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Dialectical Behavior Therapy Skills Training Affects Defense Mechanisms in Borderline

Personality Disorder – An Integrative Approach of Mechanisms in Psychotherapy

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Abstract

Objective: Borderline personality disorder (BPD) is characterized by immature defense mechanisms. Dialectical-behavior therapy (DBT) is an effective treatment for BPD. However, understanding of underlying mechanisms of change is still limited. Using a transtheoretical framework, we investigated the effect of DBT skills training on defense mechanisms.

Method: In this randomized controlled trial, 16 of 31 BPD outpatients received DBT skills training adjunctive to individual treatment as usual (TAU), while the remaining 15 received only individual TAU. Pre-post changes of defense mechanisms, assessed with the Defense Mechanism Rating Scale, were compared between treatment conditions using ANCOVAs. Partial correlations and linear regressions were conducted to explore associations between defenses and symptom outcome.

Results: Overall defense function improved significantly more in the skills training condition ($F(1, 28)=4.57$, $p=.041$). Borderline defenses decreased throughout skills training, but not throughout TAU only ($F(1, 28)=5.09$, $p=.032$). In the skills training condition, an increase in narcissistic defenses was associated with higher symptom scores at discharge ($\beta=0.58$, $p=.02$).

Conclusions: Although DBT does not explicitly target defense mechanisms, skills training may have favorable effects on defense function in BPD. Our findings contribute to an integrative understanding of mechanisms of change in BPD psychotherapy.

Word count: 192

Key words: borderline personality disorder; dialectical-behavior therapy; defense mechanisms; psychotherapy research; model integration

Introduction

Defense mechanisms are automatic psychological responses that individuals use to manage anxiety as well as internal or external stress and conflict (American Psychiatric Association [APA], 1994). They are a foundation of psychoanalytical theory and a hallmark of psychodynamic treatment and research (Barber, Muran, McCarthy, & Keefe, 2013). Defense mechanisms become more adaptive and mature throughout the course of psychodynamic psychotherapy (Bond & Perry, 2004; Drapeau, De Roten, Perry, & Despland, 2003; Hill et al., 2015; Johansen, Krebs, Svartberg, Stiles, & Holen, 2011; Kramer, Despland, Michel, Drapeau, & de Roten, 2010; Perry, 2001; Perry & Bond, 2012) and cognitive-behavioral psychotherapy (CBT; Albucher, Abelson, & Nesse, 1998; Heldt et al., 2007; Johansen et al., 2011). Hierarchically ordered, more mature defense mechanisms correlate with a more adaptive psychosocial functioning (Vaillant, 1971; Vaillant, Bond, & Vaillant, 1986). Accordingly, the predominant use of immature defense mechanisms may be troublesome. Borderline personality disorder (BPD) is a condition with critical psychosocial impairments characterized by "a pervasive pattern of instability of interpersonal relationships, self-image, affects, and marked impulsivity" (DSM-5; APA, 2013). Immature defense mechanisms (e.g., splitting of self and others' images and projective identification) are a hallmark of BPD (BPD; Kernberg, 1985; Perry, Presniak, & Olson, 2013).

The characteristic use of immature defense mechanisms in BPD has been shown empirically (Bond, Paris, & Zweig-Frank, 1994; Paris, Zweig-Frank, Bond, & Guzder, 1996; Perry & Cooper, 1986; Zanarini, Weingeroff, & Frankenburg, 2009). Kramer and colleagues (2013) reported that BPD patients used higher proportions of action, borderline, disavowal, narcissistic, and hysteric defense mechanisms than healthy matched controls. Immature and borderline (i.e., major image distorting) defense mechanisms in BPD were associated with core diagnostic features, such as impulsivity, affect dysregulation, psychotic symptoms and identity diffusion (Koenigsberg et al., 2001; Leichsenring, 1999; Perry, 1988; van Reekum,

Links, Mitton, Fedorov, & Patrick, 1996), and predicted a longer time to recovery (Zanarini, Frankenburg, & Fitzmaurice, 2013). In sum, evidence supports the link between immature defenses and BPD symptoms and prognosis. This might thus qualify defense mechanisms as an appropriate target in treatment and research on psychotherapy of BPD.

A recent meta-analysis (Babl, 2017) highlighted that only few studies with pre-post treatment assessments of defense mechanisms, which clearly indicate the inclusion of personality disorders, exist (e.g., Bond & Perry, 2004; Hersoug, Sexton, & Hoglend, 2002; Svartberg, Stiles, & Seltzer, 2004). To the best of our knowledge, no study has so far focused on BPD.

