-criticism and make it appropriate for evaluating treatment outcome. Comparisons between clinical and nonclinical samples have shown significantly higher scores on the inadequate and hated self subscales and significantly lower scores on the reassured subscale in clinical compared to nonclinical samples (Baião, Gilbert, McEwan, & Carvalho, 2015; Castilho et al., 2015). Furthermore, previous investigations in nonclinical samples have found that men score higher on the reassured self and lower on the inadequate and hated self subscales than do women (Baião et al., 2015; Yarnell et al., 2015). In contrast, investigations with clinical samples did not find any significant gender differences in the FSCRS subscale scores (Baião et al., 2015). Previous research has shown that individuals score highly on the hated self subscale of the FSCRS during middle adolescence (14 –15 years old) and are at a high risk for developing psychopathological symptoms, particularly anxiety, depression, and non-suicidal self-injury (Cunha & Paiva, 2012; Xavier, Pinto Gouveia, & Cunha, 2016). In addition, female adolescents reported higher levels of external shame, self-criticism (hated self), fear of self-compassion, daily peer hassles, depressive symptoms, and non-suicidal self-injury than did males (Xavier et al., 2016). While several studies confirmed the three-factor solution reported by the developers of the FSCRS (self-criticism, self-hate, self-reassurance; Baião et al., 2015; Gilbert et al., 2004; Kupeli et al., 2013), a recent analysis examined the factor structure of the FSCRS in 13 nonclinical samples from 12 countries (n = 7,510) and found two general factors (self-criticism and self-reassurance) with inadequate and hated self loading on one common factor (Halamová et al., 2018). Overall, the factorial structure of the FSCRS remains subject to the investigated population due to possible floor effects on the dimension of self-hatred in nonclinical samples (Halamová, Kanovský, & Pacúchová, 2017) and high scores on this dimension in the clinical population, indicating a specific pathogenic risk (Castilho et al., 2015). The FSCRS has been translated into several languages, including Chinese, German, Hebrew, Japanese, Portuguese, Dutch, Italian, and Slovak. In addition to the translations, the latter three versions of the FSCRS have been psychometrically validated (Halamová et al., 2018; Sommers-Spijkerman, Trompetter, Ten Klooster, et al., 2018). However, a psychometrically validated German version of the FSCRS has not yet been researched. The aims of this study were threefold: (a) to provide a state-of-the-art translation of the FSCRS, (b) to investigate the factorial structure of the German version of the FSCRS, and (c) to establish the psychometric properties of the German version. The evaluation of psychometric properties included internal consistency, convergent and discriminant validity, and the potential to distinguish between different clinical and nonclinical populations.

2.1.3 Methods

The approval of the study by the ethics committee was obtained before the start of the study.

2.1.3.1 Translation of the FSCRS

To ensure the maintenance of the principles of good practice for the translation and cultural adaption of the patient-reported outcome measure, the German version of the FSCRS (Gilbert et al., 2004) was translated following the recommendations of the "ISPOR Task Force for Translation and Cultural Adaptation" (Wild et al., 2005) using a 10-step procedure for translation, which is described in Table 2.1.1. The German translation of the FSCRS can be taken from the online supplemental materials.

Table 2.1.1

Steps in the translation process

i) The authors of the original version of the FSRCS were consulted for authorization. Three independent native German speakers who were fluent in English were determined.
ii) The original FSCRS was translated into German by the determined native German speakers.
iii) The three resulting translations were compared and merged into a single forward translation.
iv) The resulting German version of the FSCRS was translated back into English by an independent professional translator.
v) The back-translation was reviewed by means of a comparison of the back-translated versions of the instrument and the original to highlight and investigate discrepancies between the original and the reconciled translation.
vi) To resolve discrepancies between back-translated versions of the instrument and the original, the items of the German version of the FSCRS were harmonized.
vii) The results were initially debriefed by testing the instrument on a small group of relevant people from clinical and non-clinical samples in order to test alternative wordings and check for the understandability, interpretation, and cultural relevance of the translation.
viii) The test persons' interpretations of the translation with the original version were compared to highlight and amend discrepancies. Items were finalized.
ix) Items were reviewed a final time to highlight and correct any typographic, grammatical, or other errors.
x) A final report was written at the end of the process, documenting the development of each translation.

Note. The Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS; Gilbert et al., 2004) was translated following the recommendations of the "ISPOR Task Force for Translation and Cultural Adaptation" (Wild et al., 2005) using a 10-step procedure for translation.

2.1.3.2 Participants and Procedure

Participants were included if they were 18 years or older, were fluent in German, and provided informed consent. A total of 415 individuals were included in the present study. Participants belonged to one of the following four subsamples: (a) a sample from the general population; (b) a sample of psychiatric residential patients and outpatients with different psychiatric diagnoses; (c) a clinical sample of residential patients and outpatients with a primary diagnosis of borderline personality disorder (BPD) from the Clinic for Psychosomatic Medicine and Psychotherapy at the Central Institute of Mental Health (CIMH), Mannheim, Germany; and (d) a sample of healthy control participants (with a documented absence of mental diagnoses). The general population sample was recruited through advertisements on several online platforms for people potentially interested in psychological research (www.psychologie-onlineforschung.de; https://www.psychologieforum.de/psychologieforum-de-regional- 33/psychologie-vor-ort-34/psychologie-osterreich-46/; https://www .psychologieforum.de/psychologieforum-de-regional-33/psychologie-vor-ort-34/psychologie-schweiz-47/) and on Facebook. The advertisement included a description of the goals of the study, informed consent, and a link to the questionnaire. A total of 244 participants opened the survey link. Of those, 75 individuals did not start with the questionnaire, solely provided informed consent, or stopped filling out the questionnaire and were therefore excluded from the analyses. This resulted in a full data set of 169 participants from the general population. Participants from the mixed clinical sample were recruited from residential and outpatient psychiatric services in different public clinics in Germany and were invited to participate by their psychologists and psychiatrists. Due to a possible lack of Internet access among residential patients, all participants of the clinical sample received paper/pencil versions of the survey. A total of 146 mixed clinical patients started filling out the questionnaire. Of those, seven individuals stopped filling out the questionnaire and were therefore excluded from the analyses, resulting in 139 complete sets of data. The clinical sample of residential patients and outpatients of the Clinic for Psychosomatic Medicine and Psychotherapy at the CIMH with a primary diagnosis of BPD was recruited by the patients' psychologists and psychiatrists. Of the 80 individuals from this sample who had been recruited, 14 stopped filling out the questionnaire and were therefore excluded from the analyses. Accordingly, the questionnaires of 66 BPD patients from this sample were analyzed. Finally, a sample of 41 healthy control persons, who participated in an earlier study at the CIMH and who had been screened using the Structured Clinical Interview for DSM–IV Axis I Personality Disorders (SCID-I) and Structured Clinical Interview for DSM–IV Axis II Personality Disorders (SCID-II), by means of which any psychiatric disorder was ruled out, received the link to the online survey. Of those, each individual completed the questionnaire. Overall, the majority of the 415 participants were female (77.8%) with a mean age of 26.8 ± 7.1 years (ranging from 18 to 72 years). Between-groups comparisons indicated significant differences in terms of gender, age, education level, and disorder. A breakdown by the four groups and further characteristics, including education and anamnestic data, is provided in Table 2.1.2.

Table 2.1.2

Sample characteristics of the four samples

	Population based sample (*n* = 169)	Mixed clinical sample (*n* = 139)	BPD patient sample (*n* = 66)	Healthy control sample (*n* = 41)	Difference
Age, years					$p \leq .001$
M (SD)	27.77 (7.98)	36.71 (14.45)	21.44 (3.39)	21.34 (2.05)	
Range	18-57	18-72	18-26	18-25	
Gender, n (%)					$p \leq .001$
Male	34 (20.1)	37 (26.6)	5 (7.6)	13 (31.7)	
Female	134 (79.3)	102 (73.4)	60 (90.9)	28 (68.3)	
Diverse	1 (0.6)	0	1 (1.5)	0	
Educational level, n (%)					$p \leq .001$
None	2 (1.2)	1 (0.7)	0	0	
Low (Primary school, lower vocational education)	8 (4.7)	26 (18.7)	6 (9.1)	0	--
Intermediate (Secondary school, vocational education)	6 (3.6)	48 (34.5)	30 (45.5)	6 (14.6)	--
High (Higher vocational education, university)	104 (61.6)	56 (41.3)	30 (45.5)	35 (85.4)	--
Other educational level	49 (29.0)	5 (3.6)	0	0	--
Disorders (DSM-IV-TR), n (%)					--
Affective Disorder	23 (13.6)	92 (66.2)	39 (59.1)	0	$p \leq .001$
Anxiety Disorder	13 (7.7)	35 (25.2)	12 (18.2)	0	$p \leq .001$
Obsessive Compulsive Disorder	1 (0.6)	7 (5.0)	0	0	$p \leq .001$
Borderline Personality Disorder	15 (8.9)	30 (21.6)	66 (100)	0	$p \leq .001$
Posttraumatic Stress Disorder	9 (5.3)	15 (10.8)	20 (30.3)	0	$p \leq .001$
Addictive Disorder	3 (1.3)	4 (2.9)	9 (13.6)	0	$p \leq .001$
Eating Disorder	2 (1.2)	17(12.2)	26 (39.4)	0	$p \leq .001$
Other Disorder	2 (1.6)	12 (8.6)	13 (19.7)	0	$p \leq .001$
Disorder unknown	6 (3.6)	0	0	0	--
Current treatment, n (%)					$p \leq .001$
Residential patients	1 (0.6)	100 (71.9)	42 (63.6)	0	--
Outpatient	26 (15.4)	37 (33.8)	24 (36.3)	0	--
No treatment	142 (84.0)	2 (1.4)	0	0	--

2.1.3.3 Diagnostic Instruments

Diagnoses in the mixed clinical sample and the BPD samples have been established by the Structured Clinical Interview for DSM–IV Axis I Disorders–Clinician Version

(SCID-CV; First, Spitzer, Gibbon, & Williams, 1997; Wittchen, Wunderlich, Gruschwitz, & Zaudig, 1997) and the SCID-II (First, Gibbon, Spitzer, Williams, & Benjamin, 1997; Fydrich, Renneberg, Schmitz, & Wittchen, 1997). Additionally, their current psychotherapeutic treatment setting (residential vs. outpatient) was determined. The population-based and healthy control samples also received a screening of the SCID-CV and SCID-II and information on their current psychotherapeutic treatments were recorded.

2.1.3.4 Self-Ratings

2.1.3.4.1 Forms of FSCRS

The FSCRS (Gilbert et al., 2004) is a 22-item self-rating questionnaire. The three subscales consist of nine, five, and eight items, respectively. Items are rated on a 5-point Likert scale ranging from 0 (not like me at all) to 4 (extremely like me). Higher scores indicate a stronger sense of inadequacy (range: 0 –36), self-hate (range: 0 –20), or self-reassurance (range: 0 –32). The internal consistency of the original FSCRS subscales as assessed with Cronbach's α was 0.90 for inadequate self, α = .86 for hated self, and α = .86 for reassured self (Gilbert et al., 2004). Previous research has also demonstrated that the three FSCRS subscales (inadequate self, hated self, and reassured self) significantly discriminate between clinical and nonclinical populations (e.g., Baião et al., 2015; Castilho et al., 2015).

2.1.3.4.2 Self-Compassion Scale

The Self-Compassion Scale (SCS; Hupfeld & Ruffieux, 2011; K. D. Neff, 2003) is a 26-item instrument used to measure trait levels of self-compassion. The scale represents thoughts, emotions, and behaviors associated with several components of self-compassion. It includes six subscales: self-kindness (five items), self-judgment (five items), common humanity (four items), isolation (four items), mindfulness (four items), and overidentification (four items). Items are rated on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always). In previous studies, the SCS has demonstrated concurrent, convergent, and discriminant validity. Internal consistency and retest reliability over 4 weeks were excellent, with Cronbach's α = .91 and a test–retest reliability (r_{tt}) = .92 (K. D. Neff, 2003).

2.1.3.4.3 Rosenberg's Self-Esteem Scale

The Rosenberg Self Esteem Scale (RSES; Rosenberg, 1965; Von Collani & Herzberg, 2003) is a self-report measure of global self-esteem, consisting of 10 items. Items are rated on a 4-point Likert scale from 1 (strongly disagree) to 4 (strongly agree). Validation of the RSES demonstrated an excellent internal consistency with Cronbach's α = .92 as well as a test–retest reliability (r_{tt}) = .85 and .88. A German validation study reported a good internal consistency of α = .85 (Von Collani & Herzberg, 2003).

2.1.3.4.4 Self-criticism

The Theoretical Depressive Experiences Questionnaire - 12 (TDEQ-12) is a short version of the Depressive Experience Questionnaire (DEQ; Krieger et al., 2016; Zuroff, Quinlan, & Blatt, 1990) which comprises seven items that are scored on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The self-criticism subscale has shown acceptable to good internal consistency with Cronbach's α = .72–.86 in nonclinical samples and α = .71–.84 clinical samples (Krieger et al., 2014).

2.1.3.4.5 Hospital Anxiety and Depression Scale

The Hospital Anxiety and Depression Scale (HADS; Petermann, 2015; Zigmond & Snaith, 1983) is a 14-item measure that assesses the frequency of depressive symptoms (HADS-D) and anxiety symptoms (HADS-A) over the past week on a 4-point scale. Due to its sensitivity for mild manifestations of psychopathological symptoms and changes over time as well as its high acceptance in nonclinical samples, it is an internationally used instrument for screening mental disorders. Cronbach's α varies for HADS-A from .68 to .93 (mean .83) and for HADS-D from .67 to.90 (mean .82; e.g., Bjelland, Dahl, Haug, & Neckelmann, 2002). Results of a German study indicate good reliability in clinical as well as nonclinical samples (Hinz & Brähler, 2011).

2.1.3.4.6 Satisfaction With Life Scale

The Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985; Glaesmer, Grande, Braehler, & Roth, 2011) is the internationally most used instrument to assess satisfaction with life. It consists of five items, and findings from several studies indicate good internal consistency with Cronbach's α between .79 and .89 (Adler & Fagley, 2005; Diener et al., 1985; Steger, Frazier, Oishi, & Kaler, 2006) as well as convergent and discriminant validity. Results from a validation study of the German version of the SWLS (N = 2,519) demonstrated excellent internal consistency with Cronbach's α = .92.

2.1.3.4.7 Adult Attachment Scale

The Adult Attachment Scale (AAS; Collins & Read, 1990; Schmidt, Strauß, Höger, & Brähler, 2004) is a 15-item self-report instrument reflecting attachment-related attitudes. The dimensional scales of the AAS assess openness for intimacy in relationships, trust in other people and fear of becoming abandoned (Schmidt et al., 2004). Internal consistencies for the three subscales of the original AAS were α = .75 for the trust subscale, α = .72 for the fear subscale, and α = .69 for the closeness to others subscale. The internal consistencies of the German version of the AAS were in the range of α = .72 to .79 for the three subscales.

2.1.3.4.8 Brief Scale for the Assessment of Social Desirability

The Brief Scale for the Assessment of Social Desirability (German version: Kurzskala zur sozialen Erwünschtheit, KSE; Winkler, Kroh, & Spiess, 2006) assesses the tendency to provide socially desirable answers in surveys. This self-report instrument

consists of six items and has shown an internal consistency of α = .60 in the original validation study, which can be classified as acceptable when considering the small number of items of the scale.

The BPD and the healthy control samples received only the FSCRS, SCS (Hupfeld & Ruffieux, 2011; K. D. Neff, 2003), and RSES (Rosenberg, 1965; Von Collani & Herzberg, 2003).

2.1.3.5 Data-Analytic Plan

Internal consistencies of the FSCRS subscale scores were assessed from Cronbach's α. According to widely accepted standards, values "0.70 and "0.80 reflect acceptable and good internal consistency, respectively (Cicchetti, 1994). Intercorrelations between the subscale scores were calculated using Pearson's correlation coefficient (tested one-tailed against 0). Correlations of 0.10, 0.30, and 0.50 were considered small, medium, and large, respectively (J. Cohen, 1988). As the data were not normally distributed, Kruskal–Wallis tests were conducted to examine betweengroup differences on the following variables: age, FSCRS subscale scores, RSES score, SCS total score, and positive and negative facets scores. Statistical significance of the Kruskal–Wallis tests was determined from the asymptotic distribution of the test statistic (X^2 approximation). Fisher's exact test was used to analyze between-groups differences in gender, education level, diagnosis, and treatment setting. To avoid spurious inflation of the Type I error, Bonferroni-corrected post hoc tests were computed for between-groups comparisons. Internal consistencies and descriptive and standard psychometric analyses were conducted in SPSS 23.0 (IBM SPSS Statistics). The factor structure of the German version of the FSCRS was examined using confirmatory factor analysis (CFA). We conducted separate CFAs in the clinical and nonclinical samples to investigate whether the factor hated self, as a distinctively destructive form of self-criticism, can be found in both samples. The BPD and healthy control samples were not investigated in the CFA because we assumed that the FSCRS scores of both samples represent extreme endpoints on the continuum of self-criticism, thus accentuating the results of clinical or nonclinical samples in the opposite direction and thereby artificially increasing the difference between them. Due to controversy about a two- or three-factor structure of the FSCRS, we conducted confirmatory factor analyses with both two- and three-factorial models. Analysis of variance was used to statistically compare the fit of the two models. To account for the relatively small sample sizes and the nonnormally distributed data, bootstrapping was performed with 1,000 samples to estimate the chi-square test statistics and the model standard errors (Davison & Hinkley, 1997). The model fit was examined using multiple indices, including the Tucker–Lewis index (TLI), the comparative fit index (CFI), the standardized root-mean-square residual (SRMR), the root mean square error of approximation (RMSEA), the Akaike information criterion (AIC), the Bayesian information criterion (BIC), and the Satorra–Bentler (SB) scaled chi-square statistic (Hu & Bentler, 1998). An acceptable model fit is assumed when TLI ≥ .95, CFI ≥ .90, SRMR ≤ .10, RMSEA ≤ .08, and $p(X^2) > .05$; a good model fit is obtained when TLI ≥ .96, CFI "≥ .95, SRMR ≤ .08, RMSEA ≤ 0.06, and $p(X^2) > .05$ (Browne & Cudeck, 1992; Hu & Bentler, 1998). These indices of fit have been complemented by AIC and BIC, which have been used for comparing the fit of alternative models. The model with the smallest AIC or BIC is preferred. To examine whether respondents from different groups interpret the same measure in a conceptually similar way, the population-based and mixed clinical samples were combined and examined in measurement invariance

analyses (Bialosiewicz, Murphy, & Berry, 2013). This procedure consists of the following three steps: First, we tested for configural invariance to examine whether the overall factor structure fits the data well in the population-based and mixed clinical samples. All factor loadings and item intercepts were allowed to freely vary in each group. Second, we tested for metric invariance to examine whether the factor loadings were equivalent across samples, therefore constraining the factor loadings to be equivalent across groups, while allowing the item intercepts to vary freely. In the third and final step, we tested scalar invariance to examine whether the item intercepts were equivalent across samples by constraining the item intercepts and factor loadings to be equivalent. CFAs were performed with the lavaan package in R (Rosseel, 2012), Version 4.0.0 (Team, 2009). Convergent and discriminant validity were assessed by computing Pearson correlations (one-tailed) between the FSCRS subscale scores and the scores on self-report measures of theoretically related constructs (i.e., SCS, RSES, TDEQ-12, HADS, SWLS, AAS, KSE).

2.1.4 Results

2.1.4.1 Factorial Structure

Table 2.1.3 shows the standardized factor loadings for the three models. All of the factor loadings were statistically significant and positive for both the two-factor and the three-factor solutions, suggesting that the indicators were associated in the expected directions with the factors.

2.1.4.1.1 Two-factor model of the FSCRS (Model 2)

The two-factor model (Model 2) showed an overall acceptable fit to the data in both samples as indicated by TLI = 0.89, CFI = 0.90, SRMR = 0.06, RMSEA = 0.08, $SB\chi^2(208) = 442.04$, $p < .001$ in the population-based sample and TLI = 0.90, CFI = 0.91, SRMR = 0.06, RMSEA = 0.08, $SB\chi^2(208) = 372.26$, $p < .001$ in the mixed clinical sample.

2.1.4.1.2 Three-factor model of the FSCRS (Model 3)

Model fit indices for the three-factor model (Model 3) indicated an overall acceptable fit to the data in both samples as indicated by TLI = 0.92, CFI = 0.93, SRMR = 0.05, RMSEA = 0.07, $SB\chi^2(206) = 379.50$, $p < .001$ in the population-based sample and TLI = 0.91, CFI = 0.92, SRMR = 0.06, RMSEA = 0.07, $SB\chi^2(206) = 344.11$, $p < .001$ in the mixed clinical sample.

2.1.4.1.3 Comparison between the two models

Comparisons between the two models showed that Model 3 was significantly superior to Model 2 ($SB\chi^2_{Diff}(2)) = 28.16$, $p < .001$ in the population-based sample). In the mixed clinical sample, Model 3 was also significantly superior to Model 2 ($SB\chi^2_{Diff}(2)) = 62.543$, $p < .001$). In addition, in both samples, AIC and BIC were smaller in Model 3 compared to Model 2, with $AIC_{Model\ 3} = 9,896 < AIC_{Model\ 2} = 9,955$ and $BIC_{Model\ 3} = 10,044$ & $BIC_{Model\ 2} = 10,096$ in the population-based sample and $AIC_{Model\ 3} = 8,453 < AIC_{Model}$

$_{2}$ = 8,477 and $BIC_{Model\ 3}$ = 8,590 < $BIC_{Model\ 2}$ = 8,609 in the mixed clinical sample. Results of measurement invariance analyses between the population-based and mixed clinical sample are shown in Table 2.1.4. The configural invariance model fitted the data well, $X^2(412) = 723.606$, TLI = .91, CFI = .92, SRMR = .05, RMSEA = .07, indicating that the overall three-factor structure fits well for both the population-based and mixed clinical samples. The metric invariance model fitted that data also well, $X^2_{Diff}(19) = 21.36$, TLI = .92, CFI = .92, SRMR = .07, RMSEA = .07, $p < .32$, indicating that factor loadings appeared to be equivalent across both the population-based and mixed clinical sample. The scalar invariance model did not fit the data, X^2_{Diff} (19) = 303.37, TLI = .85, CFI = .85, SRMR = .10, RMSEA = .09, $p < .001$, indicating that the item intercepts vary between samples, which means that the two samples differ in the level of their item scores.

