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RUNNING HEAD: Coping Change in Dialectical-Behavior Skills Training

The Role of Coping Change in Borderline Personality Disorder: A Process-Outcome Analysis
on Dialectical-Behavior Skills Training

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Abstract

Difficulty in emotion regulation is a hallmark feature of patients with borderline personality disorder (BPD). Skills training concepts based on dialectical-behavior therapy (DBT) are common and effective treatment options for specifically addressing lacking skills in emotion regulation. However, so far it is unclear which aspects of coping change over the course of DBT skills training and if these coping strategies predict symptom change. The present process-outcome analysis, based on a randomized controlled study published earlier (Kramer, Pascual-Leone et al., in press), aims at investigating these questions, by referring to a general conception of coping and by using an observer-rated approach to assess coping strategies directly in the therapy sessions. In total, $N = 31$ patients with BPD underwent two individual clinical interview assessments (pre- and post study intervention; half of the patients underwent DBT skills training, half were in a wait-list control). All individual assessment sessions were transcribed and analyzed using the Coping Action Pattern Rating Scale (Perry et al., 2005). Outcome was assessed pre- and post-intervention using the OQ-45 and the BSL-23. The results showed increase in overall coping functioning in patients who underwent the DBT skills training, compared to the controls, and specific increases in relatedness coping where the stress is appraised as challenge, along with specific decreases in autonomy coping where the stress is appraised as threat. These changes predicted changes in general distress and borderline symptomatology. The results are interpreted within a general framework aiming at understanding the psychological effects of treatments for BPD, in particular effects related to coping. Effective emotion regulation strategies may therefore be important candidates as potential change mechanisms in treatments for BPD.

Key-Words: Borderline Personality Disorder; Coping; Affect Regulation; Observer-Rated Methodology; Dialectical-Behavior Therapy

Practitioner Points:

- 1) It seems important for clinicians to assess the quality of coping strategies as they occur within the session facing a patient with borderline personality disorder.
- 2) Clinicians may foster the emergence of support-seeking and self-reliance coping strategies in order to increase the effectiveness of therapy.
- 3) Clinicians may monitor closely the patient's use of ineffective emotion regulation strategies, in particular opposition and submission, with the aim of reducing them early in therapy.

THE ROLE OF COPING CHANGE IN BORDERLINE PERSONALITY DISORDER: A
PROCESS-OUTCOME ANALYSIS ON DIALECTICAL-BEHAVIOR SKILLS TRAINING

Introduction

The difficulty regulating emotions and affects is core in the psychopathology of patients presenting with Borderline Personality Disorder (BPD; APA, 1994; Bohus, 2002; Linehan, Bohus, & Lynch, 2007; Yen, Zlotnick, & Costello, 2002; Zittel Conklin, Bradley, & Westen, 2006). Related to this difficulty, patients with BPD may present with high levels of negative and undifferentiated affect (Stiglmayr et al., 2005), emotional dysregulation (Herpertz, 2011), along with high sensitivity and reactivity to emotions and prolonged affective activation (Linehan, Bohus, & Lynch, 2007). These difficulties to regulate or tolerate negative emotions may be treated specifically using group-based skills training modules, as part of Dialectical Behavior Therapy (DBT; Linehan, 1993a/b; Bohus, 2011). DBT has presented solid evidence of efficacy in the treatment of BPD symptoms, in particular related to affect dysregulation (*e.g.*, Linehan et al., 2006; Neacsiu, Rizvi, & Linehan, 2010) and there is emerging evidence that the skills training component contributes in a significant manner to DBT's efficacy (Harley, Baity, Blais & Jacobo, 2007; Soler et al., 2009; Kramer, Pascual-Leone et al., in press). A specific focus on the skills training is also potentially relevant, as these modules are increasingly being implemented alone, without the other DBT-specific treatment components, in a variety of settings and contexts (*e.g.*, Gunderson & Links, 2008). Finally, the focus on difficulty in emotion regulation is also consistent with the conception of modular psychotherapy (Bohus, Falkai & Herpertz, 2012) where for each patient problem a specific empirically-based treatment option may be implemented, within a context of an integrated and articulated treatment plan. Therefore, more research is needed on the patient problematic emotion regulation, and the patient's actual use of coping skills in the

context of a treatment that has been specifically devised to amend these problems in patients presenting with BPD.

