

The relationship between DBT network training and perceived criticism: a pre-post study

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Research article

Keywords: Emotion dysregulation, Dialectical Behaviour Therapy, Personality, Family Functioning, Perceived criticism

DOI: <https://doi.org/10.21203/rs.3.rs-50515/v2>

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Abstract

Background: Emotional and behavioural dysregulation in patients with Borderline Personality Disorder (BPD), such as repeated non-suicidal self-injury, are strongly affecting patients' family members or partners. In addition, critical disapproval of this emotional and behavioural phenomena by family members and reconciling understanding, affects the patients' sensitivity for rejection. As a result, scientific findings endorse that individuals with BPD appear to experience less satisfying social support and a stronger feeling of loneliness. This negative spiral possibly elicits further challenging behaviour. Therapy programs for BPD might therefore benefit from the inclusion of family members or partners in the treatment. One of the programs that includes family members is the network training of Dialectical Behavior Therapy (DBT). This study examines the impact of the DBT network training on the perceived criticism of both patients and network members.

Method: This study follows a pre-post design where a DBT network training is given to 33 patients (mean age 25 years) and 61 relatives during 8 group sessions. The degree of perceived criticism is measured by using a self-report questionnaire.

Results: Results show that the overall scores of the perceived criticism scale decrease significantly for both patients and relatives after following the DBT network training. More specific, item scores of both patients and relatives concerning how critical they looked towards the other and how critical they thought the other looked at them also decreased significantly after following the DBT network training.

Conclusion: Findings suggest that a DBT network training may be instrumental in decreasing levels of perceived criticism. Further research may focus on the putative mechanisms of behaviour such as improved perspective taking, behavioural change, and the evaluation of social cues.

Background

One of the most prevalent examples of emotion dysregulation disorders is Borderline Personality Disorder (BPD). BPD is defined as "a pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity that begins in early adulthood and is present in a variety of contexts" (p. 456) (1). This disorder is characterized by e.g., impulsive aggression, repeated non-suicidal self-injury (NSSI) and chronic suicidal tendencies that are caused by emotion dysregulation (2). Among the personality disorders, BPD has the highest rate of utilization of psychosocial services (3-5). In the Netherlands, it has been estimated that 1 to 2% of the population has BPD (6).

Dialectical Behavior Therapy (DBT) is an empirically supported treatment program developed by Marsha Linehan for individuals with BPD (7, 8). Standard DBT consists of weekly skills training, weekly individual therapy, elective intermittent telephone consultation and regular therapist team consultation. A meta-analysis by Stoffers et al. shows that DBT is especially helpful in the improvement of general functioning and in reducing inappropriate anger and NSSI (9). The DBT model assumes that the disruption of the emotional regulation is the result of a complex and longitudinal transaction between

someone with emotional vulnerabilities (the biological component) and their (invalidating) environment (the social component). Examples of the biological component include trait impulsivity (10-13), trait anxiety (14) and emotional sensitivity (15). Normally this would be described as an interaction, but Linehan speaks of transaction because she assumes that a change in the client automatically leads to a change in the environment. In this way, both parties influence and change each other in a continuous process that is interactive, mutual and interdependent (16). Chronic and pervasive emotion dysregulation lead to the disruption of a person's emotional life on both an individual level (identity, behaviour, cognition) and on an interpersonal level (rejection, sensitivity, difficulties in belonging, cooperation, chronic loneliness and negative self-esteem) (17).

Invalidating environments contribute to the enhancement of emotion dysregulation. Linehan defines an invalidating environment as one that does not acknowledge an individual's experiences or emotional expressions (17). Invalidation occurs when an individual receives explicit or implicit communication from another indicating that his internal experiences are insignificant, incorrect, inappropriate or that his reaction to a given situation is inappropriate (18). The invalidating environment frequently punishes normative expressions of emotion while simultaneously reinforcing more extreme emotional display. As relatives of individuals with BPD often show deviations in their emotional regulation abilities (19), it could be hypothesized that they are more likely to form an invalidating environment. Indeed, family members or partners of people with BPD are directly affected by dysregulating emotional and behavioural phenomena, including repeated (non-suicidal) self-injuries (NSSI). They experience severe impact from the patient's problem behaviour and are concurrently most likely the ones who affect the patient (20).