Psychotherapy is generally seen as the most successful treatment approach and several evidence-based psychotherapies for BPD exist (Cristea et al., 2017). Most empirical support has been yielded for dialectic behavioral therapy (DBT; Linehan, 1993a) which is rooted in CBT and Zen Buddhism. DBT includes group skills training as a major treatment component (Linehan, 1993b). Specific research on the impact of group skills training has been requested, since it is frequently implemented without combined individual therapy (Gunderson & Links, 2008; Pasieczny & Connor, 2011). Nonetheless, its beneficial outcomes have been shown in several studies in modified DBT settings (Linehan et al., 2015; McMain, Guimond, Barnhart, Habinski, & Streiner, 2017; Soler et al., 2009).

Beyond effectiveness studies, investigations on mechanisms of change, that means, factors through which therapy produces change in the patient (Kazdin, 2007), have also been requested (Clarkin & Levy, 2006; Lynch, Chapman, Rosenthal, Kuo, & Linehan, 2006).

Evidence suggests that symptomatic improvement during DBT occurs mainly through mechanisms including the alteration of emotion regulation, the learning and use of skills, and the beneficial effects of the therapeutic alliance (for review see Rudge, Feigenbaum, & Fonagy, 2017). While the formerly mentioned factors are theory-consistent, therapeutic

alliance, originally rooted in psychodynamic theory, can be seen as a transtheoretical mechanism of change (Forster, Berthollier, & Rawlinson, 2014).

Recently, such transtheoretical, that means, integrative, mechanisms of change have been emphasized in order to overcome the focus on explanations within the preferred model and to illuminate therapeutic changes by "therapy-school independent" approaches (Kramer, 2017a; 2018; p. 3; Luyten, Lowyck, & Blatt, 2017). This might help to identify non-responders and drop-outs in psychotherapy of BPD (Dimaggio, Nicolo, Semerari, & Carcione, 2013).

Based on the outlined evidence that immature defenses are particularly significant in BPD and that defense mechanisms may become more mature throughout different psychotherapies, we suggest defense mechanisms as a potentially transtheoretical mechanism of change. We aimed to explore changes in defense mechanisms and their association with symptom outcome in DBT skills training. We assessed defense mechanisms using the Defense Mechanism Rating Scale (DMRS; Perry, 1990), which is based on theory-consistent, observer-rated interview transcripts. To the best of our knowledge, no study has focused on the role of defense mechanisms in DBT or its skills training component.

We hypothesized a significantly larger improvement in overall defense function in patients receiving DBT skills training adjunctive to individual treatment as usual (TAU) than in patients in the control condition (individual TAU only). **We further expected** a decrease of immature defense levels in the DBT skills training condition but not in the control condition. By using an explorative approach, we tested whether changes in any of the defense levels were associated with symptom outcome.

Methods

Design & Procedure

In this process-outcome study, we report the results of a secondary analysis of a previously published two-arm randomized controlled add-on trial examining the efficacy of an adjunctive 20-session module of DBT skills group training for BPD (Kramer et al., 2016). Patients in both arms obtained treatment as usual (TAU; i.e., non-BPD specific individual psychodynamic or cognitive-behavioral psychotherapy or psychiatric treatment). The control condition (CONTROL) received only TAU, whereas the DBT skills training condition (SKILLS) received TAU plus DBT skills training. The recruitment period was three years, including four treatment waves. An Internet-based block randomization program was used separately for each of the treatment waves. The randomization procedure was reported in further detail in the parent study (Kramer et al., 2016). The between-condition effect size for the decrease in general problems between intake and discharge was small to moderate (d = 0.48) in favor of SKILLS.

The study was conducted at the European University Outpatient Clinic. All participants gave written informed consent. The university and hospital Research Ethics Board approved the study protocol. Process assessments (i.e., defense ratings) took place at intake and discharge on the basis of interviews which were later transcribed. Outcome assessments were conducted at intake, discharge, and follow-up after 3-months on the basis of questionnaires. Patients received the questionnaires after completing the interviews. Follow-up questionnaires were sent via post.

Treatments

DBT skills training

Based on the French manual (Page, 2010), DBT skills training (Linehan, 1993b) was provided in 20 weekly 90-minute sessions. Sessions were shortened due to institutional constraints. The training included sessions on mindfulness, emotion regulation, interpersonal effectiveness,

and distress tolerance. In total, 6 therapists functioned as group leaders, including four psychologists and two nurses; each group consisted of 5 or 6 patients and was led by two therapists. In addition to their basic clinical training, therapists were trained in DBT and specifically in skills training. All sessions were video-taped and supervised by a supervisor who had received formal DBT training.