Table 2.1.3

Standardized Factor Loadings of the FSCRS: Two- and Three-Factor solutions in the population-based and mixed-clinical sample

	Population-based sample Model					Mixed-clinical sample Model				
Item	Two-factor		Three-factor			Two-factor		Three-factor		
	IS and HS	RS	IS	HS	RS	IS and HS	RS	IS	HS	RS
1	0.74	--	0.78	--	--	0.79	--	0.81	--	--
2	0.83	--	0.83	--	--	0.82	--	0.84	--	--
3	--	0.74	--	--	0.74	--	0.77	--	--	0.77
4	0.69	--	0.69	--	--	0.47	--	0.45	--	--
5	--	0.72	--	--	0.72	--	0.68	--	--	0.68
6	0.74	--	0.77	--	--	0.76	--	0.77	--	--
7	0.75	--	0.76	--	--	0.71	--	0.71	--	--
8	--	0.77	--	--	0.77	--	0.90	--	--	0.90
9	0.71	--	--	0.79	--	0.64	--	--	0.74	--
10	0.78	--	--	0.85	--	0.76	--	--	0.83	--
11	--	0.85	--	--	0.86	--	0.77	--	--	0.77
12	0.63	--	--	0.69	--	0.57	--	--	0.58	--
13	--	0.71	--	--	0.71	--	0.80	--	--	0.80
14	0.56	--	0.60	--	--	0.62	--	0.63	--	--
15	0.69	--	--	0.68	--	0.67	--	--	0.68	--
16	--	0.73	--	--	0.73	--	0.72	--	--	0.72
17	0.73	--	0.75	--	--	0.73	--	0.75	--	--
18	0.53	--	0.54	--	--	0.66	--	0.67	--	--
19	--	0.68	--	--	0.68	--	0.63	--	--	0.62
20	0.52	--	0.55	--	--	0.63	--	0.61	--	--
21	--	0.76	--	--	0.76	--	0.72	--	--	0.72
22	0.79	--	--	0.81	--	0.75	--	--	0.78	--

Note. Bootstrapped CFA with two- and three-factor models of the Forms of Self-Criticizing/Attacking and Self-Reassuring Sale (FSCRS). IS = inadequate self; HS = hated self; RS = reassured self. The two-factor model comprised the items of the inadequate (IS) and hated self (HS) as factor one and reassured-self (RS) subscale as factor two. In the three-factor model, factors were based on the three separate subscale items, i.e. inadequate self (IS), hated self (HS), reassured self (RS). All factor loadings were significant at $p < .001$.

Table 2.1.4

Measurement Invariance Analysis between the population-based and mixed clinical sample

Step and Model	χ2	df	χ^2_{Diff}	df_{Diff}	P	TLI	CFI	SRMR	RMSEA	AIC	BIC
Step 1	---	---	---	---	---	---	---	---	---	---	---
Configural invariance	723.606	412	---	---	---	.91	.92	.05	.07	18437	18952
Step 2	---	---	---	---	---	---	---	---	---	---	---
Metric invariance	744.968	431	21.36	19	.32	.92	.92	.07	.07	18420	18864
Step 3	---	---	---	---	---	---	---	---	---	---	---
Scalar invariance	1048.334	450	303.37	19	.000	.85	.85	.10	.09	18686	19059

Note. Measurement Invariance Analysis between the population-based (N = 169) and mixed-clinical sample (N = 139). χ2 = scaled chi-square statistic. Df = degrees of freedom. χ^2_{Diff}= Difference between scaled chi-square statistics. df_{Diff} = Difference between degrees of freedom. TLI = Tucker Lewis Index. RMSEA = Root Mean Square Error of Approximation. CFI Comparative Fit Index; SRMR = standardized root mean square residual. AIC Akaike Information Criterion. BIC = Baysian Information Criterion.

2.1.4.2 Internal Consistency and Intercorrelations Between FSCRS Subscale Scores

Cronbach's α, means, standard deviations, and intercorrelations of the FSCRS subscales are listed in Table 2.1.5. Results showed good to excellent internal consistencies for the FSCRS total scale in addition to the three subscales with respect to all four samples (as shown in Table 2.1.5, Cronbach's α ranged from 0.84 to 0.96). The intercorrelations of the three FSCRS subscales were large ($|r| \geq 0.5$) for all four samples. As expected, the inadequate and hated self subscales were positively correlated, whereas the reassured self subscale was negatively correlated with the inadequate self and hated self subscales. Internal consistencies of all remaining self-ratings were acceptable to excellent (as shown in the in Table 2.1.6), in which Cronbach's α ranged from 0.64 to 0.9.

Table 2.1.5

Pearson intercorrelations and internal consistency of the FSCRS subscales in the four samples

	Population-based sample			Mixed clinical sample			BPD sample			Healthy control sample		
FSCRS	IS	HS	RS	IS	HS	RS	IS	HS	RS	IS	HS	RS
IS	--	--	--	--	--	--	--	--	--	--	--	--
HS	.77	--	--	.81	--	--	.79	--	--	.70	--	--
RS	-.75	-.77	--	-.62	-.58	--	-.75	-.82	--	-.68	-.58	--
Cronbach's α	.90	.87	.91	.89	.84	.91	.87	.85	.89	.91	.88	.92

Note. FSCRS = Forms of Self-Criticizing/Attacking and Self-Reassuring Scale; IS = *inadequate self*; HS = *hated self*; RS = *reassured self*. BPD = Borderline Personality Disorder. All correlations were significant at $p < .001$.

2.1.4.3 Convergent and Discriminant Validity of the FSCRS

Convergent validity of the FSCRS was investigated in the population-based and mixed clinical samples. As demonstrated in Table 2.1.6, results show medium to large correlations of the FSCRS subscales with all theoretically related constructs in both samples ($|r| \geq 0.4$). As expected, the subscale scores of inadequate and hated self were negatively correlated with the positive facets of the SCS and SWLS and positively correlated with negative facets of SCS, the self-criticism scale of the DEQ, and problems in attachment style as assessed by the AAS. In contrast, the reassured self subscale showed the expected opposite pattern in which this subscale was positively correlated with the positive facets of the SCS and SWLS and negatively correlated with negative facets of SCS, the self-criticism scale of the DEQ, and problems in attachment style as assessed by the AAS.

Interestingly, only in the population-based sample were higher scores on the inadequate and hated self subscales associated with lower self-esteem scores and higher scores on the reassured self subscale associated with lower self-esteem, as measured by the RSES ($|r| \geq 0.6$). In contrast, no statistically significant correlations between any of the three FSCRS subscales and self-esteem were found in the mixed clinical sample. These differences between the two samples were statistically significant (for correlations between RSES and inadequate self: $z = -7.499$, $p < .001$; hated self: $z = -7.515$, $p < .001$; reassured self: $z = -8.783$, $p < .001$). For correlations with the HADS scores, the results were opposite, that is, no correlations of the FCRS subscale scores with the depression and anxiety subscale of the HADS emerged in the population-based sample, whereas in the mixed clinical sample, inadequate and hated self subscale scores were moderate to highly positively correlated with symptoms of depression ($|r| > 0.4$) and anxiety ($|r| \geq 0.4$). Again, these differences between the two samples were statistically significant (for the correlations between depressive symptoms and inadequate self: $z = -2.993$, $p = .003$; hated self: $z = 2.796$, $p = .005$; reassured self: $z = -3.196$, $p = .001$; for correlations between anxiety symptoms and inadequate self: $z = 4.322$, $p < .001$; hated self: $z = 4.040$, $p < .001$; reassured self: $z = -3.910$, $p < .001$). Discriminant validity of the FSCRS was investigated by correlating the three subscales (inadequate self, hated self, and reassured self) to social desirability as assessed by the KSE in all of the population-

based and mixed clinical samples. As expected from theory, none of the subscales was significantly related to social desirability (all *ps* > .10 in both samples).

Table 2.1.6

Internal consistencies of psychological constructs and their Pearson correlations with the FSCRS subscale scores in the population-based and clinical sample

	Population-based Sample				Mixed Clinical Sample			
FSCRS	IS	HS	RS	α	IS	HS	RS	α
Depressive Experiences Questionnaire	.64***	.49***	-.57***	.81	.68***	.57***	-.49***	.77
Self-Compassion Scale								
Positive facets	-.55***	-.48***	.62***	.92	-.46***	-.40***	.71***	.93
Negative facets	.80***	.67***	-.73***	.91	.83***	.72***	-.54***	.89
Rosenberg Self-Esteem Scale	-.70***	-.68***	.82***	.83	.00	.04	.14	.73
HADS								
Depressive symptoms	.15	.10	-.09	.67	.46***	.40***	-.43***	.74
Anxiety symptoms	.09	.03	-.02	.66	.53***	.46***	-.44***	.77
Satisfaction with Life Scale	-.57***	-.54***	.62***	.90	-.51***	-.49***	.57***	.85
Adult attachment Scale	.63***	.57***	-.64***	.92	.57***	.62***	-.43***	.78
Kurzskala zur sozialen Erwünschtheit	-.07	-.01	0.08	.66	.05	.02	.01	.64

Note. FSCRS = Forms of Self-Criticizing/Attacking and Self-Reassuring Scale; IS = *inadequate self*; HS = *hated self*; RS = *reassured self;* HADS = Hospital Anxiety and Depression Scale; α = *Cronbach's alpha*.

*** $p < .001$.

2.1.4.4 Between-Group Differences on the FSCRS Subscales

In order to examine the clinical specificity of the FSCRS, including the potential to discriminate between clinical and nonclinical populations, the four samples were compared using the FSCRS subscales. Results revealed significant differences between the samples on the three subscales of the FSCRS: inadequate self ($X^2(3) = 67.24$; $p = .001$), hated self ($X^2(3) = 67.24$; $p = .001$), and reassured self ($X^2(3) = 69.30$; $p = .001$). Post hoc test results show significant differences between the four samples for most of the FSCRS subscales (all *p* values are Bonferroni corrected), indicating the pattern in which the BPD sample showed significantly higher scores on the hated subscale compared to the other three samples. Furthermore, significantly higher scores on the inadequate subscale were found in the BPD sample compared to the population-based and healthy control samples (all *ps* ≤ .001). The mixed clinical sample showed significantly higher scores on the subscales of hated and inadequate self and a lower subscale score on the reassured self subscale compared to the

population-based and healthy control samples (all *ps* ≤ .001). The population-based sample showed significantly higher scores on the hated self subscale ($p \leq .001$) in addition to the inadequate self subscale ($p = .007$) when compared with the healthy control sample. Differences on the FSCRS subscale scores remained significant when controlling for age, gender, and education levels (all *ps* ≤ .05). For further between-group differences on the FCSRS subscales, see Table 2.1.7.

Table 2.1.7

Means, Standard Deviations of the investigated measures in the four samples

Measure	Population based sample (*n* = 169)	Mixed clinical sample (*n* = 139)	BPD patient sample (*n* = 66)	Healthy control sample (*n* = 41)	Difference
FSCRS, *M (SD)*					
Inadequate Self	18.96 (8.26)	24.10 (7.78)	26.15 (7.60)	15.17 (8.10)	$\chi^2(3) = 67.24$, $p \leq .001$
Hated Self	5.22 (5.25)	9.69 (5.75)	13.83 (4.85)	2.21 (3.75)	$\chi^2(3) = 67.24$, $p \leq .001$
Reassured Self	16.77 (7.19)	10.38 (7.59)	12.15 (10.52)	20.29 (6.81)	$\chi^2(3) = 69.30$, $p \leq .001$
RSES, *M (SD)*	29.82 (6.11)	27.40 (3.50)	25.65 (2.97)	32.71 (3.77)	$\chi^2(3) = 83.44$, $p \leq .001$
SCS, *M (SD)*	80.10 (16.55)	60.86 (17.22)	82.59 (7.68)	73.80 (9.87)	$\chi^2(3) = 116.25$, $p \leq .001$
Positive facets	37.62 (10.23)	29.63 (10.40)	31.51 (11.32)	41.22 (11.42)	$\chi^2(3) = 65.67$, $p \leq .001$
Negative facets	42.49 (7.98)	31.24 (10.06)	51.08 (6.88)	32.59 (10.59)	$\chi^2(3) = 177.36$, $p \leq .001$
TDEQ, *M (SD)*	27.10 (16.23)	37.17 (7.05)	--	--	t(306) = -6,80, $p \leq .001$
HADS, *M (SD)*					
Depressive symptoms	11.17 (4.87)	10.43 (5.16)	--	--	$t(306) = 1.29$, $p = .20$
Anxiety symptoms	11.83 (4.98)	11.43 (6.01)	--	--	$t(306) = 0.64$, $p = .52$
SWLS, *M (SD)*	23.04 (7.46)	13.81 (6.33)	--	--	t(304) = 11.51, $p \leq .001$
AAS, *M (SD)*	34.97 (12.88)	45.85 (9.63)	--	--	t(305) = -8.23, $p \leq .001$
KSE, *M (SD)*	25.63 (5.85)	25.19 (3.81)	--	--	$t(306) = 0.75$, $p = .45$

Note. FSCRS = Forms of Self-Criticizing/Attacking and Self-Reassuring Scale; RSES = Rosernberg Self-Esteem Scale; TDEQ = Short version of the Depressive Experiences Questionaaire, self-critcism subscale; SCS = Self-Compassion Scale; HADS = Hospital Anxiety and Depression Scale; SWLS = Satisfaction With Life Scale; AAS = Adult Attachment Scale; KSE; Kurzskala zur Sozialen Erwünschtheit.

2.1.5 Discussion

Previous research has highlighted that self-criticism is closely related to a variety of psychological suffering and poorer treatment outcomes in psychotherapeutic contexts (e.g., Kannan & Levitt, 2013; G. Shahar, 2015).The present study provided a German translation and psychometric validation of the German version of the FSCRS, a self-reporting scale that assesses three forms of self-to-self-relating process dimensions: (a) inadequate self, (b) hated self, and (c) reassured self. Participants from four different samples contributed to this examination: (a) a sample from the general population, (b) a patient sample with mixed clinical diagnoses, (c) a patient sample with the primary diagnosis of BPD, and (d) a healthy control sample. The results indicated that the German version of the FSCRS and its subscales have good to excellent internal consistencies and convergent/discriminant validity and that they discriminate between people from the general population and those from clinical settings. Furthermore, CFA favored a three-factor solution of the German FSCRS. The good to excellent internal consistencies of the German version of the FSCRS total scale and of the three subscales (inadequate self, hated self, reassured self) were consistent with those of the original version (cf. Gilbert et al., 2004). In accordance with previous findings of the original FSCRS and previous translations (Castilho et al., 2015; Gilbert et al., 2004; Petrocchi & Couyoumdjian, 2016; Sommers-Spijkerman, Trompetter, Ten Klooster, et al., 2018), convergent validity was satisfactory for all three subscales in the two investigated samples (population-based and mixed clinical samples), as shown by medium to large correlations with established measures of self-criticism, self-compassion, self-esteem, and satisfaction with life, as well as with symptoms of depression and anxiety in addition to secure attachment styles.

In line with previous research investigating the discriminant validity of the FSCRS (Baião et al., 2015; Castilho et al., 2015), our results revealed that the hated self subscale discriminated significantly between all four samples, with the BPD sample demonstrating the highest levels of hated self among the four samples. This finding extends previous results suggesting that self-criticism is a transdiagnostic feature (Cox, MacPherson, et al., 2004; Gilbert, 2010; G. Shahar, 2015; Southwick et al., 1991, 1995; Zuroff et al., 2005). Furthermore, all three subscales (hated self, inadequate self, and reassured self) discriminated significantly between the clinical samples (mixed clinical and BPD) and the nonclinical samples (population-based and healthy control samples), with the clinical samples demonstrating significantly higher levels on the hated and inadequate self subscales and significantly lower levels on the reassured self subscale than the two nonclinical samples. The three-factor solution that was found in both our population-based and mixed clinical samples is in line with the three-factor solution reported by Gilbert et al. (2004). Additionally, the three subscales (inadequate self, hated self, and reassured self) were highly intercorrelated, which is in line with previous studies on the psychometric properties of the original FSCRS (cf. Gilbert et al., 2004) and previous translations (Petrocchi & Couyoumdjian, 2016; Sommers-Spijkerman, Trompetter, Ten Klooster, et al., 2018). The results from the measurement invariance analyses indicate that the overall three-factorial structure fits the data well in both the population-based and mixed clinical samples but that the intercepts differ between these two samples. This finding indicates that the two samples differ in the level of scoring on the items, which is in line with the results of significant group differences on the FSCRS subscales of previous studies (e.g., Baião et al., 2015; Castilho et al., 2015).

However, the three-factorial structure is not consistent with the results of Halamová et al. (2018), who found a two-factor model with correlated inadequate and hated self subscales in a large nonclinical sample analysis. We assume that whether a two- or three-factor solution shows the best fit might depend on the population under study, for example, because in nonclinical samples, inadequate self and hated self dimensions tend to be very strongly correlated and because the hated self items tend to score rather low in nonclinical samples. In addition, the exact methodology used in factor analyses might impact the results. Our study cannot conclusively clarify this controversy. The question of the factor structure should therefore be further investigated in the future and with regard to the choice of sample, possibly with even more precise separation between different clinical and nonclinical samples and also within the clinical samples between different disorder patterns. Several limitations should be considered when interpreting our results. First, the small size of the subsamples is a limitation of this study. Our results should be replicated and expanded by future investigations with larger clinical and nonclinical samples. Second, differences existed between the four samples in terms of gender, age, and level of education. Previous research in nonclinical samples has demonstrated that men score significantly higher on the reassured self and lower on the inadequate self and hated self subscales when compared to women (Baião et al., 2015). In contrast, investigations in clinical samples did not find any significant gender differences in the FSCRS (Baião et al., 2015). However, males and lower-educated people were underrepresented in all of our samples. Accordingly, results regarding gender differences should be interpreted with caution. Furthermore, this study investigated only participants older than 18 years. Previous research has shown that over half of individuals with lifetime mental health problems report first experiencing symptoms before the age of 14 years (Kessler et al., 2005; Merikangas, Nakamura, & Kessler, 2022) and that adolescents report pronounced self-criticism, self-hatred, and shame (Cunha & Paiva, 2012; Xavier et al., 2016). Accordingly, further studies should focus on adolescent populations. Third, most individuals from our clinical samples were in residential treatment (82%), with 40% having two and 19% having three or more clinical diagnoses. Our results might, therefore represent individuals with relatively high levels of psychopathology, high levels of self-criticism, and low levels of self-reassurance, which should be taken into account when one is interpreting group differences in FSCRS scores. Fourth, with measures that are designed to pick up on mental health problems, which this self-criticism scale was designed to do, one must be aware of floor effects. In nonclinical populations, floor effects show up in depression and anxiety, as well as in self-criticism, because almost by definition (being nonclinical), these are going to be low. In this study, this is the case, as shown in Table 2.1.7, in which the self-hatred score was 13.83 (SD 4.85) in the BPD group while the healthy controls scored only 2.12 (SD 3.73). This indicates that self-hatred might be a discriminatory process. Fifth, due to the sample size, frequency, and distribution of clinical diagnoses in our patient samples, we focused on BPD only in relation to levels of self-inadequacy and self-hate, without differentiating between co-occurring clinical disorders and their relationship to self-criticism. Due to the remarkable impact of self-criticism on vulnerability and recovery from psychopathology (e.g., G. Shahar, 2015), in addition to its link to poorer psychotherapeutic treatment outcomes (e.g., Kannan & Levitt, 2013), future research should test the capability of the FSCRS to assess manifestations of psychopathology in different clinical groups. In addition, future research should assess the utility of the FSCRS in identifying patients who might be in need of specific psychotherapeutic interventions targeting self-criticism. In conclusion, the current study suggests that the German version of the FSCRS is a reliable and valid measure

of self-criticism and self-reassurance in different populations. The German version of the FSCRS is capable of assessing mild to severe manifestations of self-criticism; it draws distinctions between forms of self-criticism that focus on personal inadequacy and those linked to a more pathogenic hatred of the self and differentiates between individuals from the general population and those in clinical contexts. It is a promising tool for assessing self-criticism and self-reassurance in psychotherapeutic contexts.

2.2 Study 2: Psychometric Properties of the German Version of the Fears of Compassion Scales (FCS)

2.2.1 Abstract

The cultivation of compassion is associated with beneficial effects on physical and psychological health, satisfaction with life and social relationships. However, some individuals, especially those high in psychopathological symptoms or those with particular disorders such as borderline personality disorder (BPD) may demonstrate pronounced fears of engagement in compassionate experiences or behaviors. Furthermore, fears of compassion have been found to impede progress in psychotherapy. The 38-item fears of compassion scales (FCS) is a self-report questionnaire for measuring trait levels of fears of compassion (a) one receives from others (FCFO), (b) one feels towards others (FCTO) and (c) one feels for oneself (self-compassion; FSC). The FCS is an internationally used instrument of proven validity and reliability in both clinical and nonclinical samples. In the present study, a German translation of the FCS including its three subscales was provided, and the psychometric properties were examined in 430 participants from four different samples: (a) a sample from the general population; (b) a mixed sample of psychiatric residential and outpatients; (c) a clinical sample of residential and outpatients with a primary diagnosis of BPD and (d) a sample of healthy control participants. Internal consistencies were excellent for the German version of the FSC and acceptable to excellent for its subscales. Correlations with established measures of mental health demonstrate its validity. Additionally, the German FCS discriminates significantly between individuals from the general population and patients, thus supporting its specificity. The German FCS is suitable to detect potential obstacles in cultivating compassion in psychotherapeutic treatments and beyond.

2.2.2 Introduction

Compassion is a psychological concept that has received increasing scientific interest during the last 20 years. Some define compassion as an emotion (Goetz, Keltner, & Simon-Thomas, 2010), and others define it as a multidimensional construct (Strauss et al., 2016). One of the most influential and frequently used definitions is that of Gilbert (2014), who defines compassion as a motif, involving the ‘sensitivity to suffering in self and others with a commitment to try alleviate or prevent it’. An increasing number of studies have demonstrated that compassion influences emotional processing, that is, attending to, processing, remembering and reacting to emotional stimuli (Kirby, 2017; Seppälä et al., 2017). These key processes are directly linked to the activity of the autonomic sympathetic nervous system, which enables emotion-related action tendencies such as the approach to relevant others and caregiving. The activity of the parasympathetic nervous system enables the corresponding calming and soothing tendencies. Previous studies have shown that giving and receiving compassion is physiologically linked to adaptive heart rate variability (e.g., Cosley, McCoy, Saslow, & Epel, 2010; J. J. Kim et al., 2020; Kirby, Doty, Petrocchi, & Gilbert, 2017; Matos, Duarte, Duarte, et al., 2017; Petrocchi, Ottaviani, & Couyoumdjian, 2017; Rockliff et al., 2008), blood pressure and cortisol reactivity (Cosley et al., 2010). Additionally, previous research has shown that compassion training affects the activation of the amygdala and of other brain areas involved in emotional processing and empathy (Derntl et al., 2010; Desbordes et al., 2012; Klimecki, Leiberg, Lamm, & Singer, 2013). Investigations on functional brain plasticity after compassion and empathy training

suggest compassion may reflect a new coping strategy to reverse empathic distress and to strengthen resilience (Klimecki et al., 2013; Klimecki, Leiberg, Ricard, & Singer, 2014). Furthermore, compassion activates are affiliated with feelings of soothing, calming and well-being, which are linked to specific neurophysiological systems, especially endorphin and oxytocin, which are distinct from 'drive and excitement' systems (Depue & Morrone-Strupinsky, 2005). On a psychological level, several studies have found a significant reduction in anxiety, depression, feelings of inferiority and shame, self-criticism, fears of compassion and distress in response to compassion training. These studies also found significant increases in well-being, positive affect and affiliation, feelings of relaxation and safety, self-compassion, compassion for others and from others (e.g., Gilbert & Procter, 2006; Klimecki et al., 2013; Leaviss & Uttley, 2015; Matos, Duarte, Duarte, et al., 2017; Petrocchi et al., 2017), life satisfaction and well-being (e.g., Barnard & Curry, 2011; K. D. Neff & Germer, 2013; K. D. Neff, Kirkpatrick, & Rude, 2007; Zessin et al., 2015), closer social relationships (Yarnell et al., 2015) and feelings of social connectedness (e.g., Cozolino, 2006; Crocker & Canevello, 2012; Petrocchi et al., 2017). Thus, compassion has recently become the focus of interventions for a range of mental health problems. To date, six empirically based interventions that aim to cultivate compassion have been developed (Kirby, Tellegen, & Steindl, 2017): compassion focused therapy (CFT; Gilbert, 2014), mindful self-compassion (MSC; Germer & Neff, 2019), compassion cultivation training (CCT; Jinpa, 2010), cognitively based compassion training (CBCT; Pace et al., 2010), cultivating emotional balance (CEB; Kemeny et al., 2012) and loving-kindness (LKM) or compassion meditation (CM; Wallmark, Safarzadeh, Daukantaitė, & Maddux, 2013). A recent meta-analysis investigated the effectiveness of these interventions relative to control groups across 21 randomized control trials (RCTs) and identified significant between-group differences on self-report measures of compassion (d = 0.55, CI [0.33–0.78]), which included self-compassion (d = 0.70, CI [0.59–0.87]), mindfulness (d = 0.54, CI [0.38–0.71]), depression (d = 0.64, CI [0.45–0.82]), anxiety (d = 0.49, CI [0.30–0.68]), psychological distress (d = 0.47, CI [0.19–0.56]) and well-being (d = 0.51, CI [0.30–0.63]) (Kirby, Tellegen, et al., 2017). Despite these beneficial effects on mental health and well-being, implementing compassion has revealed major limitations in some individual's abilities and motivations to develop compassion (Gilbert, 2010). Previous research has shown that some groups of individuals who might benefit most from cultivating compassion, also have major deficits in their abilities and motivation to cultivate compassion (Ebert et al., 2018; Gilbert et al., 2012; Gilbert et al., 2011; Kelly et al., 2013; MacBeth & Gumley, 2012; Xavier et al., 2016). These groups include individuals experiencing a variety of traits, which include self-harm, self-criticism and shame, insecure attachment, alexithymia, low levels of empathy and mindfulness, increased symptoms of depression and anxiety, rumination and eating disorders. Early insecure attachment experiences, neglect, abuse, traumatization and excessive feelings of shame were identified as particularly relevant predictors for the development of fear of compassion for the self, for others and from others (e.g., Matos, Duarte, & Pinto-Gouveia, 2017). These early affiliative experiences may lay down conditioned emotional memories in which the need for soothing, safeness and care becomes associated with fear, loneliness, sadness and grief (Gilbert, 2010; Liotti, 2004). In particular, traumatic experiences or memories of shame, which are of critical importance for identity, may render one to feel inferior, defective, powerless and unattractive and to perceive others as critical, rejecting, condemning or abusive. These feelings will influence the formation of negative self-other schemas and engender a sense of ongoing threat to one's social self (Gilbert, 2010; Matos, Duarte, & Pinto-Gouveia, 2015; Matos & Pinto-Gouveia, 2014; Matos, Pinto-Gouveia, & Gilbert, 2013).