Since only highly aversive and intensive emotional responses lead to reactions from the invalidating environment, the individual will not learn how to cope with emotions, nor learn to tolerate frustrations. On the contrary, the individual learns to self-invalidate his own experiences and emotion; recognition, labelling and regulation of his own emotions remains poor (7, 8).

Invalidating responses of the environment lead to significant changes in heart rate, skin conductance and affect (21). To reduce this autonomous (bottom up) emotional reactivity (22), studies show that self-destructive behavior is used as an emotional regulation strategy to relieve tension and somatic stress. Although this may temporarily suffice, it leads to misunderstanding, rejection or further invalidation (23). In addition to the aforementioned acute physical consequences of invalidating responses, there are also significant long-term consequences of the self-destructive behaviour including health damage, scars and stigmatization (24-25). Results of Bennett and colleagues (26) show that adolescents with severe emotion dysregulation problems experience their caregivers to be more invalidating and less supportive than adolescents without these problems. Furthermore other studies show that self-destructive behavior is also more likely to occur in the context of interpersonal problems (27-28). Given this negative spiral of invalidation, increased bottom up reactivity, maladaptive coping strategies and negative environmental responses, it may be concluded that instability in relationships is one of the most stable symptoms in BPD (29-30). Interpersonal disturbances have received significant attention in BPD research. We now know that individuals with BPD are more likely to evaluate social cues in a negative way and to notice criticism or rejection where others would not (31). Since individuals with BPD are prone to feeling rejected

or to experiencing criticism, they tend to avoid social relationships which ultimately results in feelings of abandonment or loneliness (32). A negative spiral of emotions and reactions ensues whereby disruption of interpersonal contact leads to increased reactivity to social stressors (33) and to higher rates of perceived criticism, and ultimately to a stronger chance of relapse after treatment (34). In other words, individuals with BPD appear to have less satisfying social interaction and experience less support when they try to cope with their distress, causing further impairment of their emotion regulation abilities (35).

Over the last twenty-five years, therapy programs have been developed to enhance social relationships through reduction of negative social cue evaluation, to reduce invalidation, to minimise drop out and relapse rates and to maximise new skill generalisation. Recently, Kirtley and colleagues (36) suggest that criticism should receive more attention in designated interventions since caretakers of individuals with BPD experience higher levels of burden and criticism than other caretakers. This proposition fits in with the growing tendency to include family members or partners in the treatment of BPD individuals to increase the degree of therapy generalization and to enhance social support. One of these therapy programs is the family network training of DBT (37).

Until now, few studies have focused on the effect of standard DBT - including a network module - on the transaction between individuals with BPD and their network members. While a limited number of studies has shown that residential DBT influences attachment style changes in BPD patients (38), this current study is the first to investigate the added value of the DBT family training with patients and network members on perceived criticism towards each other. In this pilot study, the DBT network training was part of a residential DBT program. Because of the residential character of the program, a network training could help to directly change contingencies since new learned behaviour could easily be incorporated in everyday life. We believe that the combination of analysis, practice and role play to demonstrate learned behaviour, will ultimately change the interaction between network members and result in different perspective taking.

The network training took place every two weeks and was based upon the DBT skills manual. Family members, partners and other important relatives and/or friends of the patients who participated in this residential DBT program received the DBT network training. The total training consisted of eight sessions in which patients and their family/friends (8) studied the DBT theory and learned to apply the DBT skills together.

To assess changes in interpersonal judgment, we measured perceived criticism before and after the family network training. It was hypothesized that after following the DBT network training patients and their family would be less critical of each other.

Method

Participants

This study comprises 33 female patients aged 17-50 (M=25.3 years, SD=8.6) who all participated in a step-down DBT program at Jelgersma Center for Personality Disorders, a therapy program based on Linehan's protocol (7) modified for a residential setting by van den Bosch et al. (39) This program consisted of 3 months residential DBT plus 6 months of outpatient DBT. Originally the group of patients consisted of 36, but three patients dropped out.