Treatment as usual

TAU was conducted under naturalistic conditions according to individual clinical judgement and regular practice with respect to frequency and length of sessions. The frequency of sessions ranged between one session weekly and two sessions monthly. Treatments were delivered by psychiatrists, psychologists and nurses with between 2 and 20 years of clinical experience. For ethical reasons, patients assigned to the CONTROL condition were also offered to receive DBT skills training after completion of all assessments.

The distribution of applied treatments (psychodynamic, behavioural, and psychiatric), number of TAU sessions prior to study inclusion as well as the frequencies of sessions and of psychopharmacological medication did not differ between the conditions (using chi-square statistics).

Both treatment conditions are reported in further detail in the parent study (Kramer et al., 2016).

Sample

The present study included the completer subsample ($N = 31$) of the parent study ($N = 41$); ten patients from the parent study who discontinued treatment (five in either condition) were also dropped from this study.

All patients had a diagnosis of BPD and were older than 18 years. Twenty-seven (87%) were female and 4 were male. The mean age of patients was 34.5 years ($SD = 9.6$;

ranging from 21 to 55). All patients were French-speaking. We excluded patients with a comorbid psychotic disorder and intellectual disability as well as those who had received DBT before participation in our study (Kramer, 2017b). We used the Structured Clinical Interview for DSM-IV (First & Gibbon, 2004) for the diagnosis of BPD according to the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV; APA, 1994). We calculated the reliability of the DSM-IV axis II diagnoses based on a randomly chosen sample of 10% ($n = 4$) of the intent-to-treat sample (Kramer et al., 2016) and found it to be excellent ($\kappa = 0.89$). Further details on sociodemographic and disease characteristics for the current sample are shown in Table 1 and have been published previously by Kramer (2017b). The SKILLS ($n = 16$) and the CONTROL ($n = 15$) conditions did not differ in gender, marital status, employment, medication, comorbid DSM-IV diagnoses, age, years of education, OQ-45, BSL, Global Assessment of Functioning (GAF), number of BPD symptoms, N current axis I disorder, and N current axis II disorder.

Instruments

   Dynamic Interview (Perry, Fowler, & Semeniuk, 2005)

Defense mechanisms were rated on the basis of transcripts of (individual) dynamic assessment interviews with the Defense Mechanism Rating Scale (DMRS, see next section). This semi-standardized dynamic interview (DI; Perry et al., 2005) was performed in both conditions, once after session 1 and again before session 20 of SKILLS (or at the equivalent time in the CONTROL condition). The DI is an established research tool comparable to an intake psychotherapy interview. It lasts 50 minutes and focuses on the "patient's life in general". The DI has a clear and teachable structure with five tasks to capture by the interviewer: (1) setting the interview frame; (2) offering support; (3) affect exploration; (4) trial interpretations; and (5) formulating a synthesis. Items (3) and (4) explicitly comprise defense interpretations.

Interviews were performed by blinded trained clinical interviewers. All DIs were video-recorded and transcribed according to the method defined by Mergenthaler and Stigler (1997), which sets clear and reliable research standards for verbatim transcriptions (see also Mergenthaler & Stinson, 1992).

Defense Mechanism Rating Scale

The Defense Mechanism Rating Scale (DMRS; Perry, 1990; Perry & Bond, 2012; Vaillant et al., 1986) is an observer-based instrument to measure the use of defense mechanisms on the basis of verbatim transcripts of clinical assessment interviews or psychotherapy sessions. DMRS scores reflect no use (= 0), probable use (= 1), and definite use (= 2) of each defense mechanism illustrated by examples and further observation rules. Defense mechanisms are hierarchically grouped in seven levels of adaptiveness (see Table 2). Within each level, defense mechanisms are added, resulting in seven subtotals. Each subtotal is multiplied by its weight ranging from 1 to 7. The seven weighted subtotals are summed and divided by the total number of defenses used, resulting in the overall defense function (ODF) score ranging from 1 to 7 which represents the overall maturity of a patient's defense mechanisms.

Raters (three experienced researchers, one PhD level student, and four Master level students) were selected and trained on reliability according to the manual (see Perry, Kardos, & Pagano, 1993). Reliability coefficients were calculated using a two-way mixed effects model with people effects as random and measured effects as fixed, based on 8 of 62 ratings (13%). It yielded satisfactory results with a mean intraclass correlation coefficient of .80 (SD = 0.09) which corresponds to interrater-reliability in previous studies (e.g., r = .70 and .75 (Perry et al., 1993)

Outcome Questionnaire-45.2 (OQ-45.2; Lambert & Brown, 1996)

The OQ-45.2 is a self-report questionnaire containing 45 items capturing three domains of distress: level of distress, interpersonal relations and social role. We used the general sum

score which we calculated from the three sub-scores. The original English version of the questionnaire has been found satisfactory in terms of internal consistency and sensitivity to change in the course of psychotherapeutic treatment (Vermeersch, Lambert, & Burlingame, 2000). Cronbach's alpha for our study sample of BPD patients was .95.