Additionally, a lack of experience of security, safety and being nurtured as a child may lead to an undeveloped safeness-soothing system, which undermines one's ability to generate warmth and feel safe within social relationships and will also disrupt effective emotional regulation (Gilbert, 2009, 2010; Matos & Pinto-Gouveia, 2014; Porter et al., 2020). Research supporting these assumptions indicates that a fear of compassion is predictive of lower oxytocin levels in patients with borderline personality disorder (BPD; Ebert et al., 2018). Consequently, the engagement in compassionate experiences or behaviors are linked to fears of being seen as weak or self-indulgent, of being judged or rejected due to compassionate efforts, of becoming too upset or overwhelmed by the needs of others when engaged in compassionate behaviors, and thus, the thinking that compassion will be viewed by others as manipulative or self-interested (Gilbert & Mascaro, 2017; Vitaliano et al., 2003). Furthermore, for individuals with high levels of self-criticism and interpersonal insecurity, being in compassion-based interventions may not produce soothing or safe effects, but rather increases stress, which can be measured using physiological indicators (Longe et al., 2010; Rockliff et al., 2008; Rockliff et al., 2011). In addition, strong fears of compassion have been shown to impede engagement, progress and outcome in psychotherapy (Gilbert et al., 2011; Kelly et al., 2013; Merritt & Purdon, 2020).

To specifically examine resistance to compassion, Gilbert et al. (2011) developed the fears of compassion scales (FCS). This self-report questionnaire assesses trait levels of fears of compassion on three scales: (a) fears of compassion one receives from others (FCFO); (b) fears of compassion one feels towards others (FCTO) and (c) fears of compassion one feels for oneself (self-compassion; FSC). Examinations of psychometric properties of the FCS in the original validation study reveal large correlations between the fears of compassion from others and fears of self-compassion subscales, as well as medium correlations between these two subscales and the fears of compassion towards others subscale (Gilbert et al., 2011). Internal consistencies of the original FCS subscales, which is assessed using Cronbach's α, are .85–.87 for the fears of compassion from others subscale, α = .78–.84 for the fears of compassion towards others subscale and α = .85–.92 for the fears of self-compassion subscale (Gilbert et al., 2011). The FCS is an internationally used instrument that has demonstrated promising validity and reliability across multiple studies (Cunha & Paiva, 2012; Gilbert et al., 2004; Kupeli et al., 2013; Pinto-Gouveia et al., 2013). A recent meta-analysis with data from 4,723 participants from clinical and nonclinical populations showed positive correlations between mental health difficulties (self-criticism, shame, depression, anxiety, distress and well-being) and fears of self-compassion (r = .49), fears of compassion towards others (r = .30) and fears of compassion from others (r = .48). The strongest associations were found between the mental health variables of shame, self-criticism and depression and the FCS subscales of fears of self-compassion (FSC) and fears of compassion from others (FCFO). Overall, associations are significantly stronger for clinical populations than for nonclinical populations (Kirby et al., 2019). Earlier findings have already demonstrated the FCS's potential to discriminate between clinical and nonclinical populations. The findings of a comparative study of 155 female undergraduate students and 97 females starting eating disorder treatment revealed significantly higher scores on the fears of self-compassion subscale in the latter sample (Kelly, Vimalakanthan, & Carter, 2014). A recent study compared the severity of the three fears of compassion (receiving, expressing to others and showing to oneself) in those with a principal diagnosis of depression (N = 34), obsessive–compulsive disorder (OCD; N = 27), social anxiety disorder (SAD; N = 91), generalized anxiety disorder (GAD, N = 43) and a control

sample with no mental health difficulties (N = 212) and identified greater fear of receiving compassion and fear of self-compassion in patients compared to healthy controls. The differences between anxious and control groups remained significant even when controlling for depressed mood (Merritt & Purdon, 2020). Furthermore, the FCS has been shown to have sensitivity to changes in the therapeutic contexts of interventions that target the reduction of fears of compassion (Braehler et al., 2013; Dupasquier, Kelly, Moscovitch, & Vidovic, 2018; Gilbert & Procter, 2006; Judge, Cleghorn, McEwan, & Gilbert, 2012; Kelly et al., 2013; Krieger et al., 2016; B. Shahar et al., 2012; Sommers-Spijkerman, Trompetter, Schreurs, et al., 2018), making it ideal for evaluating treatment outcomes. Due to the importance of examining fears of compassion in the context of psychotherapeutic interventions and beyond, the FCS has been translated into Portuguese (Oliveira, Ferreira, Mendes, & Marta-Simões, 2017), Italian (Dentale et al., 2017) and Japanese (Asano et al., 2017); the Italian and Japanese versions have already been validated (Asano et al., 2017; Dentale et al., 2017). A translation and psychometric evaluation of the FCS into German is missing. The purpose of this study was to provide a German translation of the FCS and to establish its psychometric properties, including internal consistency, as well as convergent and discriminant validity in a German sample.

2.2.3 Methods

2.2.3.1 Translation of the FCS

To ensure the maintenance of the principles of good practice for the translation and cultural adaption of the patient-reported outcome measure, the German version of the FCS (Gilbert et al., 2011) was translated following the recommendations of the ‘ISPOR Task Force for Translation and Cultural Adaptation’ (Wild et al., 2005) using a 10-step procedure for translation, which is described in Table 2.2.1. Following the original version of the FSC the three subscales consist of 10, 13 and 15 items, respectively. Respondents are required to indicate the degree to which they are in accordance with each statement on a 5-point Likert scale (0 = ‘Don't agree at all’ to 4 = ‘Completely agree’). Higher scores indicate a stronger fear of compassion from others (range: 0–52), fear of compassion towards other people (range: 0–40) and fear of self-compassion (range 0–60).

Table 2.2.1

Steps in the translation process

i) The authors of the original version of the FCS were consulted for authorization. Three independent native German speakers who were fluent in English were determined.
ii) The original FCS was translated into German by the determined native German speakers.
iii) The three resulting translations were compared and merged into a single forward translation.
iv) The resulting German version of the FCS was translated back into English by an independent professional translator.
v) The back-translation was reviewed by means of a comparison of the back-translated versions of the instrument and the original to highlight and investigate discrepancies between the original and the reconciled translation.
vi) To resolve discrepancies between back-translated versions of the instrument and the original, the items of the German version of the FCS were harmonized.
vii) The results were initially debriefed by testing the instrument on a small group of relevant people from clinical and non-clinical samples in order to test alternative wordings and check for the understandability, interpretation, and cultural relevance of the translation.
viii) The test persons' interpretations of the translation with the original version were compared to highlight and amend discrepancies. Items were finalized.
ix) Items were reviewed a final time to highlight and correct any typographic, grammatical, or other errors.
x) A final report was written at the end of the process, documenting the development of each translation.

Note. The Fears of Compassion Scales (FCS; Gilbert et al., 2011) was translated following the recommendations of the "ISPOR Task Force for Translation and Cultural Adaptation" (Wild et al., 2005) using a 10-step procedure for translation.

2.2.3.2 Participants and procedure

Participants were included if they were 18 years or older, fluent in German and provided informed consent. In the present study, a total of 430 individuals were included into the study between 2016 and 2019. Participants belonged to one of the following convenience samples: (a) a sample from the general population in Germany, (b) a sample of psychiatric inpatients and outpatients with different psychiatric diagnoses from several clinical settings in Germany, (c) a clinical sample of residential patients and outpatients with a primary diagnosis of BPD and (d) a sample of healthy control participants, whereby any psychiatric disorder was ruled out. The sample from the general population was recruited through advertisements on several online platforms for people potentially interested in psychological research (www.psychologieonlineforschung.de; https://www.psychologieforum.de/; www.psychologieforum.at; www.psychnet.ch) and on facebook™. Advertisement provided a description of the goal of the study, informed consent and the link to the questionnaire. A total of 244 participants opened the survey link. As 75 individuals solely provided informed consent or stopped filling out the questionnaire, an actual full dataset of 169 participants from the general population were analyzed. Participants

from the mixed clinical sample were recruited by their psychologists and psychiatrists in charge from several residential and outpatient psychiatric services of different public clinics in Germany. All participants of the clinical sample received paper and pencil versions of the survey due to a possible lack of access to the Internet. A total of 146 mixed clinical patients started filling out the questionnaire. Of those, seven individuals stopped filling out the questionnaire and were therefore omitted from the analyses. This resulted in a full data set of 139 patients. The clinical sample of residential and outpatients with a primary diagnosis of BPD were recruited by the psychologists and psychiatrists in charge. Of those 80 individuals, 14 stopped filling out the questionnaire and were therefore omitted from the analyses. A total of 66 BPD patients was analyzed. Finally, a sample of 56 mentally healthy control persons had been screened using the Structured Clinical Interview for DSM-IV Axis I Disorders Clinician Version (SCID-CV; First & Gibbon, 2004; Wittchen et al., 1997) and the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II; First, Spitzer, et al., 1997; Fydrich et al., 1997) by means of which any psychiatric disorder was ruled out. These participants received a link to the online questionnaire and filled out the questionnaire completely.

2.2.3.3 Diagnostic instruments

In the mixed clinical and BPD sample, the complete SCID-CV (First & Gibbon, 2004; Wittchen et al., 1997) and SCID-II (First, Gibbon, et al., 1997; Fydrich et al., 1997) were conducted to determine the diagnostic status. The population-based sample received a screening of the SCID-CV and SCID-II, and they were asked whether they are in psychotherapeutic treatment and in which treatment setting (residential vs. outpatient) as part of the online study questionnaire. The control group received the same screening as a telephone interview. The presence of a current mental illness and current psychotherapeutic treatment were exclusion criteria for this sample.

2.2.3.4 Self-ratings

2.2.3.4.1 Self-Compassion Scale

The self-compassion scale (SCS; Hupfeld & Ruffieux, 2011; K. D. Neff, 2003) measures trait levels of self-compassion on 26 items. The scale contains statements on thoughts, emotions and behaviours associated with several components of self-compassion which can be assigned to six subscales: self-kindness (five items), self-judgement (five items), common humanity (four items), isolation (four items), mindfulness (four items), overidentification (four items). Items are rated on a 5-point Likert scale ranging from 1 (‘almost never’) to 5 (‘almost always’). In previous studies, the SCS has demonstrated concurrent validity, convergent and discriminant validity. Reliability was excellent as indicated by Cronbach's $\alpha = .91$ and a test–retest reliability of $rtt = .92$ (K. D. Neff, 2003).

2.2.3.4.2 Rosenberg Self-Esteem Scale

The Rosenberg self-esteem scale (RSES; Rosenberg, 1965; Von Collani & Herzberg, 2003) is a self-report measure of global self-esteem. The scale consists of 10 items, which are rated on a 4-point Likert scale from 1 (‘strongly disagree’) to 4 (‘strongly agree’). Validation of the original RSES demonstrated excellent internal consistency

with Cronbach's α = .92 and test–retest reliabilities of rtt = .85 and .88. A German validation study reported good internal consistency of α = .85 (Von Collani & Herzberg, 2003).

2.2.3.4.3 Self-criticism

The self-criticism subscale of the short version of the depressive experiences questionnaire (DEQ; Krieger et al., 2014; Zuroff et al., 1990) is a seven-item self-report measure of self-criticism. Items are scored on a 7-point Likert scale, ranging from 1 (‘strongly disagree’) to 7 (‘strongly agree’). The self-criticism subscale has shown acceptable to good internal consistencies with Cronbach's α = .72–.86 in nonclinical samples and α = .71–.84 clinical samples (Krieger et al., 2014).

2.2.3.4.4 Hospital Anxiety and Depression Scale

The hospital anxiety and depression scale (HADS; Petermann, 2015; Zigmond & Snaith, 1983) assesses the frequency of depressive symptoms (HADS-D) and anxiety symptoms (HADS-A) over the past week on 14 items, which are rated on 4-point scales. This instrument is an internationally used instrument for screening mental disorders due to its sensitivity for mild manifestations of psychopathological symptoms and changes over time and its high acceptance in nonclinical samples. Cronbach's α varies for HADS-D from .67 to .90 (mean .82) and for HADS-A from .68 to .93 (mean .83; Bjelland et al., 2002). Results of a German validation study indicate good reliability in clinical and nonclinical samples (Hinz & Brähler, 2011).

2.2.3.4.5 Satisfaction with life Scale

The satisfaction with life scale (SWLS; Diener et al., 1985; Glaesmer et al., 2011) is the internationally most used instrument to assess satisfaction with life. It consists of five items which are rated on a 7-point Likert scale ranging from 1 (‘strongly disagree’) to 7 (‘strongly agree’). Findings from several studies indicate good to excellent internal consistency with Cronbach's α between .79 and .89 (Adler & Fagley, 2005; Diener et al., 1985; Steger et al., 2006) and good convergent and discriminant validity. Results from a validation study of the German version of the SWLS (N = 2,519) demonstrated excellent internal consistency with Cronbach's α = .92.

2.2.3.4.6 Adult attachment scale

The adult attachment scale (AAS; Collins & Read, 1990; Schmidt et al., 2004) is a 15-item self-report instrument representing attachment-related attitudes. The dimensional scales of the AAS assess openness for intimacy in relationships, trust in other people and fear of becoming abandoned (Schmidt et al., 2004). Items are rated on 5-point Likert scales. Internal consistency of the original AAS was acceptable with α = .75 for the subscale trust, α = .72 for the subscale fear and α = .69 for the subscale closeness to others. Investigation of the German version of the AAS indicate an acceptable internal consistencies of α = .72–.79 for all subscales.

2.2.3.4.7 Short scale for the assessment of social desirability

The short scale for the assessment of social desirability (German version: Kurzskala zur sozialen Erwünschtheit, KSE; Winkler et al., 2006) investigates the tendency to provide social desirable answers in surveys. This self-report instrument consists of six items which are rated on a 5-point Likert scale. In the original validation study, this instrument has shown an internal consistency of α = .60 which might be rated acceptable when considering the small number of items of the scale.

The BPD sample and the healthy control sample received only the FCS and the German versions of the SCS (Hupfeld & Ruffieux, 2011; K. D. Neff, 2003) and RSES (Rosenberg, 1965; Von Collani & Herzberg, 2003).

2.2.3.5 Data analytic plan

Internal consistencies of FCS total and subscale scores were assessed with Cronbach's α. Intercorrelations between subscales were calculated using Pearsons's correlation coefficient (one-tailed testing against 0). Similarly, convergent validity was assessed by computing Pearson correlations (one-tailed) between FCS subscale scores and scores on self-report measures of theoretically related constructs (i.e., SCS, RSES, TDEQ-12-SF, HADS, SWLS, AAS, SSASD). A Kruskal-Wallis test using $\chi 2$ approximation was conducted to examine between group differences on age as the data were not normally distributed. Fisher's exact test was used to analyze between group differences on gender, education level, diagnosis and treatment setting. Bonferroni corrected post hoc tests were computed for between group comparisons to avoid inflation of the type-I error. Due to significantly different variances in between group comparisons on the self-rating questionnaires, Sattherthwaite corrections were made. Although the total FCS score was calculated in the data analysis of this study, it is recommended to always report the scores from the three subscales to differentiate the three dimensions of fears of compassion. Descriptives, standard psychometric analyses and internal consistency were conducted in SPSS 23.0 (IBM SPSS statistics).

2.2.4 Results

The majority of the n = 430 participants were female (78.3%); their mean age was 24.8 years (SD = 5.9, range = 18–72 years). Between group comparisons indicated significant differences concerning gender, age, education level and diagnosis. An overview of the four groups' characteristics including education and anamnestic data is provided in Table 2.2.2.

Table 2.2.2

Sample characteristics of the four samples

	Population based sample (*n* = 169)	Mixed clinical sample (*n* = 139)	BPD patient sample (*n* = 66)	Healthy control sample (*n* = 56)	Difference
Age, years					$\chi^2(3) = 125.09$; $p \leq .001$
M (SD)	27.77 (7.98)	36.71 (14.45)	21.44 (3.39)	21.29 (2.15)	
Range	18-57	18-72	18-26	18-25	
Gender, n (%)					$p = .027$
Male	34 (20.1)	37 (26.6)	5 (7.6)	13 (23.2)	
Female	134 (79.3)	102 (73.4)	60 (90.9)	43 (76.8)	
Diverse	1 (0.6)	0	1 (1.5)	0	
Educational level, n (%)					$p \leq .001$
None	2 (1.2)	1 (0.7)	0	0	
Low (Primary school, lower vocational education)	8 (4.7)	26 (18.7)	6 (9.1)	0	
Intermediate (Secondary school, vocational education)	6 (3.6)	48 (34.5)	30 (45.5)	9 (16,1)	
High (Higher vocational education, university)	104 (61.6)	56 (41.3)	30 (45.5)	47 (83.9)	
Other educational level	49 (29.0)	5 (3.6)	0	0	
Disorders (DSM-IV-TR), n (%)					
Affective Disorder	23 (13.6)	92 (66.2)	39 (59.1)	0	$p = .140$
Anxiety Disorder	13 (7.7)	35 (25.2)	12 (18.2)	0	$p \leq .001$
Obsessive-Compulsive Disorder	1 (0.6)	7 (5.0)	0	0	
Borderline Personality Disorder	15 (8.9)	30 (21.6)	66 (100)	0	
Posttraumatic Stress Disorder	9 (5.3)	15 (10.8)	20 (30.3)	0	$p \leq .001$
Addictive Disorder	3 (1.3)	4 (2.9)	9 (13.6)	0	$p \leq .001$
Eating Disorder	2 (1.2)	17(12.2)	26 (39.4)	0	$p = .085$
Other Disorder	2 (1.6)	12 (8.6)	13 (19.7)	0	$p \leq .001$
Disorder unknown	6 (3.6)	0	0	0	
Current treatment, n (%)					$p \leq .001$
Residential patients	1 (0.6)	100 (71.9)	42 (63.6)	0	
Outpatient	26 (15.4)	37 (33.8)	24 (36.3)	0	
No treatment	142 (84.0)	2 (1.4)	0	0	

2.2.4.1 Internal consistencies and intercorrelations between FCS total and subscale scores

Cronbach's α, means, SDs and intercorrelations of FCS total and subscale scores are displayed in Table 2.2.3. According to widely accepted standards (Cicchetti, 1994) internal consistencies for FCS total score and the three subscales were good to excellent in all four samples (Cronbach's α ranged from .76 to .96). As expected, all three subscales fears of compassion from others, fears of compassion towards others and fears of self-compassion were positively correlated with medium to large ($r \geq 0.3$) intercorrelations in all four samples suggesting that the three dimensions are interrelated but not entirely overlapping. Internal consistencies of all remaining self-ratings are shown in Table 2.2.4.

Table 2.2.3

Pearson intercorrelations and internal consistency of the FCS subscales in the population-based, mixed clinical, BPD and healthy control sample

	Population-based sample				Mixed clinical sample				BPD sample				Healthy control sample			
FCS total	FCS total	FCFO	FCTO	FSC	FCS total	FCFO	FCTO	FSC	FCS total	FCFO	FCTO	FSC	FCS total	FCFO	FCTO	FSC
FCFO		-				-				-				-		
FCTO		.56**	-			.52**	-			.46**	-			.72**	-	
FSC		.80**	.56**	-		.74**	.32**	-		.75**	.49**	-		.80**	.67**	-
Cronbach's α	.96	.80	.93	.95	.95	.83	.92	.94	.92	.76	.86	.89	.96	.80	.92	.95

Note. FCS = Fears of Compassion Scale total; FCFO: *Fears of Compassion from Others*; FCTO: *Fears of Compassion Towards Others*; FCS: *Fears of Self-Compassion*.

** $p < .001$.

Table 2.2.4

Internal consistencies and Pearson correlations between the FCS subscale scores and other psychological constructs in the population-based and mixed clinical sample

	Population-based Sample				Mixed Clinical Sample			
FCS	FCFO	FCTO	FSC	α	FCFO	FCTO	FSC	α
Depressive Experiences Questionnaire short version, subscale self-criticism (TDEQ)	.07	-.08	.11	.81	.54**	.20*	.49**	.77
Self-Compassion Scale (SCS)								
Positive facets	-.47**	-.22**	-.52**	.92	-.26**	.07	-.37**	.93
Negative facets	.71**	.42**	.70**	.91	.61**	.30**	.57**	.89
Rosenberg Self-Esteem Scale (RSES)	-.68**	-.45**	-.69**	.83	-.05	.04	-.02	.73
Hospital Anxiety and Depression Scale (HADS)								
Depressive symptoms	.27**	.25**	.30**	.69	.54**	.16	.47**	.86
Anxiety symptoms	.16*	.04	.18*	.67	.47**	.13	.47**	.82
Satisfaction with Life Scale (SWLS)	-.65**	-.46**	-.63**	.90	-.54**	-.13	-.50**	.85
Adult attachment Scale (AAS)	.87**	.55**	.76**	.92	.78**	.43**	.62**	.78
Short Scale for the Assessment of Social Desirability (SSASD)	-.04	-.03	-.04	.64	-.03	.05	-.05	.64

Note. FCS = Fears of Compassion Scale; FCFO: Fears of Compassion from Others; FCTO: *Fears of Compassion Towards Others*; FCS: *Fears of Self-Compassion*.