All patients met the criteria for Borderline Personality Disorder according to the Dutch version of the Structured Clinical Interview for DSM-IV Axis II personality disorders (SCID-II) (40, 41) and showed a severe level of borderline symptomatology (> 24 on the Borderline Severity Index; BPDSI) (42) with parasuicidal behaviour present in the last month preceding the start of residential DBT. Other inclusion criteria were adequate understanding of the Dutch language and acceptable travelling distance from the study center in Leiden, the Netherlands. Exclusion criteria were an IQ<80, a chronic psychotic condition, bipolar disorder, drug abuse requiring inpatient detoxification, forced treatment framework, and/or DBT treatment in the year preceding intake.

The network training was considered a part of the residential DBT program. In the event that a network could not or did not want to participate, the patient was not excluded from the residential DBT program. Patients were informed about the residential program through an extensive script which an Q and A session was organized. Patients were informed that that all information would be anonymously processed and all participants gave informed consent and permission to make video recordings of therapy sessions. After culmination of the sessions, participants evaluated the effectiveness of the therapy. Patients were permitted bring family members, partners, friends or other persons of importance to them to the DBT network training. All 33 patients followed the DBT network training, 31 of them together with their network. The network group consisted of 61 people: mothers (N=21), fathers (N=16), partners (N=11), sisters (N=6) and friends (N=7). All patients and network members were asked to sign a written informed consent about the use of the data for scientific purposes.

Measures

The perceived criticism (PC) scale (34) gives an indication of the degree in which an individual experiences disapproval or criticism from his environment and the degree in which he is critical of his environment. This scale asks the individual two questions: 'how critical is your relative of you?' and 'how critical are you of your relative?'. The PC scale is a 10-point Likert scale ranging from not at all critical to extremely critical.

Both patients and the network members attending the DBT training filled in the PC scale over the other. The scales were filled in at the end of the first session and after 16 weeks at the end of the last session.

Intervention

The current residential DBT program consisted of the standard DBT program supplemented with daily mindfulness classes, daily meetings concerning living together as a group, weekly drama therapy, weekly

group sessions on validation skills and chain analyses. The program lasted for 3 months during which (39) a support staff was present during office hours to help the patients apply DBT skills. The network training sessions were held every two weeks.

The DBT network training was based on the network training of Hoffman, Fruzzetti & Swenson (37) and consisted of 8 sessions of two hours (break included). The meetings were always planned in the early in the evening to facilitate participation. The DBT network training was led by experienced skills trainers from the DBT team who received supervision on a regular basis by a certified DBT clinician.

The first two meetings of the training were devoted to psycho-education (information about Borderline Personality Disorder, the DBT treatment program, emotion dysregulation, the biosocial theory, case management strategies). After these introductory sessions, the participants were asked to commit to participation in the entire training. The program of remaining six sessions included (in chronological order) a mindfulness exercise, an overview of the content of the current session, a summarization of the theory of the previous session, a discussion of the homework assignments, a short intermission, and lastly the introduction and practice of new theory. The theory of the third, fourth, fifth and sixth meetings was respectively mindfulness, interpersonal effectiveness, emotion regulation and distress tolerance. Participants were asked to prepare for a session by reading the corresponding chapter of the skills training manual. During each session an overview of the associated skills was presented, and homework was directed at the core of each module. For instance, for interpersonal effectiveness the participants were asked to fill in the homework sheets belonging to DEAR MAN GIVE FAST. During the final two meetings all of the the DBT skills discussed were evaluated. At the end of the last meeting the group addressed how to continue practicing the DBT skills.

Procedure

All patients participated in an intensified adapted DBT program, which consisted of 3 months residential DBT plus 6 months of outpatient DBT (39). In residential DBT, support staff were present during office hours to help the patients apply DBT skills. Different program parts were added to the standard DBT program like daily mindfulness classes, daily meetings about living together as a group, weekly drama therapy, weekly group sessions on validation skills and chain analyses and every other week the network training was given. Therefore, the network training was also a part of the 3 months residential DBT program. Patients could choose who they wanted to participate with in the DBT network training. In clinical practice, this meant that mothers, fathers, partners, friends and siblings were invited in person by the patients to join the DBT network training with them.