The role of coping capacities in psychotherapy

Increased capacities of emotion regulation may be understood as a potentially central mechanism of change in treatments for BPD. McMain, Pos and Iwakabe (2010) have argued that capacities of emotion regulation may describe an area of treatment intervention across therapy approaches for patients with BPD. For psychotherapy as a whole, Beutler, Harwood, Kimpara, Verdirame and Blau (2011) have demonstrated the importance of the patient's coping capacities for subsequent therapist intervention choice, predicting symptom change after treatment. They differentiate between internalized and externalized coping capacities: the latter describe the individual's tendency to be outgoing, but also a tendency to be insensitive to other's feelings along with a tendency to inadequately express anger, whereas the former describe the individual's tendency to social withdrawal, self-criticism and avoidant behaviors. According to Beutler and Clarkin's (1990) conception, targeted treatment interventions are related with the patient's use of coping capacities. For patients with externalizing coping capacities, behavioral skills training may be indicated, whereas for patients with internalizing coping capacities, insight-focused treatment may be indicated. Beutler and colleagues (2011) showed a medium-sized effect size ($d = .55$) for the effectiveness of the fit between patient coping style and treatment type.

These conceptions describe coping style as a stable personality trait moderated by a number of variables (such as gender) and predicting treatment outcome; what remains to be examined is whether such coping capacities are changing over the course of treatment; and whether this change relates to – but does not confound with – therapeutic outcome (Kazdin, 2009). Also, the general distinction in two – or a few – dimensions of coping should be

completed by a more fine-grained analysis of coping capacities which takes into account the larger coping literature.

Towards a comprehensive conception of coping

Emotion regulation may be understood as an over-arching functionality aiming at the maintenance of the individual's homeostasis and well-being (Gross, 2001), encompassing a great variety of operationalizations of coping with stress (Lazarus & Folkman, 1984; Cramer, 1998; Kramer, 2010a/b). In this context, coping was defined as «overt and covert behaviors that are taken to reduce or eliminate psychological distress or stressful conditions» (Fleishman, 1984, p. 229). Because a great amount of sub-concepts and strategies were discussed under the label of coping, Skinner, Edge, Altman, and Sherwood (2003), in their comprehensive literature review, identified a number of underlying categories, taking into account the functional perspective on coping (Lazarus, 2000; Lazarus & Folkman, 1984). They differentiated coping strategies on the basis of the nature of its appraisal. For example, a stressful event might be appraised by the individual as challenge (*i.e.*, the individual assesses she/he has sufficient mastery in addressing the stress, the stress is seen as controllable) or as threat (*i.e.*, the individual assesses the stimulus emotion or the stress as overwhelming, the individual does not tackle the stress due to a perceived lack of skills).

Based on this distinction, Skinner et al. (2003) identified a dozen distinct categories of coping (see Table 1). As such, six of the coping categories are conceived as coping with stress appraised as challenge (yielding adaptive coping) and the other six as coping with stress appraised as threat (yielding non-adaptive coping). Three coping domains are identified: competence, relatedness and autonomy. The competence domain encompasses two coping categories where the stress is appraised as challenge, *i.e.*, problem-solving and information-seeking, as well as two categories where the stress is appraised as threat, *i.e.*, helplessness and escape. Similarly, for the relatedness domain, two categories imply stress appraisal as

challenge, *i.e.*, self-reliance and support-seeking, two as threat, *i.e.*, delegation and isolation. Finally, the autonomy domain encompasses two challenge-coping categories, *i.e.*, accommodation and negotiation, and two threat-coping categories, *i.e.*, submission and opposition. Each coping category is broken down into three action levels, *i.e.*, affective, behavioral and cognitive, enabling the fine-grained understanding of a total of 36 different types of coping strategies. This structured conception has several assets, in particular it is empirically-derived, integrative and enables one to harken back to the generic underlying dimensions related to coping and thus implies a high level of generality. As such, research carried out within this generic conception may generalize to a great variety of contexts and therapy approaches. The observer-rated Coping Action Patterns Rating Scale (Perry, Drapeau & Dunkley, 2005) used in the present study was developed based on this conception (see Method section). As announced by Neacsiu and colleagues (2010), an observer-rated approach to measuring coping as it occurs in session has several methodological advantages (D'Iuso, Blake, Fitzpatrick, & Drapeau, 2009; Kramer, de Roten, Drapeau & Despland, 2013; Shedler, Mayman & Manis, 1993; Nisbett & Wilson, 1977), and in particular, it places the patient's in-session speech at the center of the attention, enabling to draw clinically truly relevant conclusions from this type of research.