** $p < .01$; * $p < .05$

2.2.4.2 Between group differences on the FCS subscales

To examine the specificity of the FCS, that is, the potential to discriminate between clinical and nonclinical populations, the four samples were compared based on FCS total score and the subscales. Comparisons drawn across the four groups revealed significant differences between the samples in terms of FCS total score (χ 2 (3) = 130.22, p ≤ .001) and the three subscales: fears of compassion from others (χ2 (3) = 142.73, p ≤ .001), fears of compassion towards others (χ 2 (3) = 50.14, p ≤ .001) and fears of self-compassion (χ 2 (3) = 118.21, p ≤ .001). Post hoc tests results showed significant differences between the four samples for most of the FCS subscales (all p values are Bonferroni-corrected), revealing the following pattern. The BPD sample showed significantly higher scores for the FCS total scale and for subscales fears of compassion from others and fears of self-compassion relative to the other three samples (with p values of ≤.05). Furthermore, significantly higher scores on the fears of compassion towards others subscale were found for the BPD sample relative to the population-based and healthy control sample (with p values of ≤.05). The mixed clinical sample showed significantly higher scores on the fears of compassion from others, fears of compassion towards others and fears of self-compassion subscales relative to the population-based and healthy control samples (with p values of ≤.05). No significant differences on any of the three FCS subscales appeared between the population-based and healthy control samples. Differences between the FCS subscale scores remained significant when controlling for age, gender, and education level (with p values of ≤.05). For further between group comparisons for the FCS, see Table 2.2.5. Table 2.2.6 displays means and standard deviations and between group differences for the other investigated self-rated questionnaires.

Table 2.2.5

Means, Standard Deviations and Between-group comparisons on the FCS in the four samples

Measure	Population based sample (*n* = 169)	Mixed clinical sample (*n* = 139)	BPD patient sample (*n* = 66)	Healthy control sample (*n* = 56)	Difference
FCS total, *M (SD)*	42.55 (27.76)	73.06 (28.87)	85.08 (24.56)	43.63 (25.46)	$\chi^2(3) = 130.22$, $p \leq .001$
FCFO	13.56 (11.05)	24.37 (11.81)	32.94 (9.97)	12.13 (9.22)	$\chi^2(3) = 142.73$, $p \leq .001$
FCTO	13.81 (6.68)	19.49 (7.83)	19.27 (7.78)	16.32 (6.87)	$\chi^2(3) = 50.14$, $p \leq .001$
FSC	15.18 (13.63)	29.20 (14.49)	34.94 (12.54)	15.18 (12.17)	$\chi^2(3) = 118.21$, $p \leq .001$

Note. FCS = Fears of Compassion Scales; FCFO = Fears of Compassion from Others; FCTO = *Fears of Compassion towards Others*, *Fears of Self-Compassion.*

Table 2.2.6

Means, Standard Deviations and Between-group comparisons of the investigated measures in the four samples

Measure	Population based sample (*n* = 169)	Mixed clinical sample (*n* = 139)	BPD patient sample (*n* = 66)	Healthy control sample (*n* = 56)	Difference
RSES, *M (SD)*	29.82 (6.11)	27.40 (3.50)	26.59 (2.90)	33.27 (3.56)	$\chi^2(3) = 105.91$, $p \leq .001$
SCS, *M (SD)*	80.10 (16.55)	60.86 (17.22)	82.59 (7.68)	74.45 (9.45)	$\chi^2(3) = 260.25$, $p \leq .001$
Positive facets	37.62 (10.23)	29.63 (10.40)	31.51 (11.32)	41.79 (10.45)	$\chi^2(3) = 123.02$, $p \leq .001$
Negative facets	42.49 (7.98)	31.24 (10.06)	51.08 (6.88)	32.67 (9.95)	$\chi^2(3) = 158.99$, $p \leq .001$
TDEQ, *M (SD)*	27.10 (16.23)	37.17 (7.05)			t(306) = -6.80, $p \leq .001$
HADS, *M (SD)*					
Depressive symptoms	11.17 (4.87)	10.43 (5.16)			t(306) = 1.29, $p = .20$
Anxiety symptoms	11.83 (4.98)	11.43 (6.01)			t(306) = 0.64, $p = .53$
SWLS, *M (SD)*	23.04 (7.46)	13.81 (6.33)			t(304) = 11.51, $p \leq .001$
AAS, *M (SD)*	34.97 (12.88)	45.85 (9.63)			t(305) = -8.23, $p \leq .001$
SSASD, *M (SD)*	25.63 (5.85)	25.19 (3.81)			t(306) = 0.75, $p = .44$

Note. RSES = Rosenberg Self-Esteem Scale; TDEQ = Short version of the Depressive Experiences Questionnaire, self-criticism subscale; SCS = Self-Compassion Scale; HADS = Hospital Anxiety and Depression Scale; SWLS = Satisfaction With Life Scale; AAS = Adult Attachment Scale; SSASD = Short Scale for the Assessment of Social Desirability.

2.2.4.3 Convergent and discriminant validity of the FCS

The convergent validity of the FCS was investigated for the population-based and mixed clinical samples. As shown in Table 2.2.4, results yielded medium to large correlations for the fears of compassion from others and fears of self-compassion subscales for the majority of theoretically related constructs in both samples. As expected, both subscales were found to be positively correlated with (a) negative facets of the SCS, (b) symptoms of depression and (c) attachment style problems as assessed by the AAS ($r \geq 0.30$, with p values of ≤.05) in both samples. Furthermore, both subscales showed medium to large negative correlations with (d) positive facets of the SCS, (e) the SWLS, and (f) the RSES in both samples ($r \leq -0.30$, with p values of ≤.01). In the mixed clinical sample, both subscales showed medium to large positive correlations with symptoms of anxiety as assessed by the HADS ($r = 0.47$, with p values of ≤.01). In the population-based sample these correlations were of small sizes ($r \leq 0.18$, with p values of ≤.05). The fears of compassion towards others subscale

shows significant correlations with most of the theoretically related constructs for the population-based sample (|*r*| = .22–.55, with p values of ≤.01). For the mixed clinical sample, small to medium correlations of this subscale were only found with for negative facets of the SCS, attachment style problems as assessed by the AAS and the self-criticism subscale as assessed by the TDEQ. No correlation emerged between the fears of compassion towards others subscale and symptoms of anxiety as assessed by the HADS (with |*r*| values of ≤.13 and p values of >.10) in either sample. Interestingly, correlations of the three FSC subscales and the self-criticism subscale of the TDEQ generally appear only for the mixed clinical sample (|*r*| = 0.20–0.54, with p values of ≤.05). In contrast, correlations between the three subscales and the RSES are only significant for the population-based sample (|*r*| = 0.45–0.69, with p values of ≤.01). The discriminant validity of the FCS was investigated by correlating the three subscales (i.e., fears of compassion from others, fears of compassion towards others and fears of self-compassion) with social desirability as assessed by the short scale for the assessment of social desirability for the population-based and mixed clinical samples. As expected from theory, none of the subscales were significantly related to social desirability (with |*r*| values of ≤.05 and p values of >.10) in either sample.

2.2.5 Discussion

The aim of the present study was to provide a psychometrically validated German translation of the FCS. Overall, 430 participants from four groups were investigated. The groups included a sample from the general population, a patient sample with mixed clinical diagnoses, a patient sample with a primary diagnosis of BPD and a healthy control sample. Overall, the German version of the FCS and its subscales exhibit acceptable to excellent internal consistency and show a pattern of correlations supporting the validity of the German FCS. Furthermore, the FCS and its subscales were found to clearly discriminate between individuals from the general population and patients, thus supporting the specificity of the German version of the instrument. Finally, the three subscales of the German FCS were intercorrelated between all four samples, and large correlations were identified between the fears of compassion from others and fears of self-compassion subscales and medium to large correlations were identified between these two subscales and the fears of compassion towards others scale. These results are in line with those of previous studies on the psychometric properties of the original FCS (Gilbert et al., 2011). Furthermore, in accordance with previous studies on the original FCS and its translations, our results indicate good to excellent levels of internal consistency for the FCS total scale and the three subscales across all of our samples (cf. Asano et al., 2017; Dentale et al., 2017; Gilbert et al., 2011). Additionally, convergent validity was found to be satisfactory for all three subscales in the two investigated samples (the population-based and mixed clinical samples), which is evident by the medium to large correlations with established measures of self-compassion, satisfaction with life, symptoms of depression and secure attachment styles. This result is in accordance with previous research on the convergent validity of the FCS (Cunha & Paiva, 2012; Gilbert et al., 2004; Kupeli et al., 2013; Pinto-Gouveia et al., 2013) and is in line with the results of a recent meta-analysis that identified significant correlations between the three FCS subscales and measures of self-criticism, shame, depression, anxiety, distress and well-being (Kirby et al., 2019). The fears of compassion towards others and fears of self-compassion subscales had medium to large correlations with symptoms of anxiety in the mixed clinical sample, whereas these two subscales had small correlations with anxiety symptoms in the population-based sample. This result is in line with previous findings

of greater fear of receiving compassion and fear of self-compassion, in patients with a principal diagnosis of depression, OCD, SAD and GAD compared with a control sample with no mental health difficulties (Merritt & Purdon, 2020). The fears of compassion towards others subscale, on the other hand, was found to have no correlation with the anxiety subscale of the HADS in the population-based and mixed clinical sample. From a content point of view, the lack of correlation can possibly be attributed to qualitative differences between fear of compassion for others and fear as defined in the diagnosed mental disorders. Previous studies suggest that fear of compassion for others may be related to personality variables and empathy (e.g., Graziano, Habashi, Sheese, & Tobin, 2007), desired moral identity (e.g., Reed & Aquino, 2003), insecure attachment style (e.g., Feeney & Collins, 2001; Mikulincer, Shaver, Gillath, & Nitzberg, 2005), the personal significance of the recipient (e.g., Bakan, 2005), fear of being submissive, weak or being exploited by others (McLaughlin & Hughes, 2003). From a methodological point of view, previous studies have found only small to medium correlations, even in significant larger samples than ours (e.g., Dentale et al., 2017; Kirby et al., 2019; Merritt & Purdon, 2020). In studies with small sample sizes, such as the Japanese translation and validation study (Asano et al., 2017), no significant correlations were found, indicating that if a correlation exists, it can only be found in large samples. Because the specific reasons for this finding are unknown, further research is needed to understand the similarities and differences between fear of compassion for others and symptoms of anxiety in anxiety related disorders. Two unexpected results emerged from our analysis of convergent validity: Correlations between the three FSC subscales and the self- criticism subscale of the TDEQ generally only appeared for the mixed clinical sample. In contrast, correlations between the three subscales and the RSES were only found to be significant in the population-based sample. The reasons for these unexpected findings are unknown. Further research is needed to understand the underlying mechanisms and potential differences between clinical and nonclinical samples with respect to the fear of compassion. The results from former studies regarding the specificity of the original FSC demonstrate significant differences between nonclinical and clinical samples (e.g., Kelly et al., 2014; Kirby et al., 2019). Accordingly, our results reveal significant differences between our two clinical samples (the mixed clinical and BPD samples) and two nonclinical samples (the population-based and healthy control samples) for all three subscales. Again, this is in line with the results of greater fear of compassion from others and fear of self-compassion in patients with depression, OCD, SAD and GAD compared with a control sample with no mental health difficulties (Merritt & Purdon, 2020). Our results also extend previous findings in that the BPD sample showed significantly stronger fears of self-compassion and of compassion from others than the three other samples. This result may be due to the more frequent presence of early insecure attachment experiences, neglect, abuse, traumatization and excessive feelings of shame during the childhoods of BPD patients, which is thought to be associated with the development of fears of compassion. A recently published meta-analysis revealed that patients with BPD (a) were over 13 times more likely to report childhood adversity than nonclinical patients, (b) were more likely to report childhood adversity than other clinical populations, (c) reported elevated emotional abuse and neglect relative to controls (Porter et al., 2020). Several limitations should be considered when interpreting these results. First, there are differences between the samples in terms of gender, age and educational attainment. Previous meta-analytical findings on gender differences in self-compassion found that males reported slightly stronger fears of self-compassion than females (Yarnell et al., 2015). Nevertheless, in our study, demographic variables were found to have low, mostly nonsignificant

correlations with FCS total and subscales. Second, the majority of individuals from our two patient samples were in residential treatment (82%), with 40% having two and 19% having three or more clinical diagnoses. Our results might, therefore, represent a specific population of individuals with relatively high levels of psychopathology and fears of compassion, and this should be considered when interpreting the very large between group differences found among FCS subscale scores. Third, due to the nonrepresentative distribution of specific mental disorders represented in our patient samples, group comparisons were only drawn between the predefined recruited samples, rather than comparing fears of compassion between mental disorders across samples. Despite these limitations, the results clearly indicate that the German version of the FCS exhibits satisfactory psychometric properties. Fears of compassion are closely related to mental health difficulties (Kirby et al., 2019) and symptoms of psychopathology (Gilbert et al., 2012; Gilbert et al., 2011; Kelly et al., 2013; MacBeth & Gumley, 2012; Xavier et al., 2016). These fears of compassion are also closely linked to poorer psychotherapeutic treatment outcomes (e.g., Kannan & Levitt, 2013; Marshall et al., 2008; Rector et al., 2000). Future research should test the FCS's potential to assess manifestations of psychopathology and demands for specific psychotherapeutic interventions, for example, CFT (Gilbert & Procter, 2006), across different clinical groups. Because our results indicate the BPD sample reported the strongest fears of self-compassion and fears of compassion from others, it should be further determined whether this feature is particularly pronounced in individuals with a diagnosis of BPD, who might then require more intensive treatment. In conclusion, the current study suggests that the German version of the FCS is a reliable and valid instrument for measuring fears of compassion. Furthermore, the German FCS exhibits sufficient specificity to assess mild to severe manifestations of fears of compassion and the ability to differentiate between individuals from the general population and between clinical contexts. Thus, the German FCS is a promising instrument for detecting potential obstacles to psychotherapeutic treatment progress. Finally, due to its close relations to physical and psychological health as well as life satisfaction and social relationships, the German FCS can be used as a useful measure of treatment outcomes.

2.3 Study 3: Shame, self-disgust and envy: An experimental study on negative emotional response in borderline personality disorder during the confrontation with the own face

2.3.1 Abstract

Background: A markedly negative self-image and pervasive shame proneness have consistently been associated with borderline personality disorder (BPD). The present experimental study investigated the intensity of negative emotional responses with a focus on shame in BPD compared to healthy control persons (HCs) during an experimental paradigm promoting self-awareness, self-reflection and self-evaluation. Furthermore, the relationship between levels of state shame during the experiment and shame proneness in BPD compared to HCs was examined.
Methods: A sample of 62 individuals with BPD and 47 HCs participated in the study. During the experimental paradigm participants were presented with photos of i) the own face, ii) the face of a well-known person, and iii) of an unknown person. They were asked to describe positive facets of these faces. Participants rated the intensity of negative emotions induced by the experimental task as well the pleasantness of the presented faces. Shame-proneness was assessed using the Test of the Self-Conscious Affect (TOSCA-3).
Results: Individuals with BPD experienced significantly higher levels of negative emotions than HCs both before and during the experimental task. While HC participants responded to their own face particularly with an increase in shame compared to the other-referential condition, the BPD patients responded above all with a strong increase of disgust. Furthermore, the confrontation with an unknown or well-known face resulted in a strong increase of envy in BPD compared to HC. Individuals with BPD reported higher levels of shame-proneness than HCs. Higher levels of shame-proneness were related to higher levels of state shame during the experiment across all participants.
Conclusion: Our study is the first experimental study on negative emotional responses and its relationship to shame proneness in BPD compared to HC using the own face as a cue promoting self-awareness, -reflection and -evaluation. Our data confirm a prominent role of shame when describing positive features of the own face, but they emphasize also disgust and envy as distinct emotional experience characterizing individuals with BPD when being confronted with the self.

2.3.2 Introduction

One of the core symptom domains in borderline personality disorder (BPD) are dysfunctions in emotion processing with a predominantly negative affect and impairments in emotion regulation (Bohus et al., 2021). These impairments are part of etiological models such as the biosocial model of Linehan (Crowell, Beauchaine, & Linehan, 2009). This model assumes that an interaction between a high sensitivity to emotions as an example for a genetic factor and psychosocial factors such as adverse childhood experiences underlies the pathogenesis of BPD. In line, impairments in emotion regulation form the basis for disorder-specific therapeutic approaches such as the Dialectic Behavioral Therapy (DBT; Linehan, 1987). Many conceptualizations suggest that there are emotions specifically linked to the processing of self-related information (M. Lewis, 1995; Tracy et al., 2007). These so-called self-conscious emotions comprise for example shame and guilt, but also self-contempt or self-disgust (e.g., M. Lewis, 1995; Sznycer, 2019; Tracy & Robins, 2004; Tracy et al., 2007).

Previous studies suggest that negative self-conscious emotions are particularly important in BPD (e.g., Spitzer, Jelinek, Baumann, Benecke, & Schmidt, 2021; Unoka & Vizin, 2017; Winter et al., 2017) with a special importance of shame (e.g., Rüsch et al., 2007; Scheel et al., 2014). These studies have primarily used self-report questionnaires in which individuals have to imagine their emotional responses to theoretical scenarios. Findings support a higher proneness to shame in BPD. However, studies are missing that investigate whether increased levels of shame are only part of the overall increased level of negative affect in BPD or whether they are distinctively exaggerated responses evoked by specific contextual or internal factors. In the current study, we aim to contribute to the understanding of self-conscious emotions in BPD by investigating negative emotional responses during an experimental paradigm in BPD and healthy individuals and the association to the individuals' shame proneness.
Shame is a cognitive affective construct, comprising negative judgements of the self (H. Lewis, Block, 1971; Tangney et al., 1996; Tangney et al., 2007). Alongside other emotions such as humiliation, embarrassment and guilt, shame is a self-conscious emotion as it requires self-awareness, complex self-representations, self-reflection and self-evaluation (Buss, 2001; M. Lewis, 1995; Tangney, 1999). Shame arises after one has failed to meet social or own standards and norms regarding what is appropriate and desirable (Kaufman, 2004; Nathanson, 1987). It signals an actual or likely threat to self-esteem, social status or acceptance. It has a potentially disturbing influence on the self-esteem and gives rise to feelings of worthlessness and inferiority (Ausubel, 1955; Gruenewald et al., 2007; Tangney, 1999). Shame motivates people to withdraw and isolate themselves from other people in order to either hide their inferiority, or to appease their social group by showing awareness of one's norm-violating behavior and willingness to conform to group standards (e.g., Dickerson, Gruenewald, & Kemeny, 2004; Gilbert, 1997; H. Lewis, Block, 1971; López-Castro et al., 2019). Shame-proneness is the trait-like tendency to experience shame across a range of socially relevant situations stemming from internal, global and stable attributions of negative events to the self (M. Lewis, 1995). It is distinguished from "state shame" that is a transitory affective state restricted to a moment in time (Rüsch et al., 2007). Particularly in the context of shame as a target for therapeutic interventions, increased trait or state shame has different implications for psychotherapy, that is for example, changing a general stable attitude toward oneself or changing an automatic acute shame reaction arising fast as a reflex to specific triggers.
Shame is a self-conscious emotion of trans-diagnostic relevance. Increased levels of shame have been related to various mental disorders including social phobia, major depression, substance abuse, eating disorders, body dysmorphic disorder, psychosis and posttraumatic stress disorder (López-Castro et al., 2019; Shi, Ren, Zhao, Zhang, & Chan, 2021). Studies contrasting different mental disorders suggest that both shame proneness and state shame are particularly central to the psychopathology of BPD (Buchman-Wildbaum et al., 2021; Crowe, 2004).

With regard to explicit shame proneness, individuals with BPD reported higher levels of shame compared to healthy individuals and other clinical samples such as major depression, social phobia, attention-deficit/hyperactivity disorder, and narcissistic personality disorder (Bach & Farrell, 2018; Chan et al., 2005; Ritter et al., 2014; Rüsch et al., 2007; Scheel et al., 2014; Wiklander et al., 2012). However, higher levels of implicit shame-proneness, as measured with an Implicit Association Test, compared with anxiety-proneness, could not be consistently linked to BPD (Ritter et al., 2014; Rüsch et al., 2007). These findings point to differences between explicit and implicit measures of shame proneness, that is, when individuals evaluate their tendency to

experience shame or to select a shame-led tendency to act in questionnaires (e.g., TOSCA, SHAME; Scheel, Bender, et al., 2013; Tangney, Dearing, Wagner, & Gramzow, 1989) in contrast to when shame proneness is inferred from performance data such as error rates or reaction times without the participants' awareness of their behavior.

With regard to state shame, the findings are less clear and seem to be influenced by the measurement instruments as well as contextual factors such as the cues used to trigger a shame response. Results from cross-sectional studies assessing state shame with self-report questionnaires suggest elevated levels of state shame in BPD compared to healthy individuals and individuals with social phobia or narcissistic personality disorder (Ritter et al., 2014; Rüsch et al., 2007; Unoka & Vizin, 2017). This particular relevance of state shame in BPD is supported by a previous study using experience sampling method (ESM): dynamics of high instability, interpersonal reactivity, and a prolonged return to baseline levels in guilt and shame after real live interpersonal challenges were specific to BPD compared with Bipolar Disorder (BD), Major Depressive Disorder (MDD) and healthy control individuals (HC) even after controlling for co-occurrence of current MDD or BD in the BPD group (Mneimne et al., 2018). While Gadassi et al. (2014) found an increase in shame following the experience of social proximity both in individuals with BPD and avoidant personality disorder during an ESM study, their findings revealed also simultaneously an increase of anger specifically in the BPD group. While these results on state shame in studies using self-report questionnaires and ESM revealed consistently stronger shame responses in BPD, experimental studies of state shame in BPD show mixed findings: Gratz et al. (2010) investigated emotional reactivity and recovery in outpatients with BPD (N = 17) and outpatients without a personality disorder (non-PD; N = 18) following an experimental stress induction of anxiety, irritability, hostility, and shame. They examined the effects of two laboratory stressors, contrasting a negative evaluation of the participants with the Paced Auditory Serial Addition Task (PASAT) as a non-social stressor. The PASAT is an empirically supported laboratory stressor shown to induce emotional distress in the form of anxiety, frustration, and irritability (Brown, Lejuez, Kahler, & Strong, 2002; Daughters, Lejuez, Kahler, Strong, & Brown, 2005; Lejuez, Kahler, & Brown, 2003). Individuals with BPD exhibited higher emotional reactivity and - as a result of the strength of their emotional reactions - a slower return to baseline levels of emotional arousal than non-PD. These changes were specific to shame and not seen for other emotions. Moreover, these effects were dependent on the particular stressor, inducing emotional distress only for the social but not for the non-social stressor. In contrast, Scheel, Schneid, et al. (2013) found elevated baseline levels of shame in a group of individuals with BPD (N = 25) compared with Major Depressive Disorder (MDD; N = 25) and healthy control persons (HC; N = 23). However, when asking participants to take either the perspective of a protagonist of a scenario describing a shameful job interview or of a scenario describing a person's morning routine with neutral emotional content, results revealed no differences in the intensity of shame or return to baseline of shame in the BPD group compared with the MDD and HC group. Similarly to the ESM study by Gadassi et al. (2014), Scheel et al. (2014) found instead a prolonged anger reaction after completing the shame induction exercise.