As mentioned before at the end of the second meeting, all participants were asked for commitment to continue training in the skill modules. Commitment not only consisted of participating in the remaining meetings, but also the willingness to practice the skills material and practice homework assignments together (both network member and patient). At the start and at the end of the last network-training session everyone was asked to fill in the PC scale.

Data collection took place from 2012-2014, when residential DBT was provided by the Jelgersma Centre. In the last part of this period, the study of the effectivity of residential DBT treatment took place (43) but the collection of data of the network training was not included in the study protocol. The scientific commission and the board of GGZ Rivierduinen agreed to support the execution of the data collection.

Statistical analyses

Statistical analyses are performed with SPSS for windows version 22. The impact of the DBT network training is determined by paired sample t-tests. Scores of the perceived criticism scale before and after following the DBT network training were compared. All tests were two-tailed tests and alpha was set at 0.05. To determine the size of the effect, Cohen's d is calculated. The formula $d = t/\sqrt{n}$ is used because of the within-subject design (44).

Results

First we examined the overall scores. The perceived criticism scores of both patients and network members were significantly higher before the DBT network training than after the training with a large effect (table 1 and figure 1).

Table 1 Pre and post scores of the perceived criticism scale (PC) for patients and relatives: overall

	Pre Training (T0)	Post Training (T1)	Outcomes			
	M (Sd)	M (Sd)	T	Df	P	Cohen's d
<i>Total scores PC scale</i>						
PC Patient (N33)	6.91 (1.84)	5.01 (1.47)	7.90	32	0.00	1.38
PC Relative (N61)	6.54 (1.40)	4.89 (0.99)	7.57	30	0.00	1.36

Next, differences in PC scale scores were also examined per item. The scores of both patients and their relatives concerning how critical they think the other is towards *them* decreased significantly following the DBT network training, with a large effect (Table 2). Furthermore, the scores of both patients and their relatives concerning how critical they are towards *the other*, also decreased significantly after following the DBT network training, with a large effect (Table 2).

Table 2 Pre and post scores of the perceived criticism (PC) scale for patients and relatives: subscales.

	Pre Training (T0)	Post Training (T1)	Outcomes			
	M (Sd)	M (Sd)	T	Df	P	Cohen's d
<i>Item: 'How critical do you think your relative is towards you?'</i>						
PC Patient (N33)	7.48 (1.69)	5.27 (1.49)	7.16	32	0.00	1.25
PC Relative (N61)	6.91 (2.19)	5.30 (1.60)	6.21	30	0.00	1.12
<i>Item: 'how critical do you think you are towards your relative?'</i>						
PC Patient (N=33)	6.34 (2.39)	4.75 (1.92)	5.76	32	0.00	1.00
PC Relative (N=61)	6.16 (1.43)	4.48 (0.96)	5.77	30	0.00	1.04

Discussion

To our knowledge, this is the first study to examine the impact of a DBT network training on perceived criticism between patients and family members, partners and other important relatives and vice versa. As hypothesized, we found that the overall scores of the perceived criticism scale given by both patients and relatives decreased significantly after following the DBT network training. Furthermore, the scores of patients and their relatives in how critical they think the other is towards them and in how critical they are towards the other decreased significantly after following the DBT network training. Given the large effect sizes, this may be considered a highly relevant finding, although the specific mechanisms underlying the indicated change remain unclarified. Additional analysis of the efficacy study (R. Sinnaeve, personal communication, 43) shows that social functioning of patients only improves significantly with residential DBT, but not with standard DBT. The network training in the current study was a part of a residential DBT program. It is likely that joint activities of clients and relatives contribute to the relationship changes since the improvement in social functioning and perceived criticism improves in both clients and their relatives.