Autonomy-related coping in borderline personality disorder

Based on Skinner and colleagues' (2003) generic conception of coping and using process-based observer-rated methodology to assess coping types in BPD, a cross-sectional study compared the coping profile of $N = 25$ outpatients with BPD, to inpatients with Bipolar Affective Disorder I (BD; $N = 25$) and to healthy controls ($N = 25$; Kramer, 2014). The results revealed that the presence of any of the two mental disorders was systematically associated with more maladaptive coping processes and less adaptive ones. In particular, a general score of coping functioning differentiated the two patient groups from the healthy controls. In

addition, when comparing the BPD with the BD patients, the study found greater in-session use of submission and opposition associated with BPD, compared with BD. These increased frequencies were associated with greater symptom severity, namely more borderline symptoms. Submission and opposition are meta-categories, according to Skinner and colleagues (2003), describing coping with stress perceived as threat in the domain of the individual's need for autonomy. Here, the stress may be perceived as boundary crossing actions by other persons, as a force over-determining one's identity and sense of agency (Skinner et al., 2003). Facing this perception of a stressful event as intruding and as threatening one's identity, the patient either opposes the stress (by putting contents onto other persons, discharging an intensive emotional reaction or by accusing the context for being responsible for the intensity of the stress), or submits to the stress (by accepting constraints going further than what may be acceptable, aligning one's opinion with the one of others, without considering one's own). As such, autonomy-related coping might be a particularly important domain of externalizing coping (Beutler et al., 2011).

Strategies related to externalizing coping are particularly relevant in patients with BPD: Dougherty, Bjork, Huckabee, Moeller and Swann (1999) reported irritability, impulsivity and negative affects as associated with BPD in a laboratory task. Ineffective coping strategies, such as stress avoidance (Kruegelbach, McCormick, Schul, & Grueneich, 1993) and low frequencies of problem solving (Kremers, Spinhoven, Van der Does, & Van der Dyck, 2005) were found in patients with BPD, as compared to healthy controls. It was noted that aversive tensions are ill regulated, and in particular in patients with BPD, self-harming behaviors might be used to cope with the inner emotional tension (Welch, Linehan, Sylvers, Chittams, & Rizvi, 2008). Opposition coping and disinhibition of aggressive impulses observed in patients with BPD might be explained by neurobiological underpinnings. New and colleagues (2007) have demonstrated a decrease in inhibitory

functionality between prefrontal and amygdalar regions. A recent meta-analysis also speaks in favor of a larger failure of neural connectivity in BPD, which may not necessarily involve amygdalar hyperreactivity (Ruocco et al., 2013). Such decreased neural connectivity might explain affective dysregulation, aggressive and oppositional behaviors in BPD, as a correlate of early inadequate – or emotionally abusive – relationships with the child’s care-takers (Herpertz, 2011, 2013). Emerging literature has particularly focused on the moderating role of gender of the link between BPD and (externalizing) coping. For example, it was reviewed that men with BPD present with more neurobiological indicators underlying aggression, than female BPD (Mancke, Bertsch, & Herpertz, 2015); these effects were less marked when analyzing data from questionnaire or interview studies. It was also observed that gender differences for BPD were most marked on stable dimensions of personality (e.g., impulsivity, novelty seeking), but less on the more transient markers of distress (Sansone & Sansone, 2011).

Change in coping and emotion regulation capacities in dialectical-behavior therapy