Taking together, previous studies have focused either on shame-proneness or state shame in BPD. To our knowledge, there are no studies investigating whether shame proneness is related to state shame or specific shame triggers.

In sum, studies consistently suggest a particularly high shame proneness in BPD compared with other mental disorders. In contrast to cross-sectional studies that rely on the participants' self-view measured with self-report questionnaires, the distinguishing role of shame in BPD has less consistently been found in the still small number of studies using ESM during every-day life and experimental paradigms. Since shame has increasingly become a treatment focus in BPD in recent years (Rizvi, Brown, Bohus, & Linehan, 2011), further studies are required to investigate the exact role of shame in the psychopathology of BPD.

In the current study, we aim to contribute to the understanding of shame in BPD by investigating whether individuals with BPD differ from healthy control persons in levels of state shame and its relationship to shame proneness. From our perspective, an experimental investigation of state shame requires a situation during which the participants experience a strong reference to his/her own self in contrast to the use of scenarios during which participants have to take the perspective of another individual and might thereby rely on social cognitive processes such as empathy or imagination abilities of the participants. In our study, we followed the definition of shame as a self-conscious emotion and used the confrontation with one's own face to activate self-awareness, stimulate self-reflection and self-evaluation by answering questions about the preferences for one's own face. For this purpose, we measured baseline levels of shame and the change of shame induced by the experimental paradigm. In order to control whether effects are shame specific or only one facet of the overall negative affect characterizing BPD, we additionally assessed several other negative emotions comprising basic emotions such as anger, sadness, disgust and anxiety as well as self-conscious emotions such as guilt and envy. We examined i) whether the confrontation with one's own face is associated with elevated negative emotional responses in BPD, ii) whether this effect is stronger than in healthy individuals, and iii) whether this effect is shame-specific. We hypothesized that individuals with BPD respond more intensely with negative emotions when being confronted with one's own face compared to another one's face than HCs. We expected that individuals with BPD report higher levels of shame proneness and state shame compared to HCs and that their state shame levels are especially pronounced when being confronted with one's own self. Additionally, we asked participants to evaluate the pleasantness of the faces presented during the experimental task. We hypothesized that individuals with BPD rate their own face as less pleasant compared to the faces of others and in comparison to HCs. Finally, we investigated to what extent self-reported shame proneness is associated with state shame. We expected a positive correlation of levels of shame proneness with state shame at baseline as well as with the shame response when evaluating the own face during the experimental task.

2.3.3 Methods

2.3.3.1 Participants

We recruited a sample of individuals with a BPD and sample of HCs. Participants of the BPD sample were recruited though flyers and verbal advertisement. HCs were recruited from the database of the central project of the KFO 256, a Clinical Research Unit funded by the German Research Foundation dedicated to investigating mechanisms of disturbed emotion processing in BPD (Schmahl et al., 2014), the department research website, social networks and study flyers that were distributed at universities and vocational schools. General inclusion criteria for study participation were an age of 18-25 years and female sex. Inclusion criterion for the BPD sample

was the presence of a primary diagnosis of Borderline Personality Disorder (BPD) according to DSM-IV (Bell, 1994). Exclusion criteria were the presence of a diagnosis from the schizophrenic disorder spectrum, the presence of acute manic episode or substance dependence. Exclusion criteria for the HC sample were the presence of a mental disorder or current psychotherapeutic/psychiatric treatment. 109 individuals participated in the study, with 62 being residential or outpatients from the Clinic for Psychosomatic Medicine and Psychotherapy at the Central Institute of Mental Health (CIMH), Mannheim with a primary diagnosis of BPD and 47 being healthy controls persons.

Diagnoses in the BPD samples have been established by the Structured Clinical Interview for DSM-IV Axis-I Disorders Clinician Version (SCID-I; First, Spitzer, et al., 1997; Wittchen et al., 1997) and the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II; First, Gibbon, et al., 1997; Fydrich et al., 1997). HCs were screened for the presence of a current mental disorder using the German version of the Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998). All individuals provided written informed consent before participating in the study. The study was approved by the Research Ethics Board II of the Medical Faculty Mannheim of Heidelberg University.

We characterized the samples by assessing sociodemographic features and psychopathology. We measured BPD symptom severity with the short version of the Borderline Symptom List (BSL-23; Bohus et al., 2009) and severity of syndromes of somatization, depression and anxiety with the German version of the Brief Symptom Inventory (BSI-18; Franke et al., 2017). Additionally, we measured trait self-esteem with the Rosenberg Self Esteem Scale (RSES; Rosenberg, 1965; Von Collani & Herzberg, 2003). In the BSL-23, participants evaluated the severity of BPD symptoms during the previous week in 23 items (5-point Likert scale from 0 (‘*not at all*’) to 4 (‘*very strong*’)).The BSL-23 mean score ranges from 0 to 4 with higher scores indicating a higher level of BPD symptoms. In the present study, internal consistency was α = 0.96 in the HC sample and 0.95 in the BPD sample. The total score of the BSI-18 is an indicator of general psychological distress (Global Severity Index, GSI) ranging from 0 to 72. Additionally, subscales of somatization, depression and anxiety are assessed with six items rated on a 5-point Likert Scale ranging from 0 (‘*not at all*’) to 4 (‘*extremely*’). In the present study, internal consistencies were heterogeneous ranging from low to acceptable for the different subscales (α = .73 for Somatization, α = .55 for Depression, α = .68 for Anxiety and GSI α = .87 in the HC sample and α = .81 for Somatization, α = .76 for Depression, α = .78 for Anxiety and GSI α = .91 in the BPD sample). The RSES is a self-report measure of global self-esteem, consisting of 10 items rated on a 4-point Likert Scale from 1 (‘*strongly disagree*’) to 4 (‘*strongly agree*’) that are added up to a total score. In our study, Cronbach’s α was 0.83.
To measure proneness to shame, we used the subscale ‘proneness to shame’ (TOSCA-SHAME) of the short version of the Test of Self-Conscious Affect – 3 (TOSCA-3; Kocherscheidt, Fiedler, Kronmüller, Backenstraß, & Mundt, 2002; Tangney et al., 1989). The short version comprises 11 scenarios describing negative social events (e.g. “While playing around, you throw a ball and it hits your friend in the face”). For each scenario, there are four different statements with possible reactions to the event and participants had to judge how strongly these statements would fit their own behavior on a 5-point Likert scale from 1 (‘*not likely*’) to 5 (‘*very likely*’). The statements correspond to a shame-reaction (e.g. “You would feel inadequate that you can't even throw a ball”), a guilt-reaction (e.g. “You would apologize and make sure your friend

feels better"), an externalization-reaction (e.g. "You would think maybe your friend needs more practice at catching") and a detachment-reaction (e.g. "You would think: 'It was just an accident'"). Based on these four statements, we calculated sum scores (range 11 to 55) for each of the subscales proneness to shame, proneness to guilt, externalization (of blame), and detachment/unconcern. In our study, Cronbach's α was 0.88 for the shame-proneness scale.

2.3.3.2 General procedure

The study was conducted in Germany and consisted of two parts: the completion of an online questionnaire, and the experimental paradigm. The online survey comprised questionnaires on sociodemographic data, current severity of psychopathological symptoms and shame proneness and was created using "Unipark". Participants received the link to the questionnaire the day before they participated in the experimental paradigm. The experiment was conducted in a laboratory at the Institute for Psychiatric and Psychosomatic Psychotherapy of the Central Institute of Mental Health (CIMH) in Mannheim. At the end of the study, subjects were debriefed, thanked, and they received a small fee for their participation.
Please note that we additionally measured the physiological response in ECG and blushing, but the results will not be presented in this manuscript.

2.3.3.3 Experimental paradigm and stimulus material

2.3.3.3.1 Overview

An overview of the experimental paradigm is displayed in Figure 2.3.1A. The paradigm comprised three blocks during which participants selected one of three images either of themselves (self), of a well-known other person (other well-known) or of a stranger (other unknown). See Figure 2.3.1B. Subsequently, they answered standardized questions about their decisions. At the beginning of the experiment (baseline) and following their answers in each block, participants evaluated their emotional state. Between blocks, participants solved a cognitive task to reduce carry-over effects. The order of the three blocks was counterbalanced across participants. At the end of the experiment, participants rated for each of the three portraits they liked best how pleasant or unpleasant they found the respective face.
Participants were informed that their faces would be filmed and their answers would be audiotaped during the entire experiment. Participants were seated at a table with a computer and a video camera in frontal orientation to them. The experimental task was programmed in Presentation ® (nbs.neurobs.com).

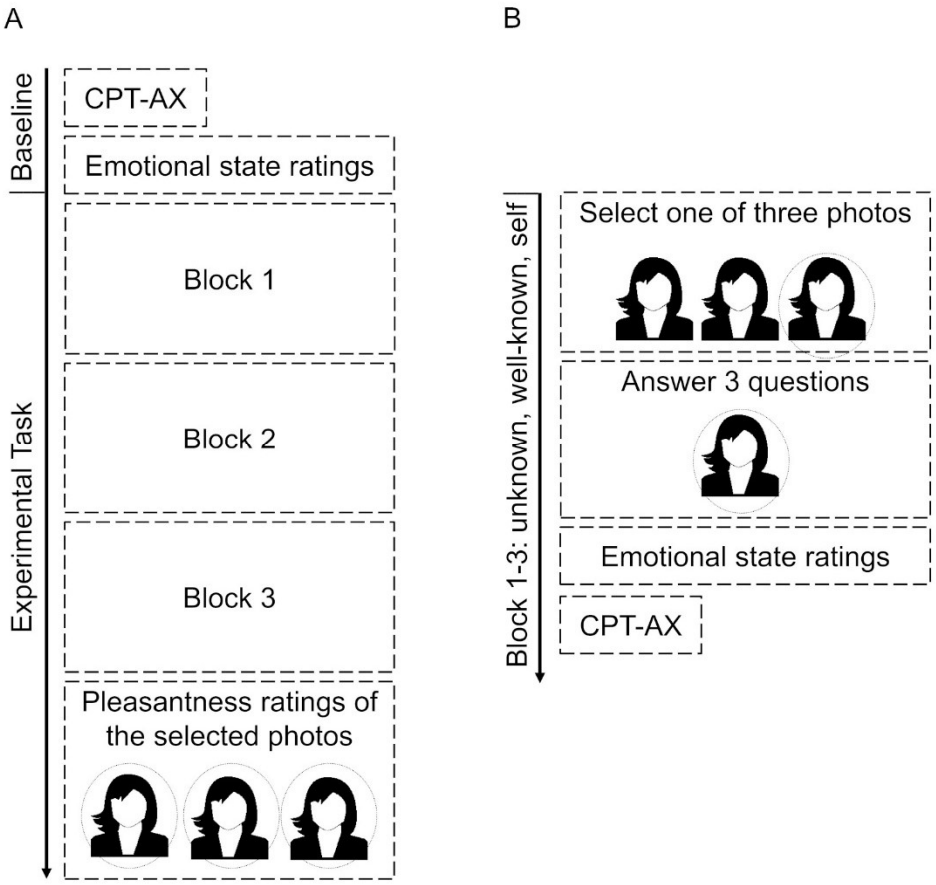

Figure 2.3.1. Schematic illustration of the experimental paradigm

Note. Schematic illustration overview of the overall sequence of the experimental paradigm (A) and the sequence within a block (B). Please note that the order of the three blocks (unknown, well-known, self) was counterbalanced across participants. CPT-AX = Continuous Performance Task-AX.

2.3.3.3.2 Stimulus material

During the experimental task, we manipulated the self-reference of the facial stimuli by presenting in the three blocks either a photo of the participant herself (self), a well-known (other-well-known) or an unknown (other-unknown) person. The photos of the participants were taken before the start of the experiment, i.e., three standardized frontal portrait photos (upright) of the participants were taken in a simulated photo studio with standardized lighting. As stimuli in the other-well-known condition three photos of Emma Watson as a well-known person, were used. We selected Emma Watson for the other-well-known condition based on a previously conducted survey to ensure that the person is known to all persons with the highest possible probability and has a comparable age to the participants. As stimulus in the other-unknown condition three photos of an unknown female person were used to control effects of familiarity (e.g., Dubois et al., 1999; Ramon & Gobbini, 2018). These photos were taken under the same situational conditions as the photos of the participants.

2.3.3.3.3 Experimental task blocks

Each block of the experimental task comprised four parts.

Part A. At the beginning of each block, participants were presented - depending on the experimental condition - with either the three previously taken photos of their own face, three photos of Emma Watson, or three photos of an unknown person presented on a computer screen in front of the participants. Participants were instructed to select one of these three photos according to their best liking (instruction: "You will now see the three photos of (yourself/a person you are well-known with/an unknown person). Take some time and decide which of these three photos you like best."). Participants signaled their decision by moving a cursor with the computer mouse to one of the facial stimuli and pressing a mouse button.

Part B. Following the selection of an image and a break of 60 seconds, the selected face was shown on the computer screen and participants had to answer different questions about the reasons for their decision (questions: "I will now ask you some questions about the photo. Please speak your answer loud and clear into the camera: Why did you choose this photo as the most beautiful? Which aspect of the face do you like best? Why do you like this particular aspect best?"). For each question, participants had 90 seconds to respond. They signaled the end of their answer by pressing a button. During the questions and the participants' answers, the chosen photo remained on the screen. Instructions and questions were delivered by a prerecorded audio file via headphones. The audio instruction was chosen to prevent experiential avoidance of viewing the presented faces, to reduce possible interferences between presentations of the visual stimuli and to create the feeling of a social context situation.
Part C. After answering the different questions the presentation of the facial stimulus was finished and participants rated how intensely they were experiencing different emotions. Additionally to shame, participants assessed the intensity of the self-conscious emotions guilt and envy as well as the basic emotions anger, disgust, sadness, and anxiety to differentiate whether the experimental manipulation affected specifically the experience of shame or negative affect in general. Negative emotions were presented intermixed with positive emotions used as distractors in order to reduce the priming of a negative evaluation bias (pride, interest, joy, satisfaction). All emotions were rated on a visual analogue scale (ranging from 0 (not at all) to 100 (very much)) presented on the computer screen by moving a cursor with a computer mouse on the scale and confirming their rating by pressing a mouse button. Please note that the same visual analogue scale was used for the ratings of pleasantness of the presented faces at the end of the experiment.

Part D. Each block was terminated by a cognitive task (65 trials, duration 2.5 minutes) to reduce carry over effects. We chose a cognitive continuous performance task during which the participants had to press a particular button when the target letter X was presented and preceded by the letter A (J. D. Cohen, Barch, Carter, & Servan-Schreiber, 1999).

2.3.3.4 Statistical Analysis

We compared the two groups with independent t-tests for age and questionnaire data and with the Cochrane-Armitage test for education. As dependent variables in the experimental task, we analyzed a) mean intensity ratings of the emotional state averaged for each participant across the negative emotion categories and b) intensity ratings of the single negative emotion categories. We compared the mean intensity ratings between groups during baseline with an independent t-test and during the experimental task with a 2 × 3 mixed ANOVA design with 'group' as between subject factor (BPD, HC) and 'reference' as within subject factor (unknown, well-known, self).

Assumptions of normality, sphericity (Kolmogorov–Smirnov tests, visual inspection of graphic plots, Mauchly's) and equality of variances (Levene's test) were checked. Kolmogorov–Smirnov test indicated a violation of the normal distribution assumption of the residuals. However, as the visual inspection of the graphic plots indicated an approximate assumption of normal distribution, parametric tests for these analyses were conducted. To analyze the importance of shame as a distinct emotion category, we extended the analyses with 'emotion category' as an additional within-subject factor. Since the intensity ratings for each emotion category are ordinal data, we used a rank-aligned nonparametric ANOVA for analyses (Wobbrock, Findlater, Gergle, & Higgins, 2011). For baseline ratings, we applied a 2 × 7 mixed ANOVA with the between-subject factor 'group' (HC, BPD) and the within subject factor 'emotion category' (shame, guilt, envy, anger, disgust, sadness, anxiety). To reduce the complexity of the design for the experimental task, we combined the two other-referential conditions (unknown, well-known) by averaging both conditions resulting in a 2 × 2 × 7 mixed ANOVA with the factors 'group', 'reference' (other, self) and 'emotion category'. Please note that we used baseline-corrected rating scores in the analysis of the experimental task to control for difference in intensity ratings between groups that existed independently of the experimental task already during baseline ratings. Finally, we analyzed pleasantness ratings of the facial stimulus presented in the unknown, well-known and self-referential condition during the experimental task by means of a 2 × 3 rank-aligned nonparametric mixed ANOVA. We corrected degrees of freedom according to Greenhouse–Geisser. As post-hoc analyses we conducted Mann-Whitney U Test and nonparametric ANOVA sub-designs, respectively. To control for multiple testing we applied a Bonferroni correction for the families of pairwise comparisons. Significance levels corrected for multiple testing are marked as $p_{Bonferroni}$. We report effect sizes according to the applied statistical approach
Correlational analyses of shame-proneness with state shame at baseline and experimentally induced state shame were conducted using Spearman's correlation coefficient. Significance level for all analyses was $\alpha = .05$, two-tailed. Data analysis was conducted with IBM SPSS Statistics Version 23 and matlab R2022a.

2.3.4 Results

2.3.4.1 Sample description

The BPD and HC groups were balanced for age ($t = 1.60$, $p = .113$) and education ($X^2 = 1.51$, $p = .680$). Mean age of the BPD sample was 20.84 ± 2.09 years (range 18-25 years) and 21.49 ± 2.13 years (range 18-25 years) in the HC sample. The BPD group reported higher levels of BPD symptoms (BSL-23) a higher general psychological distress (BSI-18) and a lower self-esteem compared to HCs (all $ps < .05$). Further details are depicted in Table 2.3.1.

Table 2.3.1

Sample characteristics

	BPD (N = 62)	HC (*N* = 47)	*Test statistic*	*p*
Demographics				
Age[a]	20.84 (2.09)	21.49 (2.13)	1.60	.113
Education, *n* (%)[b]			1.51	.680
Low (Primary school, lower vocational education)	7 (11.3)	3 (6.4)		
Intermediate (Secondary school, vocational education)	29 (46.8)	24 (51.1)		
High (Higher vocational education, university)	25 (40.3)	18 (38.3)		
University Degree	1 (1.6)	2 (4.3)		
Current comorbidities, *n* (%)				
Affective disorder	49 (79.0)	0		
Anxiety disorder	17 (27.4)	0		
Posttraumatic stress disorder	21 (33.9)	0		
Substance abuse	5 (4.8)	0		
Eating disorder	14 (22.6)	0		
Obsessive compulsive disorder	2 (3.2)	0		
Other disorder	8 (12.9)	0		
Current treatment, *n* (%)	62 (100)	0		
Residential patients	43 (69.4)	0		
Outpatient	19 (30.6)	0		
Psychopharmacological treatment n (%)	57 (91.9)	0		
Clinical characteristics				
BSL-23[a]	2.3 (0.9)	0.2 (0.5)	14.5	< .001
BSI-18 Global severity[a]	56.8 (15.1)	24.2 (7.1)	13.6	< .001
Somatization[a]	19.1 (5.6)	7.9 (2.6)	12.7	< .001
Depression[a]	17.3 (5.5)	7.7 (2.4)	11.2	< .001
Anxiety[a]	20.4 (5.1)	8.6 (2.7)	14.3	< .001
Rosenberg Self-Esteem Scale[a]	17.5 (5.3)	34.2 (4.7)	17.1	< .001
TOSCA-3				
Shame[a]	44.1 (6.2)	29.0 (7.4)	11.5	< .001
Guilt[a]	47.7 (6.8)	45.6 (4.5)	1.9	.060
Externalization of blame[a]	21.2 (5.6)	22.0 (5.7)	-0.7	.469
Detachment/Unconcern[a]	22.7 (6.6)	30.6 (5.2)	-6.8	< .001

Note. BPD = Borderline Personality Disorder; HC = Healthy Control; BSL= Borderline Symptom List; BSI-18 = Brief Symptom Inventory-18; TOSCA-3 = Test of Self-Conscious Affect Scale -3.

[a]T-test

[b]Cochrane Armitage test

2.3.4.2 Self-reported proneness to shame

Individuals with BPD reported a higher proneness to shame in the TOSCA-subscale (TOSCA-SHAME) compared to HCs (t = 11.51, p < .001, d = 2.24). Please note that

the individuals with BPD reported also a lower score in the TOSCA subscale ‘detachment and unconcern’ compared with HCs (t = 6.76, p < .001, d = -1.31), but did not differ significantly from HCs in the TOSCA subscales ‘proneness to guilt’ and ‘externalization of blame’ (*ps* >.05).

2.3.4.3 Experimental task

2.3.4.3.1 Baseline

At baseline, individuals with BPD experienced higher intensity of negative emotions compared with HCs (t = 6.52, p < .001, d = 1.14, Figure 2.3.2A).
Analyses of the different emotion categories between groups in a 2 × 7 rank-aligned non-parametric ANOVA revealed that differences in intensities between groups varied between the emotion categories (interaction effect ‘group * emotion’: $F(6, 620) = 14.83$, p < .001 *Cohen’s f* = 0.33; Figure 2.3.2B). Post hoc comparisons between groups revealed higher intensities for shame, guilt, anxiety, sadness and anger in the BPD compared to the HC group (all $p_{Bonferroni}$*s* < .05). In contrast, both groups did not differ significantly on baseline levels of envy (p = .163) and only at a trend level on baseline levels of disgust ($p_{Bonferroni}$*s* <.10). For further details, see Table S2.3.1.

2.3.4.3.2 Changes of the emotional state during task solving

Individuals with BPD reported higher levels in the intensity of negative emotions during the experimental task in relation to the baseline than the HC group across all experimental conditions as indicated by the higher baseline-corrected rating scores (main effect ‘group’ $F(1, 107) = 39.65$, p < .001; *Cohen’s f* = 0.62, Figure 2.3.3A). This difference between groups was influenced by the experimental condition (interaction ‘group * condition’ $F(2,214) = 9.05$, p < .001; *Cohen’s f* = 0.30). In post-hoc analyses, we compared pairs of the three experimental conditions in ANOVA sub-designs. These analyses revealed differences between groups particularly for the comparison of the self-referential condition with both other-referential conditions: Negative emotions were more intense in the BPD group than in the HC group when the own face was presented compared to both an unknown and a well-known face (interaction effects ‘group * condition’ in sub-design ‘unknown/self’ $F(1, 107) = 8.47$, p = .004, $p_{Bonferroni}$ = .012, *Cohen’s f* = 0.28; ‘well-known/self’: $F(1, 107) = 16.65$, p < .001, $p_{Bonferroni}$ < .001, *Cohen’s f* = 0.40; ‘unknown/well-known’: $F(1, 107) = 0.59$, p = .446, $p_{Bonferroni}$ = 1.00, *Cohen’s f* = 0.07).