Borderline Symptom List (BSL-23; Bohus et al., 2009)

The BSL-23 is a self-report questionnaire capturing specific borderline symptoms using 23 items. The short-version which we used has excellent psychometric properties. We calculated an overall mean score. We used a French translation of the measure which has been approved by the authors. Cronbach's alpha for our study sample was .89.

Data Analytic Strategy

We tested the equivalence of all defense mechanisms at intake between the two conditions using a series of independent *t*-tests.

We applied univariate statistics to test our first hypothesis, which predicted an increase in overall defense functioning (ODF) in the SKILLS condition, but not the CONTROL condition. We conducted a one-way analysis of covariance (ANCOVA) with condition as fixed factor, intake ODF scores as covariate, controlling for potential between-condition baseline differences, and discharge ODF scores as dependent variable. Subsequently, we examined the effect of condition on changes in single defense levels, predicting a decrease of immature defenses in the SKILLS condition. Separate one-way ANCOVAs were conducted with condition as fixed factor, single defense level intake scores as covariates, and single defense level discharge scores as dependent variable. We used Levene's Test to test for equality of variances. We used partial correlations controlling for intake symptom score in order to explore whether changes in ODF or single defense levels correlated with symptom outcome. To confirm significant correlations, we conducted independent linear regression analyses.

Results

As preliminary analyses, we examined the equivalence of defense mechanisms between conditions. There was a significant difference in ODF at intake ($t(1, 29) = 2.20$, $p = .04$), suggesting a higher score in patients in the CONTROL condition ($M = 3.81$, $SD = 0.48$) than the SKILLS condition ($M = 3.41$, $SD = 0.52$). There were no between-condition differences on single defense levels at intake (mature: $t(1, 29) = 1.85$, $p = .07$; obsessional: $t(1, 29) = 0.44$, $p = .67$; neurotic: $t(1, 29) = 0.23$, $p = .82$; narcissistic: $t(1, 29) = -0.37$, $p = .72$; disavowal: $t(1, 29) = 0.02$, $p = .99$; borderline: $t(1, 29) = -1.74$, $p = .09$; action: $t(1, 29) = -0.23$, $p = .82$; psychotic: $t(1, 29) = -1.17$, $p = .25$).We nevertheless chose a conservative statistical approach, controlling for ODF and single defense level intake scores, respectively, in order to consider potential effects on the outcome measures in our exploratory analyses.

Furthermore, we compared the intake variables (sociodemographic characteristics, psychopathology, and intake OQ-45 and BSL-23 symptom scores, see Table 1) between conditions. None of the between-condition differences were significant.

Change of Defense Mechanisms in Dialectical-Behavior Skills Training

We conducted a one-way ANCOVA to measure the effect of condition (CONTROL vs. SKILLS) on ODF score at discharge, whilst controlling for ODF scores at intake. There was a significant main effect of condition ($F(1, 28) = 4.57$, $p = .041$), suggesting the ODF increase over time was higher in the SKILLS condition ($M = 0.72$, $SD = 0.64$) than the CONTROL condition ($M = 0.04$, $SD = 0.68$). To explore which of the defense levels might explain this effect, we conducted separate one-way ANCOVAs to measure the effect of condition on single defense level scores at discharge, whilst controlling for intake scores. A significant main effect of condition was revealed for borderline defenses ($F(1, 28) = 5.09$, $p = .032$), which decreased in the SKILLS condition ($M = -2.94$, $SD = 6.63$), while they increased in the

CONTROL condition ($M = 5.09$, $SD = 8.82$). There was no other significant effect of condition on changes in single defense levels from intake to discharge (see Table 3).

Association Between Change in Defense Mechanisms and Therapeutic Outcome

We explored whether changes in ODF and the single defense levels at intake vs. discharge (i.e., difference scores) correlated with discharge and 3-month follow-up BSL-23 symptom scores, irrespective of condition ($N = 31$), controlling for intake BSL-23 symptom scores. No correlation was significant (see Table S1 in the supplementary materials). Furthermore, we correlated ODF and single defense level intake vs. discharge difference scores with discharge and follow-up OQ-45 symptom score, irrespective of condition ($N = 31$), controlling for intake OQ-45 symptom score. Changes in narcissistic defenses correlated with OQ-45 symptom score at discharge ($r = .46$, $p = .011$) but not at follow-up ($r = .07$, $p = .722$). There were no significant correlations in any of the other defense levels (see Table S1 in the supplementary material).