Within the context of DBT, specifically devised techniques are used to increase the effectiveness of the patient’s coping; change in the latter is therefore predicted by the model (Linehan et al., 2007). McMMain and colleagues (2013) have shown change of behavioral problem solving and the development of more balanced, or nuanced, emotional experiences as a correlate of symptom reduction in DBT for patients with BPD. Neacsiu and colleagues (2010) conducted a mediation analysis on the use of specific DBT-based coping skills by patients with BPD undergoing DBT. These authors concluded that the frequency of actual skills use by patients mediated change on several outcome variables, such as the decrease in suicide attempts, in non-suicidal self-harming behavior and in depressive symptoms. These authors called for more research using method of assessment of emotion regulation which does not rely on self-report. Using functional Magnetic Resonance Investigation techniques,

several studies (Schnell & Herpertz, 2007; Schmitt, Winter, Niedtfeld, Schmahl, & Herpertz, 2013) supported the importance of change in emotional regulation and reappraisal over the course of DBT, in particular the increased neural connectivity between pre-frontal and amygdalar circuits as correlate of an increased capacity of emotion regulation. In conclusion, there is emerging evidence, from different methodological viewpoints, that emotion regulation capacities increase consistently across DBT, in particular skills training. It also appears that self-report assessment of such generic coping skills is limited. So far, no study has examined, from an observer-rated in-session perspective, coping change in DBT skills training.

Aims and hypotheses

The present study aims at exploring change in coping functioning, and in particular autonomy-related coping, as possible change process in dialectical-behavior skills training for borderline personality disorder. We conceptualize the variable of interest from a generic perspective and aim at assessing coping by using a theory-consistent observer-rated approach. As such, we aim to test whether (a) there is an overall increase in coping functioning over the course of dialectical-behavior skills training, along with a decrease in autonomy-related threat coping over the course of dialectical-behavior skills training, which should not be observed in a control condition. We will also test, whether (b) this observed change in coping predicts short-term outcomes of the dialectical-behavior skills training.

Method

Design

The present process-outcome study is a secondary analysis of a previously published two-arm randomized controlled trial testing the additive value, to individual therapy as usual, of a 20-session module of dialectical-behavior-based skills training for borderline personality disorder (Kramer, Pascual-Leone et al., in press). This main study has described a medium

between-group effect size ($d = .48$) for the added skills group for decrease in general problems, between intake and discharge. The original study took place at a European University Outpatient Clinic; recruitment was completed after 3 years. Inclusion criteria were the presence of BPD and over 18 years of age; patients with psychotic disorder and mental retardation, and those who had had DBT before, were excluded from the main study (see Kramer, Pascual-Leone et al., in press). The present process-outcome analysis included the completers from the initial study.

Sample

A total of $N = 31$ outpatients presenting Borderline Personality Disorder (BPD) were included in the present process-outcome study. Twenty-seven (87%) were female, there were 4 males; the patients had a mean age of 34.5 years ($SD = 9.6$; ranging from 21 to 55). All patients were French-speaking and had a DSM-IV (APA, 1994) diagnosis of BPD, as diagnosed by the Structured Clinical Interview for DSM-IV (SCID-II; First, Spitzer, Williams, & Gibbons, 2004). All additional diagnostic information with regard to this completer sample may be found in Table 2. The patients did not differ on any variable, measured at intake. All participants gave written informed consent for data to be used for publication. The study was approved by the Research Ethics Board of the institution involved.

Treatments

The present process-outcome study taking place within an add-on design, the treatment as usual (TAU) condition involved individual treatment for both conditions. These individual treatments were administered according to clinical judgment and in keeping with regular practice. They encompassed psychodynamic, cognitive-behavioral and psychiatric treatments (for distributions and more details, see Kramer, Pascual-Leone et al., in press). The individual treatments were delivered by psychiatrists, psychologists and nurses.

The add-on component was a dialectical-behavior-based skills training (SKILLS) for specifically enhancing emotion regulation and the use of coping skills in patients with BPD. The treatment took place during a total of 20 once-weekly 90-minute sessions. This short version of skills training is based on DBT principles (Linehan, 1993a/b; Page & Kramer, 2011) and followed a manual (Page, 2010). The following coping skills were taught: a) Mindfulness, b) Emotion regulation, c) Interpersonal effectiveness, d) Distress tolerance.

Instruments

Outcome Questionnaire-45.2 (OQ-45; Lambert, et al., 1996). This self-report questionnaire encompasses 45 items addressing three main domains of distress: level of distress, interpersonal relations and social role. In this study, the general sum score computed from the three sub-scores was used. A Likert-type scale is used to assess the items, from 0 (never) to 4 (almost all the time). The validation coefficients of the original English version are satisfactory, in particular for internal consistency and sensitivity to change over psychotherapeutic treatment (Vermeersch, Lambert, & Burlingame, 2000). Cronbach's alpha for this BPD sample was .95.