To analyze whether shame plays a central role when particularly one's own face in comparison to another face is presented, we compared the self- and other-referential task condition depending on the emotion categories between groups. Since there were no differences between ratings for unknown and well-known faces, we combined these two experimental conditions to one ‘other-referential’ condition (for further details see supplementary material, Figure S2.3.1).
Results of the 2 × 2 × 7 nonparametric rank-aligned ANOVA revealed that the emotion rated and the face evaluated influenced differences between groups (interaction effect ‘group * reference * emotion’: $F(6, 642) = 52.75$, p < .001, *Cohen’s f* = 0.70; Table S2.3.2). In post-hoc analyses, we compared the groups in ANOVA sub-designs separately for the different emotion categories (Table 2.3.2, Figure 2.3.3B). These analyses revealed that individuals with BPD reported stronger differences between the other-referential and self-referential condition for all emotions compared to HC (all interaction effects p < .05). Effect sizes were large for disgust (*Cohen’s f* = 0.84) and

envy (*Cohen's f* = 0.75), small for anxiety (*Cohen's f* = 0.29) and medium for the other emotions (*Cohen's f* = 0.30 to *Cohen's f* = 0.75). BPD patients reported more intense negative emotions in the self-referential condition compared with the other-referential condition than HC, except for envy for which the level was higher in the other-referential condition compared to the self-referential condition. In consequence, BPD patients reported higher levels of shame, guilt, disgust and sadness than HC when confronted with the own face, as well as a higher level of envy when confronted with another one's face. Please note that the interpretability of the main effects group and reference is restricted for most emotions by the higher-order interaction effect (for further details see supplementary material 3A, Table S2.3.3 and Table S2.3.4).

Table 2.3.2

Results of 2 x 2 rank-aligned ANOVA sub-designs for the different negative emotion categories

	Main effect group			Main effect reference			Interaction effect group x reference		
	F(1,107)	*p*	Cohen's *f*	*F*(1,107)	*p*	Cohen's *f*	*F*(1,107)	*p*	Cohen's *f*
Shame	22.92	**< .001**	0.46	92.15	**< .001**	0.93	10.70	**.001**	0.32
Guilt	27.63	**< .001**	0.51	32.04	**< .001**	0.55	26.48	**< .001**	0.50
Envy	59.61	**< .001**	0.75	115.83	**< .001**	1.04	60.05	**< .001**	0.75
Anger	2.91	.091	0.16	27.13	**< .001**	0.50	9.68	**.002**	0.30
Disgust	72.42	**< .001**	0.82	117.93	**< .001**	1.05	75.78	**< .001**	0.84
Sadness	17.75	**< .001**	0.41	41.27	**< .001**	0.62	16.31	**< .001**	0.39
Anxiety	1.63	.205	0.12	22.35	**< .001**	0.46	9.22	**.003**	0.29

Note. Significance levels below the Bonferroni corrected threshold of $p < .007$ for $\alpha = 5\%$ are marked in bold

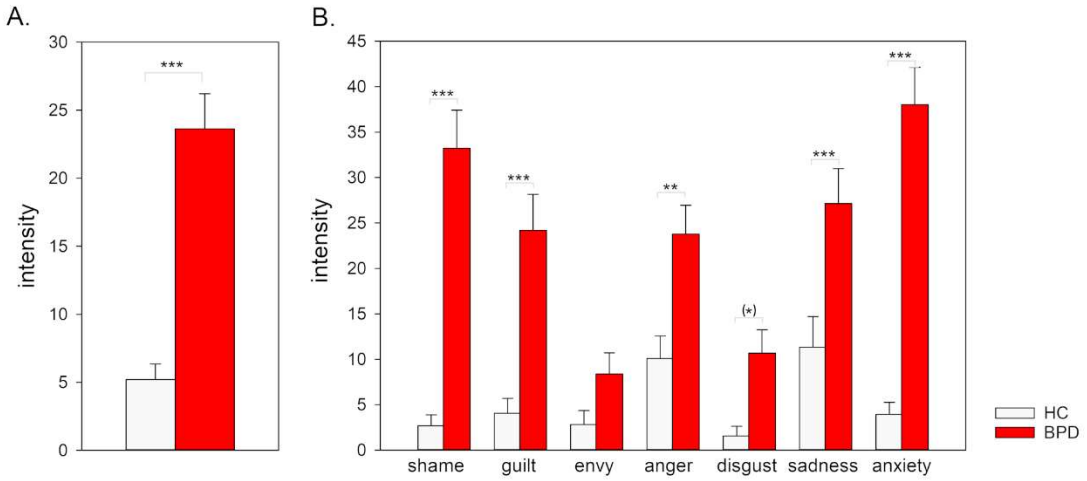

Figure 2.3.2. Ratings of the intensity of negative emotions for BPD and HC at baseline

Note. Mean and standard error of ratings for negative emotions at baseline. (A) Mean intensity rating averaged across the different negative emotions. (B) Intensity ratings for the different negative emotions.

$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$ (Bonferroni-corrected)

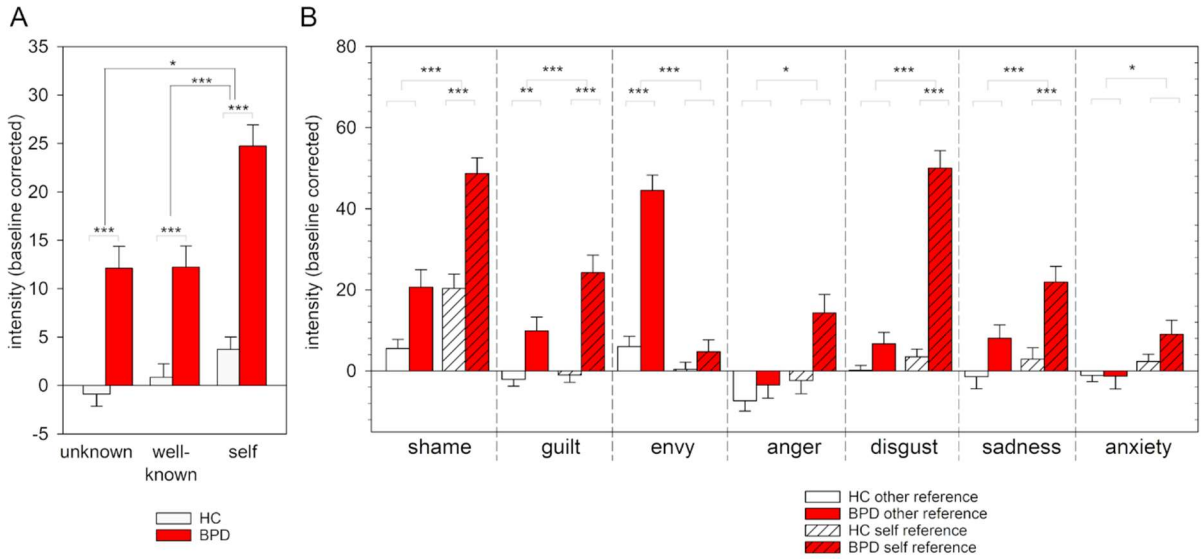

Figure 2.3.3. Ratings of the intensity of negative emotions for BPD and HC during the experimental task

Note. (A) Mean and standard error for baseline-corrected intensity ratings averaged across the different negative emotions in the three experimental task conditions unknown, well-known and self. (B) Mean and standard error for baseline-corrected intensity ratings for the different negative emotion categories in the other- and self-referential condition. Ratings of the unknown and well-known condition were combined in the other-referential condition.

Scores > 0 indicate an increase in the intensity ratings during the experimental task compared to baseline.

$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$ (Bonferroni-corrected)

2.3.4.4 Pleasantness of the faces

Results of the nonparametric 2 × 3 rank aligned ANOVA revealed that individuals with BPD differed from HCs in judging the pleasantness of the presented faces in dependence of the presented faces (interaction 'group x condition': $F(2, 238) = 42.52$, $p < .001$; *Cohen's f* =0.56). Post-hoc tests revealed that both groups differed only in ratings of pleasantness when judging the own face ($Z = -7.10$, $p_{Bonferroni} < .001$, $r = -0.68$): BPD patients rated their own faces markedly as less pleasant than the HC group. In contrast, both groups did not differ in judgments of pleasantness for unknown and well-known faces (for well-known faces: $Z = -1.23$ $p_{Bonferroni} = 0.220$, $r = -0.12$; for unknown faces: $Z = -1.58$, $p_{Bonferroni} < .114$, $r = -0.15$). Results are depicted in Figure 2.3.4.

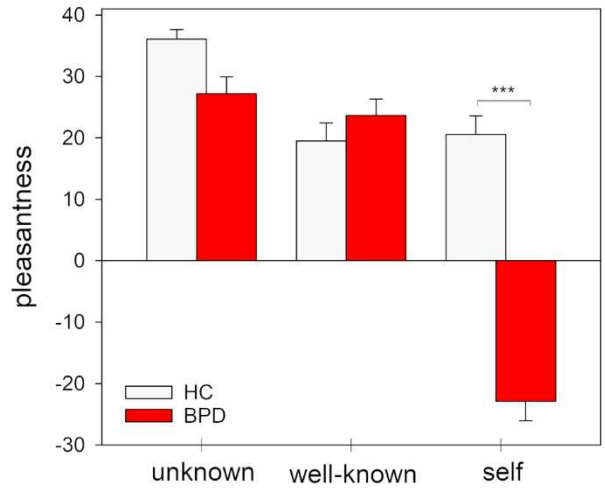

Figure 2.3.4. Pleasantness ratings of the images of the facial stimuli presented during the unknown, well-known and self-referential condition of the experimental task

Note. mean and standard error for pleasantness ratings

*** $p < .001$ (Bonferroni-corrected)

2.3.4.5 Relationship between state shame and shame proneness

Correlational analyses across all participants revealed that participants with higher shame proneness as assessed with TOSCA-SHAME showed higher levels of baseline shame before the experimental task ($r = .43$, $p < .001$), higher levels of state shame ratings during the confrontation with their own face ($r = .35$, $p < .001$) as well as a higher level of shame in the self-referential compared to the other-referential experimental condition ($r = .23$, $p < .017$). However, when analyzing these correlations separately for both groups, there were no significant correlations between these trait and state measures neither in the HC nor in the BPD group (all $rs \leq \pm.04$, all $ps \geq .763$). See supplementary material, Figure S2.3.2.

2.3.5 Discussion

In the present study, we investigated negative emotional responses with a specific focus on shame in individuals with BPD compared to HCs during the experimental confrontation with one's own face. In addition, we examined whether shame proneness is related to levels of state shame. Our findings revealed higher levels of negative

emotions except for disgust and envy in BPD compared to HCs at baseline. During the experimental paradigm, individuals with BPD reported higher levels of negative emotions than HCs, with differences between the two groups being largest for the own-face in comparison to the unknown or the well-known face condition. However, different emotions were differentially affected by the self in comparison to the other referential evaluations: Compared to HCs, individuals with BPD reported higher scores particularly for disgust when seeing one's own picture which is in line with their negative self-image. Moreover, seeing others or celebrities triggered a high degree of envy in BPD patients when compared to HCs which might similarly reflect the patients' negative self-concept triggered in social comparison situations. Moreover, confrontation with one's own face resulted in higher levels of various negative emotions including shame, guilt and sadness although with smaller effect sizes as those observed for disgust. In addition, individuals with BPD rated their own face as more unpleasant than an unknown or well-known face compared with HCs. While the BPD group showed a higher shame proneness than the HC group, a correlation of higher shame proneness as assessed with TOSCA-SHAME was related to higher levels of state shame at baseline and during the experimental task across all participants, but not within the single groups.

With regard to state shame assessed as baseline of the experimental task, our findings are in line with previous studies suggesting elevated levels of negative affect in individuals with BPD compared to HCs. Several studies have already shown alterations in the processing of negative self-conscious emotions such as shame, self-disgust or self-contempt central to BPD psychopathology (Spitzer et al., 2021; Unoka & Vizin, 2017; Winter et al., 2017). However, in contrast to our study, most of these previous studies have assessed rather proneness to a specific emotion than state emotional responses and have used scenario-based questionnaires in which the respondents take the perspective of a protagonist without any direct self-reference.
Regarding emotional state ratings during the experimental task, our findings suggest differences in emotional reactivity in BPD compared to HCs depending on the experimental condition and varying between negative emotions. This is in contrast to the results of Scheel, Schneid, et al. (2013) who did not find any group differences between specific emotional states after experimental shame induction. A more detailed analysis of our results showed that this effect resulted particularly strong from differences between groups in disgust and envy: BPD patients reported higher levels of disgust when confronted with their own face, as well as higher levels of envy when confronted with the face of an unknown or well-known other individual compared with HC. Furthermore, with regard to the specificity of single emotions, our results are in accordance with those of Gratz et al. (2010), suggesting that differences between negative emotional responses in BPD compared to healthy individuals depend on contextual cues and specific triggers, in our study being confronted with the own face in contrast to the face of another person, and vary between different negative emotions. In contrast to the study by Gratz et al. (2010), our results suggest that when controlling for the emotional experience in an other-referential condition of the specific emotions, not shame but disgust is particularly elevated compared to all other negative emotions. However, higher levels of negative emotions triggered by the confrontation with one's own face were also observed for shame, guilt, anger, sadness and anxiety in BPD. This finding might indicate a more complex emotional response in the sense of activating emotional networks instead of individual emotions in BPD. The finding of elevated state levels of disgust in BPD is in line with the current state of research: Previous studies have shown an increased tendency to disgust proneness (Ille et al.,

2014; Rüsch et al., 2007; Schienle et al., 2013; Schienle et al., 2003) and state disgust in BPD (Schienle et al., 2013). Especially, higher levels of self-disgust have shown to be related to more pronounced severity of BPD psychopathology (Schienle et al., 2015). Furthermore, previous findings suggest that self-disgust is related to Non-Suicidal-Self-Injuries (NSSI) in BPD and beyond (Ille et al., 2014). Since self-disgust is often considered a facet of self-criticism, our results also fit against the background of increased self-criticism in BPD compared to a general population sample as well as other clinical samples (Biermann et al., 2021).

In addition, recent emotion theories assume both maladaptive and adaptive facets of shame: They emphasize that shame can also serve socially regulatory and protective functions important for the development and maintenance of interpersonal relationships (Dost & Yagmurlu, 2008; Scheel, Eisenbarth, & Rentzsch, 2020). In consequence, one might consider the extent to which automatic, fast and pre-attentive development of disgust might represent a maladaptive shame response in BPD that leads to self-damaging behavior (Abdul-Hamid, Denman, & Dudas, 2014; Ille et al., 2014; Schienle et al., 2015) rather than socially adaptive action tendencies (e.g. appeasing a social group). This is in line with previous research suggesting a reduced capability to control disgust responses in individuals with BPD compared to healthy controls (Schienle et al., 2013). Although the confrontation with one's own face was not accompanied by exclusively higher levels of shame, our findings of elevated levels of baseline shame and state shame during the confrontation with the own face indicate a specific importance of this emotion in BPD which is in line with previous results on elevated shame proneness (Rüsch et al., 2007; Scheel et al., 2020) and state shame (Gadassi et al., 2014; Gratz et al., 2010; Mneimne et al., 2018). In the context of shame as self-conscious emotions, it is also assumed that these emotions do not only arise from self-referential processes including self-awareness, self-reflection and self-evaluation but also affect socio-cognitive processes in social interactions (Winter et al., 2017): Shame has been linked to increased self-awareness and tendencies to avoid social interactions (Leith & Baumeister, 1998; Tangney, 1992, 1994), whereas for example the self-conscious emotion of guilt is assumed to increase empathy and cooperative behaviors, decreases self-focused attention while directing attention towards social interaction partners (Baumeister et al., 1994; Leith & Baumeister, 1998; Tangney, 1994). In case of BPD, our findings revealed both higher levels of shame and guilt. Based on the assumption that both emotions are associated to different behaviors, one might speculate whether our findings point to the participants' problems in differentiating both emotions or a mechanism contributing through conflicting behavioral consequences to the affective and social instability characterizing BPD.

When interpreting our results in the context of previous research, it seems also important to discuss the influence of different experimental shame inductions on emotional responses: Previous studies have used social context as a trigger for shame (e.g. negative feedback in the study of Gratz et al. (2010) or a failed job interview in the study of Scheel, Schneid, et al. (2013)). In contrast, we used the exposure to the own face without an explicitly given social context shifting the emphasis from violation of social norms in the view of others to violation of one's own norm. However, the fact that the participants did not only look at their own face, but also described the merits of it and justified their decision in our study, apparently led to higher levels of both disgust and shame.

Interestingly, in our study individuals with BPD reported significantly higher intensity of envy when being confronted with another face in contrast to the own face compared to HCs. To our knowledge there is no previous study focusing on the specific emotion of envy in BPD patients. Given the high importance of this emotion in social

comparisons (Lange & Crusius, 2015), future studies are needed to clarify to what extent the BPD criteria of instability in self-image and relationships are associated with elevated levels of envy.
Furthermore, our results reveal that individuals with BPD evaluated particularly their own face as less pleasant compared to other referential faces than HCs. This is in line with previous studies suggesting that BPD is characterized by negative self-evaluations including a negative self-concept with low levels of self-esteem, a tendency to avoid self-awareness cues and higher levels of negative self-conscious emotions (Winter et al., 2017; Winter, Koplin, & Lis, 2015).

To our knowledge, this study was the first to investigate the relationship between shame proneness and negative emotional state responses with a focus on shame. Although our findings suggest a positive correlation between shame proneness and levels of state shame during the confrontation with one's own face across all participants, this correlation could not be found in the two individual samples. Although it can be debated to what extent the relation seen across all participants might simply reflect the group difference in the investigated variables, we used this approach to examine the relationship between shame proneness and state shame across a broader range of evaluations. Nevertheless, further studies with larger sample sizes for both the BPD and HC group with a higher variability of ratings within each group are needed to further investigate the interplay between trait and state measures. However, an alternative explanation for the lack in the association between trait and state measures might be that both differed in their relation to the self as well as in the presence of a social context: The TOSCA SHAME captures shame proneness on the basis of predetermined social scenarios in which the respondent has to put himself into the protagonist's perspective. In contrast, our study emphasized the relation to the self through the confrontation with one's own face without the need to 'step in another one's shoes. Thus, both approaches can be assumed to capture different processes. This interpretation is supported by exploratory analyses of the associations between our shame measures and the severity of BPD psychopathology: When exploring these relationships, we found that a higher BSL-23 score was related to a higher shame proneness in both groups (HC: r_s = .49, p < .001; BPD: r_s = .53, p < .001), but not to the shame ratings of the experimental task (all ps > .200). Moreover, our paradigm did not involve a direct social interaction. However, one might speculate whether answering questions about the merits of one's own face with the awareness of being video- and audio -taped constitutes an "indirect" social situation. Whether a stronger shame response would be evoked in the actual presence of others has to be investigated in future studies. Beyond these differences, the state shame response might depend on maladaptive automated processes such as state self-disgust thereby inducing emotions of a different quality as the measures of shame proneness. This has several implications for the psychotherapeutic treatment of impairments in BPD: on the one hand, it implies the change of automatically activated (maladaptive) emotional responses and action tendencies (e.g. opposite action in DBT) and on the other hand, the change of a rather persistent tendency to feel negative self-conscious emotions such as shame in a variety of situations. For example, Compassion Focused Therapy (CFT) according to Gilbert (2009) offers an approach that has already proven to be effective in reducing proneness to shame and self-criticism in other clinical samples. Since our results suggest a more complex emotional event, it would be important to take the multiple emotional changes into account rather than focusing exclusively on the attenuation of a single emotion.

The major strength of our study represents the experimental manipulation of shame as a self-referential construct in a controlled laboratory setting. Nevertheless, some limitations of our study should be kept in mind when interpreting the results: These include the restricted generalizability of our findings, since only women were included in the current study. Since there is evidence of gender differences between men and women in the experience of shame (for meta-analysis see Else-Quest, Higgins, Allison, & Morton, 2012), the findings cannot be generalized to males. Moreover, we only included women with age between 18-25 in the study. Although this restricts the generalizability of the findings to other age and gender groups, it was necessary in our study to use face photos comparable to the gender and age of all participants for a well known and unknown face while simultaneously presenting the same stimuli in the other-referential conditions across participants. Regarding baseline, it should be taken into account that the participants' photos were taken before baseline, so that anticipatory effects on the baseline measurement cannot be excluded. However, in contrast to previous studies that specifically evoked anticipatory effects (Kirschbaum, Pirke, & Hellhammer, 2010), there was no corresponding instruction in our study. Since we reported emotion ratings during the experimental task corrected for baseline, anticipatory effects on the emotional state at baseline might have reduced the response during the experimental conditions. Another limitation concerns the attractiveness of the known (Emma Watson) and unknown person for whom the study did not control. It is possible that the participants rated both persons as significantly more attractive than themselves, which particularly intensified the difference to their own face. However, previous findings on body self-evaluations in BPD suggest that the face is rated least negatively in individuals with BPD compared to other parts of the body (Kleindienst et al., 2014). This implies that the difference to other people should be the smallest for this area of the body. Nevertheless, further investigations are needed that capture state self-disgust and shame in BPD without reference to the own appearance. In addition, we focused on the investigation of negative self-conscious emotions whereas positive self-conscious emotions such as pride or self-satisfaction were not taken into account. Based on previous findings of a markedly negative self-image in BPD (Winter et al., 2017), it can be assumed that the confrontation with one's own face in BPD is accompanied by low levels and reduced variance in emotions with positive valence compared with HCs. Exploratory analyses of the ratings of positive emotions, which we used as distractors in the current study, support the relevance of positive emotions as one facet of changes in self-referential processing in BPD: Individuals with BPD reported not only lower intensities of positive emotions at baseline compared with HC, but showed also even lower intensities of positive emotions compared with baseline levels when confronted with the own face during the experimental task (for further details see supplementary material, Figure S2.3.3, Tables S2.3.5 and S2.3.6). Taking recent advances in positive psychology and therapeutic approaches to strengthen resilience into account, further studies are needed to investigate the relevance of self-related positive emotions and their potential for therapeutic interventions. Finally, each of the different negative emotions participants assessed in this study are highly complex regarding their communicative value, their extent of self-reference, their dependency on social comparison processes and their relevance in BPD. This implies that a composite score across the different categories has to be interpreted with care. Moreover, participants evaluated their emotional state following the confrontation with one’s own face in a specific experimental context, that is, combined with the confrontation with the face of a well-known and unknown person. This might have differentially intensified the influence of social comparison processes on the evaluation of the different emotion categories.

In conclusion, our study is the first experimental study on negative emotional response with a focus on shame and its relationship to shame proneness in BPD in comparison to HCs using the own face as a cue inducing self-awareness, self-reflection and self-evaluation as important features of self-conscious emotions. Our data confirm previous results of a markedly negative self-image in BPD and high shame proneness. In addition, our results point to the importance of disgust and envy as elevated self-conscious emotions in BPD, which should be further investigated in future research and taken into account as important target emotions in therapeutic interventions.