In order to further explore this result with respect to change over time, we conducted a linear regression analysis. Controlling for intake OQ-45 symptom score, we found that the change in narcissistic defenses predicted OQ-45 symptom score at discharge ($\beta = 0.42$, $p = .011$, $R^2 = .37$, adjusted $R^2 = .32$), but not at follow-up ($\beta = 0.06$, $p \geq .05$, $R^2 = .21$, adjusted $R^2 = .15$). This indicates that an increase in narcissistic defense mechanisms throughout the course of therapy is accompanied by an increase in symptoms, which does not persist after three months.

In order to further explore this result with respect to the treatment condition, we conducted a linear regression analysis for each condition, with difference scores of narcissistic defenses as predictor variable and intake OQ-45 symptom score as control variable. In the CONTROL condition, changes in narcissistic defenses did not significantly predict discharge OQ-45 symptom score ($\beta = 0.30$, $p = .13$, $R^2 = .60$, adjusted $R^2 = .53$),

whereas in the SKILLS condition, changes in narcissistic defenses did significantly predict discharge OQ-45 symptom score ($\beta = 0.58$, $p = .02$, $R^2 = .38$, adjusted $R^2 = .28$). This indicates that an increase in narcissistic defense mechanisms is accompanied by an increase in symptom score only in patients who received adjunctive DBT skills training. This effect vanished at 3-month follow-up.

Discussion

The present process-outcome study, based on a randomized controlled trial in a sample of BPD patients, focused on change in defense mechanisms as a potentially transtheoretical mechanism of change in psychotherapy of BPD. We investigated whether adjunctive DBT skills training was accompanied by changes in defense mechanisms, as compared to individual TAU only. We found a significantly larger improvement in overall defense functioning in patients obtaining DBT skills training. Borderline defenses decreased in the skills training condition; furthermore, an increase in narcissistic defenses predicted more symptoms at discharge.

Our study addresses a gap in psychotherapy research since only few studies have focused on defense mechanisms in CBT-related approaches, and, to our knowledge, the present study is the first investigating changes in defense mechanisms in DBT for BPD. Our results suggest that changes in defense mechanisms are not specific to dynamic therapy, but might also occur during therapies with "different theoretical aims" (Bond & Perry, 2004; p. 1670). This finding thus supports the advancement towards an integrative view of effectiveness of psychotherapy for BPD (Bateman, Gunderson, & Mulder, 2015). The study highlights the potentially common mechanisms of change which may have been previously overlooked due to a focus on theory-consistent conceptualizations in process and outcome research Several candidates for such common, that means, transtheoretical mechanisms have been proposed, for instance mentalizing (Bateman, Campbell, Luyten, & Fonagy, 2017;

Fischer-Kern et al., 2015), therapist's responsiveness (Kramer, 2017a), and rupture-repair episodes in the therapeutic alliance (Boritz, Barnhart, Eubanks, & McMain, 2018). Utilizing such transtheoretical concepts in studies of BPD treatments might be useful towards explaining currently unexplained variance related to partial response and dropout.

Our results indicate that defense mechanisms are highly sensitive to change even in a shorter timeframe, and might be less fixed than originally assumed (Bond, 1990; Kernberg, 1985; Kramer, Berney, de Roten, & Despland, 2012). In this regard, our results challenge the findings of a recent meta-analysis of defense mechanisms in PD according to which shorter therapies were associated with smaller improvements in defensive functioning (Babl, 2017).

When interpreting our results, we have to consider the vicinity of defense mechanisms to psychological concepts from other models. Emotion regulation, a theory-consistent mechanism of change in DBT, has been defined as "the reduction of ineffective action tendencies linked with dysregulated emotions" (Lynch et al., 2006; p. 457). By definition, this implies a certain overlap with the psychodynamic aim to reduce (immature) action defenses. However, while DBT skills training focusses primarily on consciously accessible coping abilities ("skills") in order to enhance self-awareness and -regulation, defense mechanisms are described as (mostly) unconscious, protecting the self from conflictual negative emotions, for instance, anxiety (Freud, 1936). The conceptual similarities and differences between coping, that means, behavior to deal with internally or externally induced distress (Fleishman, 1984), and defenses have been empirically studied (Cramer, 1998; Kramer, 2010a). Both are seen as functional and adaptive, but differences with respect to their sensitivity to change have been outlined. The view of coping as a rather state-dependent, and defenses as a rather trait-dependent mechanism has been updated into a more integrative view of both concepts, postulating that – among others – temporal stability does not deliver sufficient differentiation (Kramer 2010a). Whereas an earlier study partly contradicted this view (Kramer, 2010b), the

current study provides evidence that defenses are sensitive to change in a rather short timeframe. To elucidate their eligibility as mechanisms of change, further investigations on the interplay between defenses and coping, and specifically their sensitivity to short-term therapy are essential.