Borderline Symptom List (BSL-23; Bohus et al., 2009). This self-report questionnaire assesses specific borderline symptomatology using 23 items (see the more extensive BSL-95; Bohus et al., 2007). Excellent psychometric properties were found for the short version (Bohus et al., 2009). The items are assessed using a Likert-type scale ranging from 0 (absent) to 4 (clearly present); an overall mean score is computed. A French translation (Page, Kramer, & Berthoud, 2010; unpublished) was performed and approved by the authors of the scale. Cronbach's alpha for the current sample was $\alpha = .89$.

Coping Action Patterns Rating Scales (CAP; Perry, Drapeau, & Dunkley, 2005; French translation and validation by Kramer & Drapeau, 2011). The CAP is an observer-rating system assessing coping processes based on interview-transcripts. It is based on

Skinner, Edge, Altman, and Sherwood's (2003) hierarchical conception of the structure of coping and encompasses 12 categories of coping, nested within three general domains: competence, relatedness and autonomy (see Introduction section). Based on Skinner et al. (2003), an Overall Coping Functioning (OCF) score can be computed (relative frequency of challenge-coping). Empirical validation has been presented by D'Iuso et al. (2009) for the original English version and by Kramer (2010/a), Kramer and Drapeau (2011; Kramer, de Roten, & Drapeau, 2011) and Kramer et al. (2009, 2013) for the French version used in this study. For the current study, reliability coefficients on 10 ratings from a total of 62 (16%) of the ratings were established among trained raters and yielded satisfactory results in terms of intra-class correlation coefficients (2, 1; Shrout & Fleiss, 1979) varying between .57 and .95 ($M = .84$; $SD = .11$). These coefficients have been established on coping as the unit of analysis (12 categories).

Procedure

In addition to outcome assessment taking place at intake and discharge for all patients, all patients participated in two (individual) dynamic assessment interviews (Perry, Fowler, & Semeniuk, 2005) lasting 50 minutes, one after session 1 of the skills group and a second one before session 20 of the skills group. This was true for both conditions, a) skills group and b) control condition. Dynamic Interview (DI) as a research tool has been developed from clinical practice of psychodynamic psychotherapy; thus, the context of DI was comparable to the context of an intake psychotherapy interview. The focus of the DI is the «patient's life in general» and five tasks of the interviewer compose a high quality DI: (1) Setting the interview frame: work-enhancing strategies; (2) Offering support: questions, support strategies, associations; (3) Affect exploration: questions, reflections, clarifications, defense interpretations; (4) Trial interpretations: defense and transference interpretations and (5)

Formulating a synthesis. The patients were given the outcome questionnaires at the end of the interview and were asked to fill them in and send them back within two days.

All dynamic interviews were video-recorded and transcribed, according to the method defined by Mergenthaler and Stigler (1997). Ratings used these transcripts as a basis and were done by four Master's-Level students in clinical psychology, along with other trained raters.

Data Analytic Strategy

For the preliminary analyses aiming at testing the equivalence of all coping variables between the two groups, a series of independent *t*-tests were conducted. Not all variables examined had comparable variance in both groups, so *t*-tests were privileged on this level of analysis. We conducted these analyses on the completer sample ($N = 31$).

Univariate and multivariate statistics were carried out to test our first hypothesis assuming increase in overall coping functioning and decrease in autonomy-related coping where the stress is appraised as threat, both associated with DBT. The between-group effect on overall coping functioning (OCF) was tested using a univariate linear model, the between-group effect of all six sub-scales (including autonomy-coping facing threat) was tested simultaneously using a MANOVA. These data analyses were selected based on their parsimonious use of power, in the context of a small sample size.

In order to test the second hypothesis stating that coping change predicts outcome, two independent linear regression analyses were conducted, predicting a) change on OQ-45, then b) change on BSL.

Results

As preliminary analysis, we needed to demonstrate equivalence between both groups for all coping indices used in the present study. Our *t*-test revealed no between-group difference with regard to OCF at intake ($t(1, 29) = 1.31, p = .20$). This was also true for all six sub-scales of the CAP (stress appraised as challenge: competence: $t(1, 29) = 0.04, p = .97$;

resources: $t(1, 29) = 0.88, p = .39$; autonomy: $t(1,29) = 1.14, p = .27$; stress appraised as threat: competence: $t(1, 29) = -0.37, p = .72$; resources: $t(1, 29) = -0.09, p = .93$; autonomy: $t(1,29) = -1.52, p = .14$). In addition, we tested a number of intake variables with regard to between-group differences (see Table 2; socio-demographic variables, psychopathological variables, and the variables related to level of symptoms measured by the OQ-45 and the BSL at intake). Therefore, we can conclude that there are no differences between the groups at intake with regard to their coping functioning and relevant psychopathology.