The results that we describe may be explained by factors other than interactional change. Relatives and network members may have benefitted from the DBT skills that they learned. Research shows that psychiatric disorders characterized by negative affect (depression, anxiety and trauma-related disorders and impulse control) are common in relatives of patients with BPD (45). It is possible that such disorders were present in network members and that through the training these network members learned not only how to react more appropriately to the patient but also how to cope with and manage their own distress. This latter point can specifically explain why relatives perceive less criticism as indicated on the PC scale.

Furthermore, a change in perspective taking provides a cognitive-based explanation for the results. A change in perspective taking means the ability to see the world from both your own and from an others' perspective (46). Perspective taking is an important feature of social cognition and interpersonal communication (47) and consists of cognitive, behavioural and affective elements that can be trained to help develop empathy and adequate reaction to others (48). The decrease in perceived criticism could indicate that the network training results in a change in perspective taking in both patients and network

members changing emotion regulation processes and subsequently in creating the possibility of a less critical and more realistic stance for both patients and network members. Unfortunately, we have no data on the emotion regulation processes. The change in perspective taking could be influenced directly by role playing during the DBT network training since patients and family members are asked to take each other's perspective. In this way, both groups experience seemingly normal interpersonal situations that are however difficult for the other. Role play can help shape new (emotional) reactions in both patients and family members. Besides directly influencing perspective taking, analysing situations together and talking about different ways to react or respond to each other could also have influenced reconciliation and stimulated new ways to connect with each other. Perspective taking is one of the core elements of DBT and mentalization. Mentalizing includes the interpretation of your own or others' behaviour based on mental states of thoughts, beliefs, desires or feelings (49). Montgomery-Graham (50) shows that DBT enhances perspective taking skills by making automatic or indirect thoughts, feelings and behaviour more explicit, for example through the process of chain analysis. The combination of more explicit mentalization with interpersonal skills learned in DBT can help patients to better influence their behaviour instead of being led by impulsive, automatic responses.

Next to an cognitive-based explanation, the results can also analysed from a behavioural context. As patients and family members attended the skill training and did homework assignments together, these group activities could have led to changes in (interpersonal) behaviour and thus changes the manner of interaction. Also, patients and relatives learn and train new behaviour and social skills in the training session. This is a form of active learning (51) which we know to be superior to passive learning (52) when developing new skills. According to the research of Holsbrink-Engels (53), role play is the most common effective way to practice the development of interpersonal skills since individuals not only learn theoretical new skills, but also practice the new behaviour. Moreover, patients and relatives were motivated to plan homework sessions between two training meetings. In this way, they indirectly trained interpersonal and emotion regulation skills in planning and spending time together while completing the homework assignments. Also, because the homework was subsequently discussed in the following meeting, feedback and encouragement of other families/networks reinforced the practiced interactions and behaviour change.

Spending time together with and receiving support from important relatives might also contribute to positive long-term effects for patients with BPD. Research from Hooley and Hoffman (54) showed that higher emotional involvement from family/network members leads to better longitudinal results in patients with BPD. Behavioural changes realized by new interpersonal skills may redirect the circle of invalidation for both patients and network members (55). This supports the notion that BPD is a transactional, systemic disorder in which all parts of the system influence and change each other. Furthermore, support for the behavioural change comes from observations made during the DBT network training. Patients and network members show changed behaviour towards each other. The following quote of a father who participated in the DBT network training with his daughter can be seen as an example. During the last session of the training father said:

"I never realized until this training that I was judging you. Whenever I was trying to reach out a hand to help you, I thought you refused to take it because you blamed me for your problems. And I got mad at you. Now I see that you couldn't see my hand because of your regulation problems. And my own."