Borderline (major image distorting, i.e., splitting of self- and other-images; projective identification) defenses decreased significantly throughout skills training, whereas they increased throughout TAU only. Thus, we suggest that skills group training might lead to a more integrated, coherent image of oneself and others. Notably, borderline defenses are specific to BPD (Bond, 1990; Perry & Cooper, 1986), and their decrease in BPD patients during therapy is promising. This finding further challenges the postulation that immature defenses are less sensitive to short-term change (Hill et al., 2015; Perry, Beck, Constantinides, & Foley, 2009). It was once suggested to exclude BPD patients with high rates of borderline defenses from (psychoanalytic) insight-orientated therapies (Bond, 1990). Alternative treatment models, including DBT, have since been widely implemented in BPD patients with low regulatory capacities. Based on our study, it is tempting to conclude that DBT skills training affects borderline defenses without specifically targeting their unconscious manifestation (e.g., by interpretations). We therefore dare to suggest that this unintentional effect on defense mechanisms might be present in other effective psychotherapies for BPD which share multiple commonalities (Bateman et al., 2015), and thus might qualify defenses as a potential transtheoretical mechanism of change.

The link between mechanisms of change and symptom outcomes needs to be specified (Kazdin, 2007, 2009; Kramer, 2017a).Therefore, we explored associations between changes in single defense levels and symptom outcome. In the DBT skills group, an increase in narcissistic defenses (i.e., omnipotence, idealization, and devaluation) was associated with higher symptom scores at discharge. Although the specific value of narcissistic defenses for

psychosocial adaptiveness has been outlined (Vaillant, 1977), this observation has to be considered with rigorous caution due to the small sample size and the exploratory character of the analyses. Nonetheless, our finding might imply that BPD patients with lower treatment response (indicated by higher symptom scores at discharge) displayed more narcissistic defenses, for instance devaluation of therapists and their peers, at discharge. This interpretation is in line with the observation that BPD patients react sensitively to interpersonal loss and abandonment, thereby diminishing the fluidity of mental states with rigid attributions to self and others (Fonagy, Luyten, & Allison, 2015). It further corresponds to a recent finding that vulnerable manifestations of narcissism (e.g., devaluing others) is associated with rejection sensitivity and other markers of BPD psychopathology (Euler, Stobi, et al., 2018). However, in earlier studies, narcissistic defenses were associated with less borderline pathology (Perry & Cooper, 1986; Zanarini et al., 2013) and less symptoms in BPD patients (Kramer et al., 2013). More in-depth investigation, for instance by separately considering single narcissistic defenses relative to symptom burden and functional adaptability, is required.

Taken together, our main hypothesis that skills training has a significant value for the increase of overall defense functioning during psychotherapy was confirmed. Our hypothesis that immature defense mechanisms decrease throughout skills training was partly supported by the significant decrease of borderline defenses. The exploratory results did not display a robust link between change in defense function and therapeutic outcome. However, we observed an association between increased narcissistic defenses and higher symptom score at discharge.

Limitations and further recommendations

We regard our results as preliminary due to the novelty of the study design, and their interpretation has to be taken tentatively. Furthermore, the relatively small sample size has

been taken into account during the analysis and interpretation of our findings. We focused on a rather brief course of DBT skills training, so knowledge about longer-term effects as well as about standard DBT including individual therapy remains open. There are however several studies showing significant effects of short-term DBT, and recent suggestions argued for investigations of shorter treatments to reflect public health conditions (Bohus et al., 2004; McMain et al., 2017; Soler et al., 2009). Finally, outcome was assessed with self-report questionnaires and these assessments were conducted shortly after the observation of defense mechanisms. Conclusions concerning the association of symptoms and narcissistic defenses were therefore drawn tentatively.