As further preliminary analyses of the present process-outcome study, we needed to demonstrate symptom change between intake and discharge. For OQ-45, this was demonstrated by the completer analysis published by Kramer, Pascual-Leone et al. (in press) where the condition had an adding effect on the decrease in the problems reported on the OQ-45. For change in BSL, we conducted a paired sample t -test on the completers included in the present study ($N = 31$) using the delta score of BSL between pre- and post-therapy. We found an overall pre-post decrease in borderline symptoms ($t(1, 30) = 1.65; p = .05, d = .35$). The condition did not have a significant effect on this change ($t(1, 29) = 0.80, p = .53$), yet with a small between-group effect for the borderline symptom decrease favoring SKILLS ($d = .23$).

Change of coping in dialectical-behavior skills training

Univariate statistics revealed a between-group difference on OCF when we compared the change score (i.e., OCF at discharge – OCF at intake): Patients who received the SKILLS component presented with an increase in overall coping functioning, compared to TAU patients whose OCF remained stable. As shown in Table 3, multivariate statistics corroborated the overall effect favoring coping change associated with SKILLS. In addition, when examining each sub-scale separately, we found two effects: (a) patients undergoing SKILLS increased the frequency of their coping facing a stress appraised as challenge (i.e., adaptive coping) in the domain of relatedness (i.e., more self-reliance and more support-

seeking coping), compared to TAU patients, and (b) patients undergoing SKILLS decreased the frequency of their coping facing a stress appraised as threat (i.e., non-adaptive coping) in the domain of autonomy (i.e., less submissive and opposition coping), compared to TAU patients. The latter effect was specifically predicted by our first hypothesis.

Predictive value of coping change for symptom change in dialectical-behavior skills training

A series of regression analyses predicting two types of outcome (general distress and specific borderline symptomatology) were conducted on the OCF, as well as the two variables which were associated with SKILLS and yielded the following picture. OCF change was introduced in two separate regression analyses, the first to predict OQ-45 change ($\beta = -.61$, $t(1) = -4.14$, $p = .00+$) and the second to predict BSL change ($\beta = -.39$, $t(1) = -2.31$, $p = .03$). OCF change predicted alone 37.2% of OQ-45 change and, separately, 15.5% of BSL change.

When analyzing the change on the two relevant sub-scales, relatedness coping where the stress is appraised as challenge (i.e., adaptive) and autonomy coping where the stress is appraised as threat (i.e., non-adaptive), we found the following picture. Change in OQ-45 was significantly predicted by the increase in challenge-relatedness coping (i.e., self-reliance and support seeking; $\beta = -.50$, $t(1) = -3.23$, $p = .00+$) and marginally by the decrease in threat-autonomy coping (i.e., submission and opposition; $\beta = .28$, $t(1) = 1.82$, $p = .08$), together explaining 32.3% of the variance of symptom change. However, change in BSL was not significantly predicted by the increase in challenge-resource coping (i.e., self-reliance and support seeking; $\beta = -.05$, $t(1) = -.29$, $p = .77$) and by the decrease in threat-autonomy coping (i.e., submission and opposition; $\beta = .12$, $t(1) = .66$, $p = .52$), together explaining merely 2% of the variance of the specific borderline symptom change.

Discussion

The present study indicates that dialectical-behavior skills training for patients with borderline personality disorder has an impact on several generic dimensions of coping, as assessed by observer-rated methodology. Despite the small sample size associated with the present study, our results tend to confirm the central hypothesis and put into a larger context the results found by Neacsiu and colleagues (2010) who have demonstrated that DBT-specific coping skills changed across DBT, by using self-report methods to measure coping skills.