A strength of this study is the fact that this study has been conducted in clinical practice. This kind of research gives a representation of effects and achieved results without all kind of preconditions. The present study is limited in several ways. First of all, we missed control measures by a lack of a control group. Although the effect sizes are large, we interpret the results with caution due to several methodological limitations. The DBT network training was part of a residential DBT program what made it impossible to include a control group. Thus, we cannot correct for the influence of the clinical psychological treatment on the results. Secondly, the perceived criticism questionnaire can be considered to be quite vague because the term criticism can be widely interpreted. Furthermore, a distinction between different facets of interpersonal contact and perceived criticism as reflected by the PC scale cannot be made. Although the PC scale is validated for clinical use because of its short length, we suggest to further research to develop and validate other questionnaires. Possible correlations between these questionnaires can give more information about the change in interpersonal contact and perspective taking. Third, the residential DBT program was performed in a clinic with a high level of expertise with patients that were treatment-resistant at referring hospitals. As all participants had to be highly motivated in order to participate, this could have influenced the external validity. Additionally, all participants were referred to the treatment centre because of a high burden of illness, the results from this group might therefore differ with results from patients with a lower illness burden. It should be noted that patients and their network members had the opportunity to refuse future participation at any time without consequences for the treatment. However, no one refused. A further limitation is that attachment style of patients and network members could not be systematically assessed. Oostendorp and Chakhssi (38) showed that attachment style and change in attachment style of BPD patients can be a predictor of psychological functioning. The possible influence of attachment style of patient and network members and how this might influence the degree of change in the context of perceived criticism could be the focus of future research. Future research should also explore the added value of the network training in DBT in a high-quality controlled study where patients enrolled in a standard DBT program randomly participate in the network training. An alternative would be, given the fact that multiple DBT therapists in the Netherlands already give the network training, to use an interrupted time series design with a control group. This way there is a experimental group that follows standard DBT and the network training and a control group that follows standard DBT without network training. Measurements should be at the beginning and the end of the eight session and contain instruments that capture change in BPD symptomatology, perspective taking, perceived criticism and attachment style.

Conclusion

Caretakers of individuals with BPD experience higher levels of burden and criticism than caretakers of other persons. Therefore, the involvement of relatives in the treatment of BPD is important. Present findings conclude that DBT network training comprised of eight sessions as a part of a residential DBT

program is feasible. We found that the application of the DBT network training in the context of a residential DBT program resulted in a significant decrease in scores on the perceived criticism scale. This study contributes to our knowledge to the relationship between the DBT network training for patients and their relatives and perceived criticism. The results suggest that changes in interpersonal contact between an individual and the invalidating environment seems to occur. A multitude of mechanisms may play a role in the changes found. Whether adding a network training enhances the efficacy of a DBT program concerning the BPD problems of patient stays unanswered. Therefore, further research is needed to understand the relationship between DBT treatment, the application of the DBT network training and perceived criticism.

Abbreviations

BPD: Borderline Personality Disorder; DBT: Dialectical Behavior Therapy; DSM: Diagnostic and Statistical Manual of Mental Disorders; NSSI: Non Suicidal Self Injury; SCID-II: Structured Clinical Interview for DSM-IV Axis II personality Disorders; BPDSI: Borderline Severity Index; PC: Perceived Criticism.

Declarations

Acknowledgements

We would like to thank all the participants, both clients and their network members for participation. We also want to thank Lisa Davies, psychologist, for the feedback on the final version of the manuscript and express our gratitude to Debbie Ceiler, PhD for her help with English editing’.

Ethics approval and consent to participate

This study was approved by the scientific commission and the board of GGZ Rivierduinen. All participants gave written informed consent to the second author, at that time supervising clinical psychologist at the GGZ Rivierduinen institute.

Consent for publication

Written informed consent was obtained from the participants for publication of their individual details in this manuscript.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

HvL is shareholder of Dialexis, the training institute for Dialectical Behavior Therapy (DBT) in the Netherlands. WvdB works for Dialexis as an instructor. The authors declare that they have no competing interests.

Funding

GGZ Rivierduinen provided financial support to collect the data. Our project did not receive any other specific grants from funding agencies in the public, commercial, or non-profit sectors.

Authors' contributions

HvL and WvdB designed the study. WvdB was responsible for the datacollection at GGZ Rivierduinen by the DBT network trainers. HvL analysed and interpreted the data. HvL and WvdB drafted the manuscript. LO and JE supervised the project and critically reviewed the manuscript for important intellectual content. All authors provided final approval for the manuscript in its current form.

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