As in any add-on design, the observed effect on defenses might partially be due to increased attention or time received via the added component. In this respect, it is important to note that the patients in TAU were guaranteed to receive DBT skills training after completing all assessments. We thereby attempted to reduce unspecific effects such as attention or expectation biases. The beneficial effects of skills training might also be attributed to the group setting per se, since group cohesiveness has been highlighted as an effective factor of group therapies for personality disorders (Smith, Barrett, Benjamin, & Barber, 2006). For instance, BPD group treatment is effective with respect to the development of more coherent images of oneself and others (Euler, Wrege, et al., 2018), which might be closely associated with a decrease of borderline defenses in BPD. To verify the specific contribution of group DBT skills training, an unspecific group intervention as control condition is required. Nonetheless, our add-on design seemed appropriate to explore the additive value of DBT skills training under naturalistic conditions (Kramer et al., 2016). A baseline TAU is superior to wait-list control for ethical reasons and is seen as methodologically sound (Elliott & Brown, 2002; Safer & Hugo, 2006).

There are several potential biases when rating defenses on the basis of verbatim transcripts. Although all raters were blinded for the condition, blinding might have been uncovered in some cases by the content of the interviews. Moreover, there is a number of alternative approaches to investigate a patients' transcribed narrative to explore the linguistic expression of psychopathological mental processes (Boothe, Grimm, Hermann, & Luder, 2010; Tausczik & Pennebaker, 2010). However, our interest focused on defenses, and the DMRS is a validated instrument to investigate verbatim transcripts according to a highly standardized procedure.

Further studies examining defense mechanisms in longer-term behavioral treatments may help to determine effects of treatment length. Research on the assessment of defense mechanisms in different DBT settings, e.g., stand-alone skills training vs. other group therapies, DBT standard, or individual therapy would help to confirm and extend our preliminary results. Larger samples – determined by a power analysis – would further strengthen the methodology. They would also permit subgroup analyses to disentangle associated psychological factors. Assessments at multiple time points during therapy might clarify symptomatic fluctuations and levels of adaptiveness in their interplay with defense mechanisms.

Conclusion

Our study illustrates that DBT skills training improves defense function and affects immature defense mechanisms in BPD patients. The results indicate that beneficial effects on defenses are not limited to long-term psychodynamic psychotherapy but also occur in treatments with different underlying theories and aims. However, the classification as a transtheoretical mechanism of change remains preliminary until the association with symptom outcome has been more clearly investigated.

We suggest defense mechanisms as useful for further investigations on integrative process mechanisms in BPD treatments and encourage clinicians and researchers to consider defensive functioning beyond psychodynamic settings. By providing a broader variety of conceptual perspectives, our understanding of mechanisms in psychotherapy for BPD might be significantly improved.

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Table 1

Characteristics of the patients as a function of group at baseline (N = 31)

Variables	Condition			
	SKILLS (*n* = 16)	CONTROL (*n* = 15)		
	n (%)	*n* (%)	X^2	*p*-value
Gender (Female)	15 (94)	12 (80)	0.25	.33
Marital status			4.79	.09
Never married	8 (50)	8 (53)		
Married	4 (25)	7 (47)		
Separated, divorced	4 (25)	0 (0)		
Employment			5.97	.11
Unemployed	13 (81)	7 (47)		
Protected activity	1 (6)	1 (7)		
Part-time	3 (19)	2 (13)		
Full-time	0 (0)	4 (27)		
Medication	6 (38)	7 (47)	0.61	.72
Current DSM-IV diagnoses			0.55	.72
Depressive disorder	9 (56)	10 (67)		
Anxiety disorder	3 (19)	5 (33)		
Eating disorder	1 (6)	3 (20)		
Substance abuse	4 (25)	7 (47)		
Intelligence limitation	1 (6)	2 (13)		
Sexual disorder	1 (6)	1 (7)		
Attention disorder	2 (13)	0 (0)		
Axis II cluster A	1 (6)	0 (0)		
Axis II cluster B	3 (19)	1 (7)		
Axis II cluster C	3 (19)	2 (13)		
	M (SD)	M (SD)	*t* (1, 29)	*p*-value
Age	34.88 (9.84)	34.20 (9.73)	-0.19	.85
Education (years)	12.75 (1.95)	11.87 (1.68)	-1.35	.19
OQ-45 total at intake	91.06 (21.07)	91.53 (25.31)	0.06	.96
BSL at intake	1.79 (0.88)	1.88 (0.74)	0.30	.76
GAF	71.88 (7.93)	72.00 (10.14)	0.04	.97
Number of BPD symptoms	6.69 (1.45)	7.60 (1.45)	1.75	.09
N current axis I disorder	1.43 (1.03)	2.13 (1.06)	1.85	.07
N current axis II disorder	0.62 (0.96)	0.20 (0.41)	-1.59	.12

Note. All diagnostic information in co-morbidity with DSM-IV Borderline Personality Disorder (BPD).
CONTROL: individual treatment as usual (TAU); SKILLS: TAU plus dialectical behavior skills training.
OQ-45: Outcome Questionnaire-45.2; BSL: Borderline Symptom List; GAF: Global Assessment of Functioning.