Towards effective relatedness coping

Our study has shown that overall coping functioning increased under DBT skills training, along with specific coping capacities related with support seeking and self-reliance, both of which presumably involve a stress appraised as challenge within the domain of inter- and intra-personal relatedness. What is more, as predicted by the hypothesis, we observed a decrease in patients undergoing DBT skills training of the specific coping strategies of submission and opposition, both of which presumably involve a stress appraised as threat to autonomy needs. Increase in self-reliance coping – with behavioral components such as self-assertion and taking responsibility – may be interpreted as behavioral correlate of what Kramer, Pascual-Leone and colleagues (in press) described in the same sample as assertive anger. As such, the specific emotion of assertive anger might influence the choice of behavioral coping with stress: it may entail a structured outreach for help or standing up for one's healthy needs. What is more, the patient's increase in such effective relatedness coping seems to drive the decrease in general distress after the short-term skills training. Should this effect be found in larger samples, it would show the centrality of relatedness coping for the initial rehabilitation and treatment effectiveness facing patients with BPD. When facing adversity, learning how to effectively reach out for structured help and self-assert seems a central task early in therapy and it remains to be shown what the long-term effects of such coping changes are.

As assertive behaviors tend to increase when patients with BPD learn the DBT skills, problematic and unproductive coping strategies lessen: submissive and oppositional behaviors decrease. In a cross-sectional study using the same observer-rated methodology, Kramer (2014) found that this type of unproductive coping (i.e., submission and opposition) was related with the intensity of the specific borderline symptoms. Therefore, it was a sensible hypothesis to assume that in addition, the decrease in opposition and submission – the domain of autonomy coping – would predict decrease in the specific borderline symptoms in the context of dialectical-behavior skills training. This assumption did only held true on a marginally significant level. Autonomy coping where the stress is appraised as threat, tended to predict symptom decrease. Such an effect on outcome was more convincingly shown for the increase in challenge-coping in the domain of relatedness.

Increase in use of one's and other's resources to cope with the stress (i.e., relatedness coping according to Skinner et al., 2003) predicted the decrease in general psychological distress between intake and discharge, but not the change in borderline symptoms. In the context of this 4-month version of DBT skills training, psychological distress might respond quicker to the techniques offered, whereas longer-term treatments might be needed to tackle the intensity of BPD symptomatology. Comparable and yet statistically significant effects were found as a result of a three-month DBT program on the change on the short version of the Borderline Symptom List (Bohus et al. 2009).

Clinical implications

Our results bear several clinical implications. It seems important for a therapist to learn to identify in a comprehensive way the patient's coping capacities and styles. Such a competence may be acquired by using the coding system we have used in the present study (Kramer, de Roten & Drapeau, 2011). For clinicians who might not have the time to learn a comprehensive coding system, it might be helpful to pay attention to specific coping

behaviors in the session. For example, facing a patient with BPD, a clinician may specifically foster effective relatedness coping, by implementing assertiveness trainings or by suggesting to patients strategies on how to ask more effectively for support in stressful situations. In reverse, it is wise for a clinician to monitor the evolution of ineffective coping related to autonomy issues, in particular opposition coping. These may involve the expression of hatred towards another person, the accusation of someone else of facts that were unrelated with this person and the repetitive venting on emotional issues. Should this type of coping not decrease during the first sessions of skills training, as demonstrated here, the therapist should check if his/her therapy is sufficiently effective and maybe offer additional – individual – sessions to micro-analyze specific interpersonal situations where the patient has engaged in opposition coping, e.g., by using chain analyses. This strategy may help to gain a detailed understanding of how a particular patient deals with underlying autonomy issues. Such detailed analyses might help to develop alternative – more effective – behaviors in the patient to cope with the stress.

Limitations and perspectives

The present sample presented with limited power, however, the data analytic strategy was adapted to this situation by selecting specific statistical tests and by limiting the number of tests. These conditions did not enable us to conduct a formal mediation analysis on the role of coping change for the therapy's effectiveness. Also, gender was shown to be a central moderating variable of the link between BPD and externalizing coping (Mancke et al., 2015), therefore, we need to acknowledge that gender was not controlled for in the present study and should be in further studies, where power allows it. It is unclear which of the actual therapist interventions may have fostered, or hindered, the observed coping changes. A more detailed in-session analysis may help here. Also, the design of the study did not allow to formally control for the additional time and attention given to the experimental group (with SKILLS).