Supplementary Material 3A

Table S2.3.1

Between group comparisons for negative emotional states at baseline

Baseline emotion	*Z*	*p* uncorrected	*p* Bonferroni corrected	effect size *rc*
Shame	-5.85	< .001	< .001	0.65
Guilt	-3.90	< .001	< .001	0.35
Envy	-1.39	.163	1.000	0.02
Anger	-3.53	< .001	.003	0.25
Disgust	-3.19	.001	< .010	0.29
Sadness	-3.95	< .001	< .001	0.40
Anxiety	-6.16	< .001	< .001	0.63

Note. Mann-Whitney-U-Tests between individuals with BPD and HCs for negative emotions at baseline. *rc* = rank biserial correlation, $p_{\text{Bonferroni corrected}}$ corresponds to correction for seven pairwise comparisons

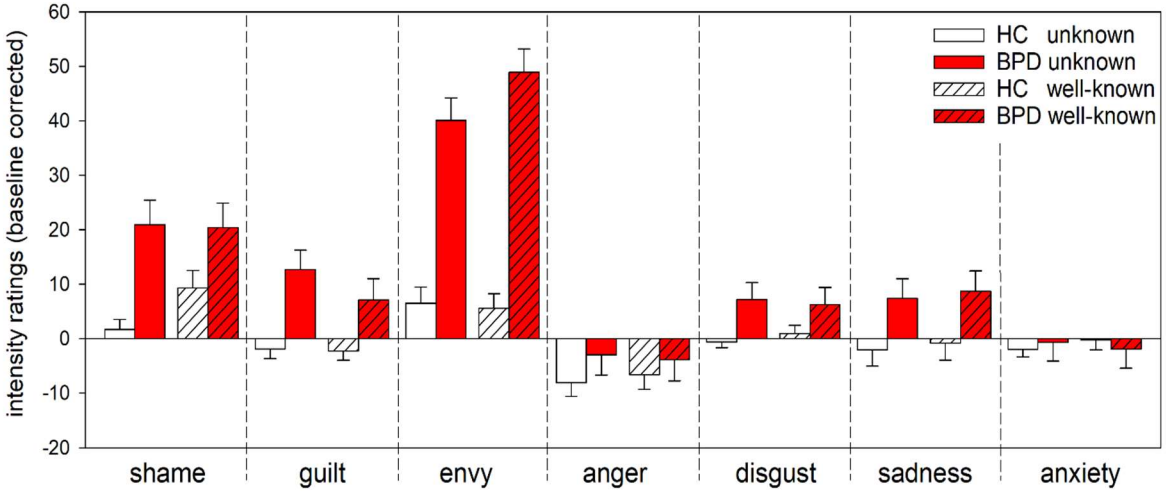

Figure S2.3.1. Ratings of negative emotions for the unknown and well-known condition of the experimental task

Note. Mean and standard error of ratings for the single negative emotion categories during the unknown and well-known condition of the experimental task. Ratings scores are corrected for baseline levels of intensity ratings of the different emotion. Scores > 0 indicate an increase in the intensity during the experimental task compared to baseline levels. Exploratory analyses of differences between both conditions revealed higher intensity ratings in the well-known condition compared with the unknown condition for shame in the HC group (MW-U test: Z = -3.31, $p_{\text{uncorrected}}$ < .001, $p_{\text{Bonfcorrected}}$ p = .031) and envy in the BPD group (MW-U test: Z = -2.2, $p_{\text{uncorrected}}$ = .028, $p_{\text{Bonfcorrected}}$ p =.392).

Table S2.3.2

Results of the 2 × 2 × 7 rank-aligned ANOVA

	df_1, df_2	*F*	p_{GG}	Cohen's *f*
Group	1, 107	67.88	< .001	0.80
Reference	1, 107	89.92	< .001	0.92
Group x Reference	1, 107	41.89	< .001	0.63
Emotions	6, 642	43.61	< .001	0.64
Group * Emotions	6, 642	14.87	< .001	0.37
Reference * Emotions	6, 642	89.34	< .001	0.91
Group * Reference * Emotions	6, 642	52.75	< .001	0.70

Note. p_{GG}: ps corrected according to Greenhouse-Geisser

Table S2.3.3

Post-hoc comparisons of intensity ratings in the self and other condition between the HC and BPD group

	other reference			self reference		
	Z	*p*	p_{Bonf}	*Z*	*p*	p_{Bonf}
shame	-2.63	.008	.119	-4.79	.000	< .001
guilt	-3.53	.000	.006	-4.98	.000	< .001
envy	-6.48	.000	< .001	-0.96	.337	1.000
anger	-0.36	.722	1.000	-2.41	.016	.221
disgust	-2.15	.031	.439	-6.97	.000	< .001
sadness	-2.44	.015	.206	-4.03	.000	< .001
anxiety	-0.02	.983	1.000	-2.18	.030	.415

Note. $p_{Bonf:}$ Bonferroni corrected for 14 pairwise comparisons

Table S2.3.4

Exploratory post-hoc comparisons of intensity ratings between the self and other condition in the HC and BPD group

	HC			BPD		
	Z	*p*	p_{Bonf}	*Z*	*p*	p_{Bonf}
shame	-4.25	< .001	< .001	-6.51	< .001	<.001
guilt	-.45	.654	1.000	-3.89	< .001	.001
envy	-2.84	.004	.063	-6.08	< .001	<.001
anger	-2.21	.027	.383	-4.07	< .001	<.001
disgust	-2.09	.036	.509	-6.60	< .001	<.001
sadness	-1.95	.052	.721	-3.96	< .001	.001
anxiety	-1.16	.247	1.000	-3.13	.002	.025

Note. p_{Bonf}: Bonferroni corrected for 14 pairwise comparisons

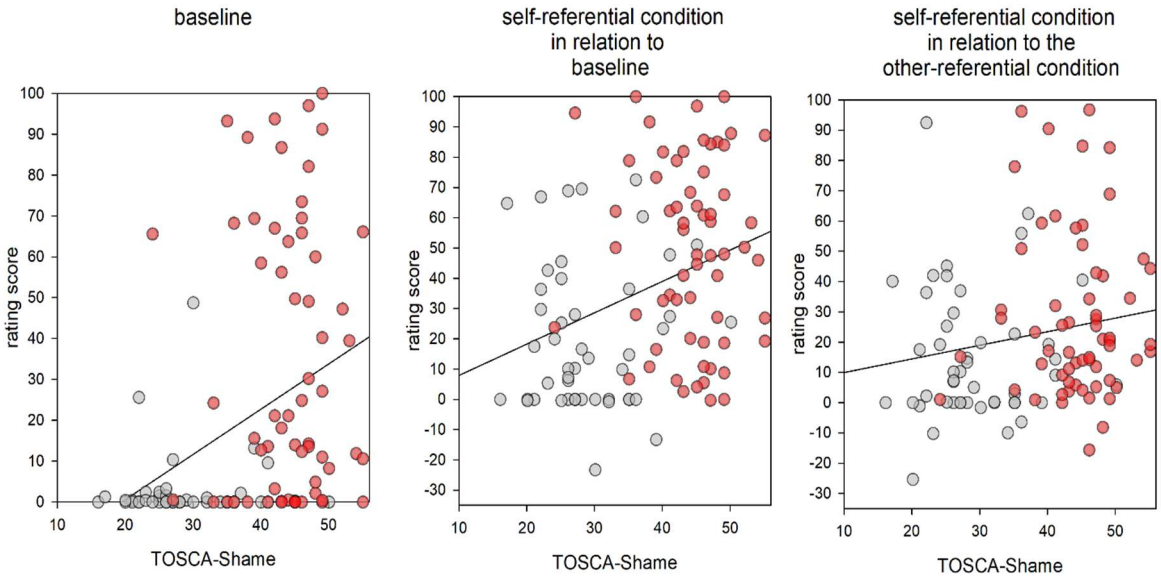

Figure S2.3.2. Scatterplots for the relationship between shame proneness and ratings of state shame

Note. TOSCA-shame: subscale of the TOSCA measuring shame proneness; rating score: ratings of shame during the experimental task at baseline (left column), following the self-referential condition in relation to baseline scores (middle column) and in relation to the other-referential condition (right column). Higher rating scores indicate a higher intensity of shame in the self-referential condition in relation to intensity ratings during the baseline and the other-referential condition, respectively. Red circles represent BPD and grey circles represent HC cases.

Supplementary Material 3B. Exploratory analyses of positive emotion states

Baseline

At baseline, BPD patients reported lower intensities for positive emotions compared with healthy controls (main effect group: $F(1,107) = 29.13$, $p < .001$, Cohen's $f = 0.52$). Differences between groups varied between the emotion categories (interaction effect 'group * emotion': $F(3,321) = 3.79$, $p = .019$, Cohen's $f = 0.19$) with the largest effect size for satisfaction (satisfaction: $r = .43$; joy: $r = .32$; pride: $r = .26$; interest: $r = .22$). See Figure S2.3.3A, Table S2.3.5.

Experimental task

BPD patients reported a lower intensity for positive emotions in the self-referential condition compared with the other referential condition than healthy control participants (interaction effect 'group * reference': $F(1,107) = 16.67$, $p < .001$, Cohen's $f = 0.40$). Differences between groups depending on the emotion categories were not confirmed statistically (interaction effect 'group * reference * emotion': $F(3,321) = 2.48$, $p = .069$, Cohen's $f = 0.15$). See Figure S2.3.3B, Table S2.3.6.

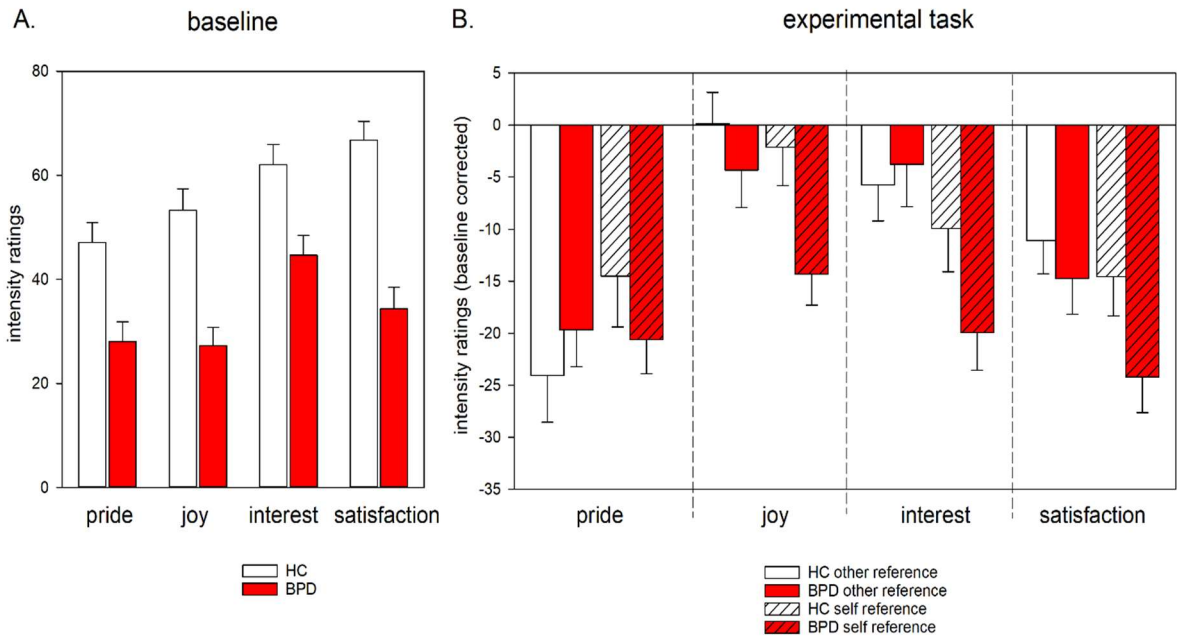

Figure S2.3.3. Ratings for positive emotions at baseline and during the experimental task

Note. Mean and standard error of ratings for the different positive emotions (A) during baseline and (B) for the other- and self-referential condition of the experimental task. Please note that rating scores during the experimental task are baseline correct with scores < 0 indicating lower intensity ratings during the experimental task compared to baseline ratings.

Table S2.3.5

Results of the 2 × 4 rank-aligned ANOVA for positive emotions at baseline

	df_1, df_2	*F*	*p*	Cohen's *f*
Group	1, 107	29.13	< .001	0.52
Emotions	3, 321	17.53	< .001	0.40
Group * Emotions	3, 321	3.79	.019	0.19

Note. ps are corrected according to Greenhouse-Geisser

Table S2.3.6

Results of the 2 × 2 × 4 rank-aligned ANOVA for positive emotions during the experimental task

	df_1, df_2	*F*	*p*	Cohen's *f*
Group	1, 107	0.75	.389	0.08
Reference	1, 107	14.40	< .001	0.37
Group * Reference	1, 107	16.67	< .001	0.40
Emotions	3, 321	9.72	< .001	0.30
Group * emotions	3, 321	1.04	.367	0.10
Reference * emotions	3, 321	11.35	< .001	0.33
Group * Reference * emotions	3, 321	2.48	.069	0.15

Note. ps are corrected according to Greenhouse-Geisser

3 GENERAL DISCUSSION

The present thesis investigated alterations in the processing of self-relevant information in Borderline Personality Disorder in three studies, focusing on self-criticism, shame and fears of compassion. In light of the severity of BPD and the health economic and personal consequences of the disorder including persistently poor psychosocial functioning for those affected (e.g., Doering, 2019; Zanarini et al., 2010, 2012), we examined processes that might contribute to a markedly negative self-image and impairments in self- and interpersonal functioning. Given previous findings of an instable but negative self-concept and low levels of self-esteem, we examined whether individuals with BPD show increased levels of self-criticism compared to other clinical and nonclinical samples. Since there were no German versions of the international most established self-report scale on self-criticism, the Forms of Self-Criticizing/-Attacking and Self-Reassuring Scale (FSCRS; Gilbert et al., 2004) and fears of compassion, the Fears of Compassion Scales (FCS; Gilbert et al., 2011), we translated both scales to German and investigated their psychometric properties. Furthermore, we examined the special relevance of self-criticism in BPD and with regard to previous findings of alterations in the processing of affiliative information such as positive feedback and social approach, we investigated whether levels of fears of compassion for oneself, towards others and from others are enhanced in individuals with BPD compared to other nonclinical and clinical samples. Against the background of previous findings of elevated negative self-conscious emotions with a special role of shame proneness and state shame in BPD compared to healthy control persons (e.g., Buchman-Wildbaum et al., 2021; Winter et al., 2017), we investigated negative emotional response with a special focus on shame in an experimental paradigm promoting self-awareness, self-reflection and self-evaluation. Additionally, we examined the link between levels of shame-proneness and experimentally induced state shame in BPD and HC. In the following section, the empirical findings presented in Chapter 2 will be discussed and integrated into previous research. While taking some limitations of the present work into account, the current results will be completed with an outlook on clinical implications including potential therapeutic interventions.

3.1 Measuring self-criticizing/-attacking and self-reassuring in individuals with BPD

With the translation of the well-established self-report questionnaire Forms of Self-Criticizing/-Attacking and Self-Reassuring Scale (FSCRS; Gilbert et al., 2004) to German we provided the basis for future studies on self-criticism and self-reassurance in German in BPD and beyond. With regard to the factor structure and psychometric properties of the German version of the FSCRS, results from confirmatory factor analysis favored a 3-factor solution of the German FSCRS in accordance with the three subscales inadequate self, hated self and reassured self of the original version of the scale. Our findings indicate that the German version of the FSCRS and its subscales had good to excellent internal consistencies. Moreover, medium to large correlations with established measures of self-criticism, self-compassion, self-esteem, satisfaction with life, symptoms of depression and anxiety, and secure attachment styles indicate good convergent validity for all three subscales. With regard to the question whether individuals with BPD show elevated levels of self-criticism, our data reveal that both clinical samples, the BPD sample and the mixed clinical sample reported higher levels of self-criticizing/-attacking and lower levels of self-reassuring tendencies compared to the two nonclinical samples. However, only the *hated self* subscale was increased in

BPD compared to the mixed clinical sample with no differences on the *inadequate* and *reassured self* subscales.
The results on factor structure and psychometrics are consistent with the original English version and previous translation and validation studies into other languages (Castilho et al., 2015; Gilbert et al., 2004; Leboeuf et al., 2020) although meta-analytic findings using non-parametric item-response theory scale analysis suggest a two factor solution with *inadequate* and *hated self* representing a single factor of self-criticism (Halamová et al., 2018). Our findings suggest that FSCRS is a suitable self-report measure to capture self-criticism and its subscales in German studies. Furthermore, the finding that the FSCRS discriminated between clinical and nonclinical samples fits with previous findings and is in line with the preliminary findings that self-criticism is a transdiagnostic construct (Cox, Fleet, & Stein, 2004; Southwick et al., 1995; Williams & Levinson, 2022; Zelkowitz & Cole, 2019; Zuroff et al., 2005). Interestingly, only the *hated self* subscale of self-criticism, which captures the desire to hurt, persecute and attack the self in the light of failure and distress, discriminated between individuals with BPD and the mixed clinical sample. Against the background of severe self-harming behaviors in BPD accompanied by NSSI and suicidality, this finding once again points to the particularly destructive self-directed processes unique to BPD (e.g., Skodol et al., 2019).

3.2 Measuring fears of compassion in individuals with BPD

With the translation of the well-established Fears of Compassion Scales (FCS; Gilbert et al., 2011) to German we contribute to future studies in fears of compassion in individuals with BPD and beyond in German speaking countries. Regarding the factor structure and psychometric properties of the German FCS and its three subscales, our data reveal that internal consistencies were excellent for the total scale and acceptable to excellent for the subscales of the FCS. Furthermore, correlations with established measures of mental health indicate good convergent validity for all three subscales. With regard to the question whether fears of compassion are elevated in BPD compared to a population-based sample and a mixed clinical sample, our data revealed enhanced levels on the two subscales fears of self-compassion and fears of compassion from others in BPD compared to the other three samples. These results suggest that the fear of showing compassion to oneself and receiving compassion from others particularly distinguish individuals with BPD from a sample of individuals with other psychiatric diagnoses. However, fears of compassion towards others was only elevated in BPD compared to the two nonclinical samples but not in comparison to the mixed clinical sample, suggesting that evaluation processes that are not directly directed at one's own self and thus possibly less threatening to one's own self, but are directed at other individuals, show comparable deviations as in other clinical populations.
Our findings on psychometric properties are in line with the original version and previous validation studies on the FCS (Asano et al., 2017; Dentale et al., 2017; Gilbert et al., 2011; Guo, Wang, Day, & Kirby, 2021) and suggest that the FCS is a promising self-report measure of fears of compassion in German-speaking populations. Furthermore, against the background of only one former study on fears of compassion in BPD, our results also highlight the importance of elevated fears of compassion in this clinical population (Ebert et al., 2018). In contrast to the study of Ebert et al. (2018), our study also focused on the comparison between levels of the three different facets of fears of compassion in BPD and other clinical populations. Our findings suggest that particularly elevated fears of self-compassion and fear of compassion from others

seem to be a specific feature of BPD compared to a mixed clinical sample. Particularly fear of compassion from others fits onto previous findings of impairments in affiliative processes such as the pervasive feeling of being socially excluded despite objective social inclusion, the disuse of positive social feedback to adjust the self-concept, altered recognition of positive social cues such as happy facial expressions, pervasive experiences of loneliness as well as hostile behaviors even in situations of social acceptance (Domes et al., 2009; Domsalla et al., 2014; Foxhall et al., 2019; King-Casas et al., 2008; Liebke et al., 2018; New et al., 2009; Renneberg et al., 2012). Interestingly, individuals with BPD did only differ in fears of compassion from others from nonclinical samples but not from the mixed clinical sample suggesting comparable alterations in affiliative feelings towards others in these two clinical samples. However, as our study is the first examination of fears of compassion in BPD compared to a sample with mixed psychiatric diagnoses and as we did not differentiate between mental disorders within this latter sample, our findings have to be interpreted with caution. Nevertheless, our result falls into the debate to what extent BPD is associated with alterations in constructs closely related to compassion such as empathy, theory of mind and mentalizing contributing to interpersonal dysfunctions (see Salgado, Pedrosa, & Bastos-Leite, 2020 for review).

3.3 Negative self-conscious emotions in individuals with BPD during the confrontation with the self

When being confronted with the own face, individuals with BPD showed above all elevated levels of shame and self-disgust and in contrast, when being exposed to the face of other persons, elevated levels of envy. At baseline BPD patients report general higher negative emotions compared to HC which might be due to study participation as a potentially non-specific stressor. In contrast, the exposition to one's own face was a specific trigger for shame but also self-disgust in individuals with BPD. These findings show that the emotional response to BPD is high and strongly dependent on the specific context. In addition, exposure to one's own face alone generates intense feelings of self-disgust and shame in BPD. Most research on self-conscious emotions in BPD has focused on shame, guilt and self-disgust (e.g., Winter et al., 2017). However, all mostly assessed the proneness to shame and self-disgust on the basis of scenario-based questionnaires. In contrast, the findings of the current study indicate an increased acute shame and self-disgust response in BPD to a specific self-referential trigger. Our finding of the own self being such a strong trigger fits with previous findings of a negative self-concept (e.g., Winter et al., 2017), self-hatred, as well as strong, destructive behavioral impulses directed against one's own self in BPD (e.g., Skodol et al., 2019). Furthermore, the finding of elevated levels of envy when being confronted with the face of other persons is particularly relevant against the light of instability in interpersonal relationships including pronounced hostility in BPD (e.g., Lis & Bohus, 2013). Interestingly, our data reveal no association between proneness to shame as assessed with the Test of the Self-Conscious Affect Scale (TOSCA; Tangney et al., 1989), a scenario based self-report measure and state shame levels neither in the BPD nor in the HC group. Although further investigation with larger samples is needed, the findings suggest that established self-report measures of proneness of shame differ from state measures on various parameters, such as the direct relation to one's own self and the social context. In addition, our findings of not only state levels of shame but also self-disgust being increased indicate that the spontaneous emotional response in BPD to the self is significantly more complex and

multifaceted than what is captured in measures that are developed to solely measure proneness to shame.

In summary, the translations and validations of the two scales on self-criticism and fears of compassion provide the conditions/prerequisite for further research in BPD and beyond in German-speaking countries. The empirical findings of this thesis point to alterations in the extent and quality of self-criticism, the experience of negative self-conscious emotions when confronted with one's own face and the face of another person, and in the experience of fear of compassion. Self-hatred seems to be a feature that distinguishes BPD from other mental disorders, as well as the tendency towards a pronounced fear of compassion for oneself and towards other people. In contrast, the desire to correct or improve certain aspects of the self rather than attacking the self and fear of compassion for others seem to be more transdiagnostic concepts. Negative self-conscious emotions are dependent on the respective (social) context, whereby one's own face is a trigger for elevated shame and self-disgust in BPD compared to healthy control persons, whereas the face of another person is primarily associated with envy.

3.4 Limitations

This thesis has, among other limitations, as mentioned in the individual studies, a few major limitations that need to be considered when interpreting the results. First, the three studies in this thesis are only cross-sectional studies that do not allow any conclusions to be drawn about causal relationships between the constructs studied. To understand the pathomechanisms underlying low social functioning, longitudinal studies with larger samples would be needed in the future. Second, although male individuals with BPD were also investigated in study 1 and 2, the majority of participants with BPD studied were female. The extent to which the findings described in the results apply to men can therefore not be automatically inferred from the data. This lack of equal distribution between the sexes is mainly due to a sampling bias, that is a larger proportion of female rather than men individuals with BPD are in inpatient and outpatient treatment settings (e.g., Sansone & Sansone, 2011). Third, participants with low education were underrepresented in all three studies, which also limits the generalizability of the findings. Forth, the majority of our patients with BPD were in residential treatment with more than 50% suffering from at least one further mental disorder. Our results might, therefore, represent a specific population of individuals with relatively high levels of psychopathology and particularly strong manifestations on the examined constructs, self-criticism, shame and fears of compassion and this should be considered when interpreting between group differences. Fifth, due to the nonrepresentative distribution of specific mental disorders represented in our patient samples in study 1 and 2, group comparisons were only drawn between the predefined recruited samples, rather than comparing fears of compassion between mental disorders across samples. Finally, the studies underlying this thesis investigated only participants older than 18 years. Against the background that BPD has been found to be just as reliable and valid in adolescence as it is in adulthood (Kaess, Brunner, & Chanen, 2014) and with regard particularly pronounced levels of self-criticism, self-hatred and shame in adolescents (Cunha & Paiva, 2012; Xavier et al., 2016), future studies are needed that focus on adolescent populations and the course of these alterations over time.