Table 2

Levels of defense mechanisms and adaptiveness

Order	Level of defense	Defense mechanisms
7	High adaptive	Affiliation; altruism; anticipation; humor; self-assertion; self-observation; sublimation; suppression
6	Obsessional	Isolation; intellectualization; undoing
5	Other neurotic	Repression; dissociation; reaction formation; displacement
4	Minor image-distorting (Narcissistic)	Omnipotence; idealization; devaluation of self; devaluation of others
3	Disavowal	Denial; projection; rationalization; fantasy
2	Major image-distorting (Borderline)	Splitting (others' images); splitting (self-images); projective identification
1	Action	Acting out; passive aggression; help-rejecting complaining

Note. Adapted from "Change in Defense Mechanisms During Long-Term Dynamic Psychotherapy and Five-Year Outcome," by J.C. Perry and M. Bond, 2012, The American Journal of Psychiatry, 169(9), p. 918. Copyright by the American Psychiatric Association Publishing.

Table 3

Change in defense mechanisms in borderline personality disorder over the course of dialectical-behavior skills training (N = 31)

Defense mechanism	Intake				Discharge				Discharge-Intake					
	SKILLS		CONTROL		SKILLS		CONTROL		SKILLS		CONTROL			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	$F_{(1, 28)}$	*p*
ODF	3.41	0.52	3.81	0.48	4.13	0.70	3.84	0.73	0.72	0.64	0.37	0.68	4.57	.041*
Mature	7.05	6.34	12.49	9.79	16.12	8.75	14.41	10.59	9.08	9.90	1.92	12.28	0.78	.384
Obsessional	15.56	9.98	17.17	10.58	20.48	12.57	14.89	10.53	4.92	11.09	-2.28	15.18	2.20	.149
Neurotic	6.45	5.92	6.93	5.76	4.46	5.66	5.43	7.16	-1.99	7.61	-1.50	9.76	0.17	.682
Narcissistic	8.78	5.78	8.02	5.67	11.87	6.27	9.89	5.99	3.09	8.61	1.86	7.34	0.73	.402
Disavowal	29.88	9.20	29.96	14.12	26.01	8.27	29.17	11.11	-3.87	10.81	-0.79	17.86	0.79	.382
Borderline	13.04	6.32	9.68	4.36	10.10	6.67	14.76	8.53	-2.94	6.63	5.09	8.82	5.09	.032*
Action	15.20	10.27	14.28	12.15	8.68	8.12	10.46	6.93	-6.52	8.88	-3.82	13.71	0.56	.461
Psychotic	4.04	7.64	1.47	3.91	2.29	4.05	0.99	3.82	-1.75	9.07	-0.48	2.57	0.52	.476

Note. One-way ANCOVAs for between-condition difference at discharge, each controlled for intake value; CONTROL: individual treatment as usual (TAU); SKILLS: TAU plus dialectical-behavior skills training; ODF: overall defense functioning *p<.05.

Supplemental material

Table S1

Associations Between Changes in Defense Levels and Therapeutic Outcomes (BSL-23, OQ-45) (N = 31)

	BSL-23				OQ-45			
	Discharge		Follow-up		Discharge		Follow-up	
	r	*p*	*r*	*p*	*r*	*p*	*r*	*p*
Mature	.30	.110	-.17	.519	-.19	.322	-.24	.212
Obsessional	-.01	.970	.12	.667	-.16	.386	.09	.636
Neurotic	-.10	.590	-.41	.118	-.11	.549	-.35	.060
Narcissistic	.21	.264	.11	.673	.46	.011*	.07	.722
Disavowal	-.11	.573	.09	.756	-.06	.759	.13	.488
Borderline	-.13	.494	.09	.731	.31	.096	.20	.279
Action	-.14	.451	.23	.402	-.04	.834	.07	.704
Psychotic	.02	.932	-.15	.588	.06	.758	-.09	.636
ODF	.24	.196	-.12	.664	-.23	.233	-.19	.306

Note. Partial correlations for difference scores of defense mechanisms (intake vs. discharge) and BSL-23 as well as OQ-45, separately calculated for discharge and follow-up, each controlled for corresponding score at intake; BSL-23: Borderline Symptom Checklist; ODF: overall defense function; OQ-45: Outcome Questionnaire

*$p<.05$.