Therefore, we need to acknowledge that parts of the effect might be related to this additional attention given to SKILLS. Formal adherence was not demonstrated in the original study, which was discussed by Kramer and colleagues (in press). We did not include follow-up data points in the present process-outcome analysis.

Despite the formal limitations, the present study has underlined the central importance of coping change in dialectical-behavior skills training, as conducted in a European University outpatient clinic setting. In addition to a general increase in coping functioning for the patients who underwent the skills training (vs the ones who did not receive the skills training), we conclude that there is an increase in effective relatedness coping and a decrease in ineffective coping related to autonomy needs. In particular the increase in effective coping was systematically associated with outcome. Skills training not only has an effect on *specific* DBT skills – as demonstrated by Neacsiu and colleagues (2010), but also on the individual's general and comprehensive coping capacities, as observed in the therapy session by independent observers. The present research calls for more studies on potential moderators in the link between BPD and coping: gender, age, level of symptoms and quality of (meta-) cognition at intake, process characteristics such as the therapeutic alliance, and treatment type are potential candidates. Irrespective of these influential variables, we may speculate that coping change may be part of a generic change process which takes place in effective psychotherapy. Humans tend to reach equilibrated emotional states and try to maintain a homeostasis over time (Cramer, 1998). One path to reach such an equilibrated state is starting to be better understood and described for patients presenting with BPD.

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Table 1

Structure of the CAP with excerpts from patients diagnosed with BPD (Perry et al., 2005)

Domain	Categories	Excerpt
Challenge :		
Competence	Problem-Solving (PS)	IS-c : « I wonder where my problems come from. »
	Information-Seeking (IS)	
Resources	Self-Reliance (SR)	SS-b : « I had more depressive bouts and then I
	Support-Seeking (SS)	called you.»
Autonomy	Accommodation (A)	A-c : « As hard as it is, I accept it now ; my wife
	Negotiation (N)	will not come back. »
Threat :		
Competence	Helplessness (H)	E-c : « I don't think about the accident anymore.
	Escape (E)	It's too distressing.” »
Resources	Delegation (D)	D-b : « I acted like a child, so my partner needed to
	Isolation (I)	take on the responsibility.»
Autonomy	Submission (S)	O-a : « I expressed my hatred directly to her.”
	Opposition (O)	

Note. CAP: Copin Action Patterns Rating Scale; Each category is broken down into three action levels: affective (a), behavioral (b) and cognitive (c). To save space, we only provide one example per domain.

Table 2

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

Variables	Condition		χ^2	<i>p</i> -value
	SKILLS ($n = 16$)	TAU ($n = 15$)		
	<i>n</i> (%)	<i>n</i> (%)		
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)	<i>t</i> (1, 29)	<i>p</i> -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). TAU: individual treatment as usual; SKILLS: TAU plus dialectical-behavior skills training. OQ-45: Outcome Questionnaire-45.2.; BSL: Borderline Symptom List; GAF: Global Assessment of Functioning.

Table 3

Change in Coping in Borderline Personality Disorder over the course of Dialectical-Behavior Skills Training ($N = 31$)

Coping	Intake				Discharge				<i>F</i>	<i>ES</i>
	SKILLS		TAU		SKILLS		TAU			
	M	SD	M	SD	M	SD	M	SD		
OCF	.37	.14	.44	.16	.48	.25	.38	.20	4.13*	0.70
Challenge										
Competence	1.56	2.06	1.60	3.07	2.13	2.85	1.80	2.14	.14	0.13
Resources	4.68	3.18	5.73	3.47	7.94	5.25	5.27	2.76	4.30*	0.75
Autonomy	0.43	0.89	1.07	2.01	1.81	3.35	1.80	1.86	.55	0.27
Threat										
Competence	5.13	2.85	4.80	1.97	6.13	4.67	6.40	4.17	.13	0.13
Resources	1.31	1.49	1.27	1.38	1.50	1.86	1.27	1.33	.10	0.12
Autonomy	5.25	3.02	3.53	3.24	3.50	2.37	3.53	2.17	4.28*	0.74

Note. ANOVA (on change value of OCF at discharge – OCF and intake); MANOVA (on change value discharge – intake on all six sub-scales taken together): $F(6, 24) = 2.04$; $p = .05$.

TAU: individual treatment as usual; SKILLS: TAU plus dialectical-behavior skills training;

OCF: Overall Coping Functioning; ES: Effect size (Cohen's d)

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