3.5 Implications for future studies

Despite these limitations, some implications for future studies can be derived. First, with regard to self-functioning in BPD, future studies could investigate whether the link between shame and BPD psychopathology is modulated by self-criticism, especially the hated self aspect which has shown to be particularly pronounced in BPD. A previous study on the link between self-criticism, shame and severity of psychopathology in a mixed clinical sample of psychiatric outpatients has found that self-criticism, especially the hatred form, mediated the relationship between levels of shame and severity of psychopathology (Castilho, Pinto-Gouveia, & Duarte, 2017). Despite the cross-sectional study design, these initial findings point to a link that could be investigated in individuals with BPD in larger, longitudinal studies. Most studies on self-conscious emotions in BPD have, like our study, focused on negative self-conscious emotions such as shame, guilt, self-disgust (Winter et al., 2017). Against the background of a markedly stable negative self-concept, it would be interesting to investigate the role of pride in BPD during social encounters and whether automated secondary emotions (e.g. shame, anger) are experienced instead. Exploratory analyses of the ratings of positive emotions (pride, joy, interest, satisfaction), which were used as distractors in the study, show that individuals with BPD reported not only lower intensities of positive emotions at baseline compared with HC, but showed also even lower intensities of positive emotions compared with baseline levels when confronted with the own face during the experimental task. With regard to interpersonal functioning and in light of our findings of an increased experience of envy in BPD when confronted with the face of another known/unknown person, further studies are needed that specifically examine the expression of envy in BPD. In view of pronounced interpersonal problems including hostility, it could be investigated to what extent individuals with BPD show an increased tendency to make social comparisons, experience increased levels of envy and how this in turn modulates hostile behavioral tendencies.

With respect to the processing of affiliative information in social contexts, there are several questions that could be addressed in future studies. First, it would be interesting to investigate the link between fears of compassion and the processing of positive self-related information such as positive feedback or social acceptance in social contexts. Possibly, the fear of compassion from others hinders the reception of this information of social approach. In this context, it could also be investigated whether fears of compassion have an influence on social-cognitive processes such as the perception of positive facial expressions, which according to a large number of studies is altered in BPD (e.g., Kleindienst et al., 2019). Furthermore, one could assume that the pervasive feeling of loneliness even in situations of social acceptance or inclusion (e.g., Liebke et al., 2018) could also be linked to higher levels of fears of compassion particularly for fear of compassion from others. In addition, although individuals with BPD did not differ in levels of fears of compassion towards others compared to the mixed clinical sample, the scores on this subscale were significantly increased compared to mixed population and healthy samples. Against the background of several studies suggesting a lack of cognitive empathy, Theory of Mind and mentalizing that are assumed to contribute to failures in the process of sustaining social cooperation, future studies could investigate to what extent fears of compassion towards others are linked to these alterations (Salgado et al., 2020). Moreover, with regard to the assumed link between early insecure attachment experiences and childhood maltreatment to fears of compassion (Gilbert, 2014)(Gilbert) and in the light of meta-analytic results

indicating that individuals with BPD are 13.91 times more likely to report childhood adversity (ACE) than nonclinical controls (Porter et al., 2020), it could also be investigated to what extent ACE mediate or moderate fears of compassion in BPD. Finally, it would be relevant to develop treatments that address even more specifically these alterations of increased self-criticism, shame and self-disgust as well as fears of compassion in BPD. This requires the investigation of the reliability of the corresponding measuring instruments for mapping changes through treatments.

Figure 3 is an illustration that places the findings of this thesis into the alternative model of personality disorders (AMPD) of section III of the DSM-5 (APA, 2022a). Previous findings on alterations in self-functioning are presented in the circles of the figures. Results of this thesis are presented in moderate grey. Against the light of former results of elevated levels of negative self-conscious emotions in BPD, the results of our study expand these results, demonstrating enhanced trait and state shame levels as well as enhanced levels of self-disgust during the confrontation with the own face and enhanced levels of envy when being confronted with the face of someone else in BPD compared to HC. Furthermore, our finding of the own face being a major cue for enhanced shame and self-disgust response as well the diminished pleasantness ratings of the own face in BPD compared to HC extend previous results of a markedly negative self-image and low levels of self-esteem. With regard to previous findings of elevated self-criticism in BPD, the results of this thesis show especially enhanced levels of the self-hatred form of self-criticism that distinguishes individuals with BPD form other clinical populations. Against the background of changes in the processing of affiliative social cues, our results indicate elevated fears of compassion in BPD compared to HC and other clinical samples, especially if oneself is the recipient of compassion. With regard to interpersonal functioning, it can be assumed that these alterations also constitutes to impairments in sustaining social cooperation and poor social integration.

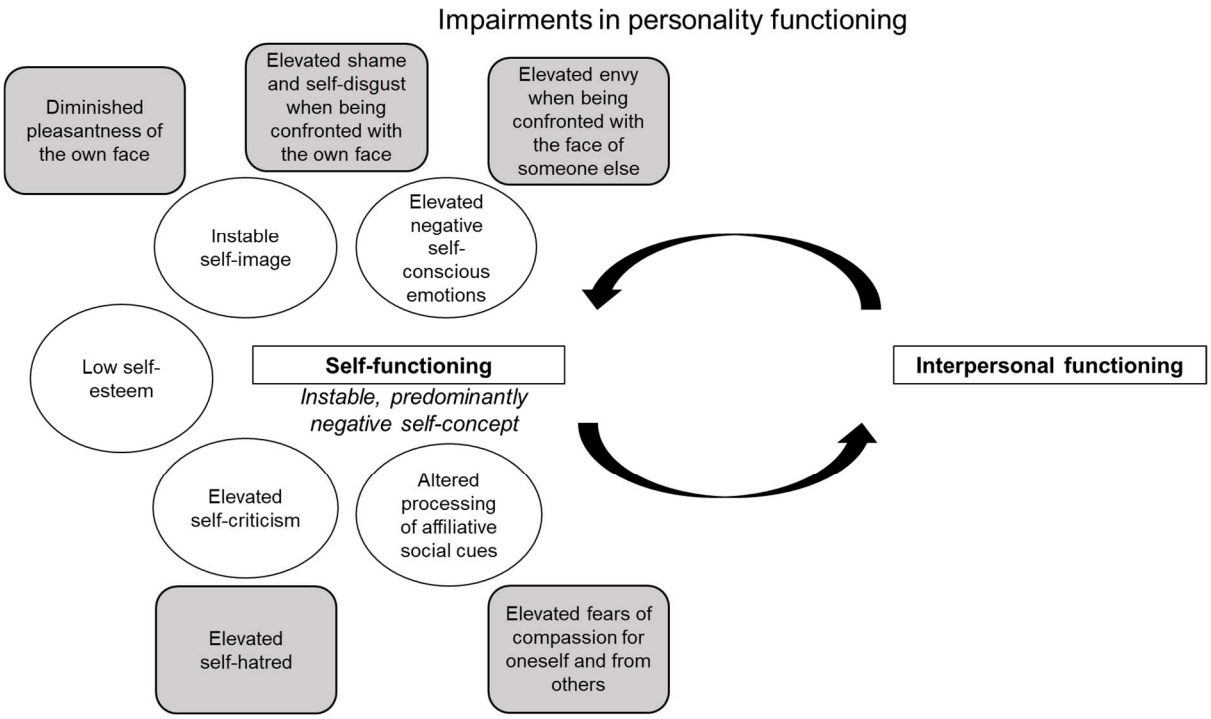

Figure 3. Proposed classification of the findings of the three studies into the diagnostic criteria according to the alternative model of personality disorders (AMPD) of the DSM-5

Note. Contextualization of the results of the three studies within the alternative model of personality disorders (AMPD) of the DSM-5 of impairments in psychosocial functioning in BPD. Findings from previous research on alterations in self-functioning is presented in circles. The results of the present thesis constituting to these findings are presented in moderate grey.

3.6 Clinical implications

In line with previous research, the studies of the current thesis emphasize the relevance of alterations in the processing self-relevant information comprising higher levels of negative self-conscious emotions as shame and self-disgust as well as envy, and increased self-criticism as well as fears of feeling compassion for oneself, towards others and receiving compassionate feelings from others for psychosocial functioning in BPD. According to the S3 guideline on the treatment of BPD (S3-Guideline; AWMF, 2022), the currently best studied methods are dialectical-behavioral therapy (DBT) according to Linehan (1987) and mentalization-based therapy (MBT) according to Bateman and Fonagy (2010). The effects achieved in the therapy studies relate to the target variables self-harming behavior (including self-injury and suicidality-associated outcome measures), inappropriate anger/anger, impulsivity, affective instability, interpersonal problems, and dissociative/psychosis-like symptoms. Despite these promising effects on these severe, most prominent symptoms, that often cause sufferers to appear in the health care system, the factors that are important for a good level of psychosocial functioning including work, school, housing, and relationships do not seem to be sufficiently addressed (Wilks et al., 2016; Zanarini et al., 2010). Previous studies have already demonstrated the close link between the self-concept and interpersonal encounters or connectedness in BPD (Bender & Skodol, 2007). In consequence, it seems to be important to focus these processes associated with the self-concept more strongly in psychotherapeutic treatments. With regard to the findings

of this thesis, this points to the need for additional tailored treatments or treatment modules that address more specifically negative self-conscious emotions especially shame and self-disgust as well has self-contempt or self-hatred and resistances to affiliative processes such as fears of compassion.

In recent years, more and more treatments and programs promoting physical and mental health have been developed that focus on strengthening affiliative, self-esteem serving processes. In this context, one approach that might be suitable to this aim is compassion focused therapy (CFT; Gilbert, 2014).

Over the past 20 years, an increasing number of studies indicate that particularly self-compassion is associated with physical and mental health and individual well-being (e.g., Di Bello et al., 2020; MacBeth & Gumley, 2012; Zessin et al., 2015). The concept of compassion is rooted in all major world religions with varying definitions and conceptualizations of compassion. According to a consensus of existing definitions, compassion comprises 5 domains: 1) Recognizing suffering; 2) Understanding the universality of human suffering; 3) Feeling empathy for the person suffering; 4) Tolerating uncomfortable feelings aroused in response to the suffering person; 5) Motivation to act/acting to alleviate suffering (Strauss et al., 2016). Previous research suggests positive relations of compassion to a variety of psychological variables: strengthening compassion was linked to for example reducing psychopathological symptoms such as depression and anxiety, but also to increasing social functioning in promoting close relationships and feelings of social connectedness as well as more globally in improving life satisfaction and well-being (for meta-analysis see Kirby, Tellegen, et al., 2017). Based on these promising findings, various compassion-based approaches have been developed and evaluated in recent years. A previous meta-analysis of the effectiveness of the six most prominent compassion approaches (e.g. Mindful Self-Compassion, Compassion Focused Therapy and Loving Kindness and Compassion Meditation) suggests benefits on (self)compassion, mindfulness, depression, anxiety, psychological distress and well-being in clinical and nonclinical samples even when including active control groups (Kirby, 2017; Kirby, Tellegen, et al., 2017).

Among these approaches, CFT by Gilbert (2014) is the empirically most supported approach and is regarded as the only psychotherapeutic treatment modality for clinical samples (Kirby, Tellegen, et al., 2017). CFT is an integrated and multimodal approach that draws from evolutionary, social, developmental and Buddhist psychology, and neuroscience (Gilbert, 2009). CFT aims to develop compassion for oneself and in exchange with the social environment. By building a compassionate attitude, CFT aims in particular at reducing shame and self-criticism. A first systematic review suggests that CFT is positively associated with improvements in mental health and the development of self-compassion even in difficult-to-treat disorders (e.g., eating or personality disorders). It seems to be particularly effective when being delivered in a group settings (Craig, Hiskey, & Spector, 2020). In contrast to Mindful Self-Compassion (MSC; Germer & Neff, 2019) as an alternative approach that focuses specifically on self-compassion, CFT is based on a more Buddhist rational conceptualizing compassion more broadly: Beyond developing compassion for oneself it integrates compassion for others, and at the same time accepting compassion from others. Its theoretical underpinning draws upon evolutionary psychology, attachment theory, and cognitive affective neurosciences and social psychology (Gilbert, 2010). CFT was originally developed on the basis of clinical observations of patients with severe mental disorders who showed little improvement in standard therapeutic procedures and experienced particularly elevated levels of self-criticism and shame (e.g., Gilbert et al., 2011; Kelly et al., 2013). Key element of CFT is the development

and activation of one's own 'soothing and social safeness system'. CFT assumes that a lack of experience with safety, security and care in childhood and adverse childhood events is associated with an underdeveloped system of safety and reassurance, which in turn reduces the development of one's ability to feel warmth and security and to feel secure in social relationships and to effectively regulate one's emotions (Gilbert, 2009, 2010; Matos, Duarte, & Pinto-Gouveia, 2017; Porter et al., 2020). CFT focuses specifically on these fears and resistances to compassion (Gilbert, 2014). CFT uses several interventions (i.e. attention training, mindfulness, mentalization, compassionate imagery) as well as breathing, posture, facial expressions, and voice tones to access and stimulate affiliative motives, emotions and competencies. A recent systematic review on the effectiveness and acceptance of CFT in clinical samples suggest promising effects on a wide range of mental health symptoms including shame and self-criticism especially when delivered in a group format over at least 12 hours (Craig et al., 2020). It is important to note that to date there is no official CFT manual, but various target group specific manuals produced by different working groups (Craig et al., 2020).

With regard to compassion-based treatments in individuals with BPD, there is only one first study on the effects of a loving kindness and compassion meditation on BPD psychopathology. Findings reveal improvements in symptom severity, self-criticism, mindfulness, acceptance and self-kindness (Feliu-Soler et al., 2017). However up to date, there is no study that has investigated whether CFT is feasible as a group intervention in individuals with BPD. Despite the overall promising findings, there is some doubt whether CFT is an intervention suited for individuals with BPD due to the patients high levels of fear of compassion as revealed in the studies of the current thesis and the pervasively negative self-concept resistant to change. Based on these considerations, we developed a manualized 12-session CFT intervention tailored to the needs of adolescents with BPD that comprised core components of CFT such as psychoeducation on evolutionary biological and psychological models of emotion processing, and practices including soothing rhythm breathing and compassionate imagery. We have had the surprisingly positive experience that this CFT intervention in addition to standard DBT works with adolescent individuals with BPD. On the one hand, the patients showed a high acceptance of the intervention and attended the group sessions gladly and reliably, on the other hand, they stated positive effects on self-compassion, shame and self-criticism as well as fears of self-compassion and compassion from others. With regard to implications for future directions, potentially beneficial effects of CFT in BPD could be investigated in randomized control group studies.

4 SUMMARY

4.1 English version

BPD is a serious mental illness characterized by instability in interpersonal relationships, self-image, affect, and marked impulsivity. Although there are evidence based therapies for BPD that have been shown to be particularly effective in reducing severe impairments in behavioral control and emotion regulation (S3-Guideline; Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften, 2022), results of long-term studies show that more than half of those affected do not achieve good social and vocational functioning even 10 years after diagnosis (Zanarini et al., 2010, 2012). These findings suggest that further research into the underlying pathomechanisms is needed in order to develop even more tailored treatments. The aim of this dissertation was to contribute to a better understanding of the processing of self-related information, a domain that is thought to contribute the poor social integration of individuals with BPD. The focus of the underlying three studies was on the investigation of the negative self-conscious emotion shame, self-criticism and fears of compassion, representing major resistances in affiliative self-related processes respectively. Since there have been no translations and validations of the corresponding measuring instruments on self-criticism and fears of compassion to date, these were carried out within the framework of this thesis. Both, the translation and validation of the *Forms of Self-Criticizing/-Attacking and Self-Reassuring Scale* (FSCRS; Gilbert et al., 2004) and the *Fears of Compassion Scales* (FCS; Gilbert et al., 2011) resulted in German versions with good to excellent psychometric quality, comparable to those of the original English versions and offer further opportunities for research of these concepts in German-speaking countries. With regard to self-criticism, individuals with BPD reported higher levels of the *hated self* aspect of self-criticism in comparison to a mixed clinical sample and additionally higher levels of the *inadequate* and lower levels of the *reassured self* aspect of self-criticism compared to a sample from the general population and a healthy control (HC) sample. In addition to the general relevance of self-criticism in BPD, these findings point to the pronounced urge to self-attacking tendencies in the face of failure or distress, which distinguishes individuals with BPD from other clinical disorders. In the light of previous findings of impairments in processes of social approach and affiliation, fears of compassion seem to be specific resistances to these processes. While individuals with BPD differed on all three dimensions of fears of compassion (for self, for other, from others) from nonclinical participants, there were no differences in fears of compassion towards others compared to a mixed clinical sample. Furthermore, during an experimental paradigm addressing levels of state shame in BPD compared to healthy control persons, the mere confrontation with the own face resulted in higher levels of state shame and self-disgust and the confrontation with the face of another person in higher levels of envy in BPD in comparison to healthy control persons. While levels of state shame during the experimental confrontation with the own self was associated with elevated proneness to shame across both samples, this relation could not be found when analyzing the BPD and HC sample separately. This again underlines that the aversiveness of processes directed towards the own self is of particular importance for the psychopathology of BPD. Nevertheless, further longitudinal studies are required that capture the exact links between these concepts and BPD psychopathology. The development and research of treatments that are more tailored to these impairments is therefore of particular relevance. Therapeutic approaches such as Compassion

Focused Therapy (CFT; Gilbert, 2014) that directly target shame and self-criticism have already been shown to be effective in other mental disorders (Craig et al., 2020) and might also be a potentially promising treatment in BPD.

4.2 German version

Die BPS ist eine schwere psychische Erkrankung, die durch Instabilität in zwischenmenschlichen Beziehungen, Selbstbild, Affekt und ausgeprägte Impulsivität gekennzeichnet ist. Obwohl es evidenzbasierte Therapien für die BPS gibt, die sich als besonders wirksam bei der Verringerung schwerer Beeinträchtigungen der Verhaltenskontrolle und Emotionsregulation erwiesen haben (S3-Leitlinie; Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften, 2022), zeigen Ergebnisse von Langzeitstudien, dass mehr als die Hälfte der Betroffenen auch zehn Jahre nach der Diagnosestellung keine gute soziale und berufliche Funktionsfähigkeit erreichen (Zanarini et al., 2010, 2012). Diese Ergebnisse legen nahe, dass weitere Forschung zu den zugrundeliegenden Pathomechanismen erforderlich ist, um noch besser zugeschnittene Behandlungen zu entwickeln. Ziel dieser Dissertation war es, zu einem besseren Verständnis der Verarbeitung selbstbezogener Informationen beizutragen, einem Bereich, von dem angenommen wird, dass er zur schlechten sozialen Integration von Menschen mit BPS beiträgt. Der Schwerpunkt der zugrundeliegenden drei Studien lag auf der Untersuchung der negativen selbstreflexiven Emotionen Scham, Selbstkritik und Angst vor Mitgefühl, die jeweils wichtige Hindernisse in affiliativen selbstbezogenen Prozessen darstellen. Da es bisher keine Übersetzungen und Validierungen der entsprechenden Messinstrumente zu Selbstkritik und Angst vor Mitgefühl gab, wurden diese im Rahmen dieser Arbeit durchgeführt. Sowohl die Übersetzung und Validierung der *Forms of Self-Criticizing/-Attacking and Self Reassuring Scale* (FSCRS; Gilbert et al., 2004) als auch der *Fears of Compassion Scales* (FCS; Gilbert et al., 2011) ergaben deutsche Versionen mit guter bis sehr guter psychometrischer Qualität, die mit denen der englischen Originalversionen vergleichbar sind und weitere Möglichkeiten zur Erforschung dieser Konzepte im deutschsprachigen Raum bieten. In Bezug auf Selbstkritik berichteten Personen mit BPS im Vergleich zu einer gemischten klinischen Stichprobe höhere Werte für den Aspekt des *hated self* und zusätzlich höhere Werte für den Aspekt des *inadequate self* und niedrigere Werte für den Aspekt des *reassured self* im Vergleich zu einer Stichprobe aus der Allgemeinbevölkerung und einer gesunden Kontrollstichprobe (HC). Neben der allgemeinen Bedeutung der Selbstkritik bei der BPS weisen diese Ergebnisse auf den ausgeprägten Drang zur Selbstkritik angesichts von Misserfolg oder Stress hin, der Personen mit BPS von anderen klinischen Störungen unterscheidet. Vor dem Hintergrund früherer Befunde über Beeinträchtigungen bei Prozessen der sozialen Annäherung und Zugehörigkeit scheinen Ängste vor Mitgefühl spezifische Hindernisse gegen diese Prozesse zu sein. Während sich Personen mit BPS in allen drei Dimensionen der Ängste vor Mitgefühl (für sich selbst, für andere, von anderen) von nicht-klinischen Teilnehmern unterschieden, gab es keine Unterschiede bei den Ängsten vor Mitgefühl gegenüber anderen im Vergleich zu einer gemischten klinischen Stichprobe. Darüber war die bloße Konfrontation mit dem eigenen Gesicht im Rahmen eines experimentellen Paradigmas, das die Ausprägung von situativer Scham bei BPS im Vergleich zu gesunden Kontrollpersonen untersuchte, mit einem höheren Grad an Scham und Selbstekel und die Konfrontation mit dem Gesicht einer anderen Person mit einem höheren Grad an Neid bei BPS im Vergleich zu gesunden Kontrollpersonen einher. Während das Ausmaß der situativen Scham während der experimentellen

Konfrontation mit dem eigenen Ich in beiden Stichproben mit einer erhöhten generellen Neigung zu Scham assoziiert war, konnte dieser Zusammenhang bei der getrennten Analyse der BPS- und Kontrollstichprobe nicht gefunden werden. Die Befunde unterstreichen, dass die Abneigung gegen Prozesse, die sich auf das eigene Selbst richten, von besonderer Bedeutung für die Psychopathologie der BPS ist. Dennoch sind weitere Längsschnittstudien erforderlich, die die genauen Zusammenhänge zwischen diesen Konzepten und der BPS-Psychopathologie erfassen. Die Entwicklung und Erforschung von Behandlungen, die stärker auf diese Beeinträchtigungen zugeschnitten sind, ist daher von besonderer Bedeutung. Therapeutische Ansätze wie die Compassion Focused Therapy (CFT; Gilbert, 2014), die direkt auf Scham und Selbstkritik abzielen, haben sich bereits bei anderen psychischen Störungen als wirksam erwiesen (Craig et al., 2020) und könnten auch bei BPS eine potenziell vielversprechende Behandlung darstellen.

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6 APPENDIX

6.1 Figures

6.2 Tables

Table 2.3.2 Results of 2 x 2 rank-aligned ANOVA sub-designs for the different negative emotion categories

Table S2.3.1 Between group comparisons for negative emotional states at baseline

Table S2.3.2 Results of the 2 × 2 × 7 rank-aligned ANOVA

Table S2.3.3 Post-hoc comparisons of intensity ratings in the self and other condition between the HC and BPD group

Table S2.3.4 Exploratory post-hoc comparisons of intensity ratings between the self and other condition in the HC and BPD group

Table S2.3.5 Results of the 2 × 4 rank-aligned ANOVA for positive emotions at baseline

Table S2.3.6 Results of the 2 × 2 × 4 rank-aligned ANOVA for positive emotions during the experimental task

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