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Published in final edited form as:

Title: Assertive Anger Mediates Effects of Dialectical Behaviour-informed Skills Training for Borderline Personality Disorder: A Randomized Controlled Trial.

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Journal: Clinical psychology amp; psychotherapy

Year: 2016 May

Issue: 23

Volume: 3

Pages: 189-202

DOI: [10.1002/cpp.1956](https://doi.org/10.1002/cpp.1956)

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ANGER CHANGE IN DIALECTICAL BEHAVIOR SKILLS TRAINING

Assertive anger mediates effects of dialectical behavior-informed skills training for borderline personality disorder: a randomized controlled trial

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Acknowledgments: Part of this research was supported by the Société Académique Vaudoise and the 450e Anniversaire of the University of Lausanne grants given to the first author.

Running Head: ANGER CHANGE IN DIALECTICAL BEHAVIOR SKILLS TRAINING

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personality disorder: a randomized controlled trial

Abstract

Dialectical behavior (DBT)-informed skills training for borderline personality disorder (BPD) aims at the development of specific emotion regulation skills in patients, particularly in regard to the regulation of problematic anger. While the effects of DB skills training have been shown, their processes of change are rarely examined. Neacsiu, Rizvi and Linehan (2010) found that patient's self-reported use of emotion regulation skills was a mediator of therapeutic change in these treatments, however, they found no effect for problematic anger. From an integrative perspective on anger (Pascual-Leone & Greenberg, 2007; Pascual-Leone & Paivio, 2013), there are several forms of anger, varying in their degree of therapeutic productivity. The present add-on randomized controlled trial included $N = 41$ patients with BPD ($n = 21$ DBT-informed skills training vs. $n = 20$ treatment as usual). The first study examined outcome of the DBT-informed skills training encompassing basic components of training in mindfulness, distress tolerance, interpersonal effectiveness and emotion regulation. Results showed that symptom reduction was significantly greater in the DBT-informed skills training, compared to the treatment as usual. The second study used process assessment, for which all patient completers underwent a 50 minute-long psychological interview both early and late in treatment, which were rated using the Classification of Affective Meaning States (CAMS). DBT-informed skills training produced increased levels of primary “assertive” anger, as compared to the treatment as usual, whereas no effect was found for “rejecting” secondary anger. Most importantly, we showed that changes in assertive anger mediated the reported symptom reduction, in particular in patient’s social roles. We discuss these results in the context of underlying mechanisms of change in DBT skills group treatments, in particular towards developing more productive forms of anger in this patient population.

Key-Words : Borderline Personality Disorder; Anger; Dialectical Behavior Therapy; Skills Training; Emotion Processing; Randomized Controlled Trial (RCT); Outcome

Key Practitioner Messages:

1. A 20-session DBT-informed skills training is a promising adjunct intervention for patients with Borderline Personality Disorder, in particular for reducing problems related to social role.
2. Increases in assertive anger mediates the effects of DBT-informed skills training, whereas rejecting anger remains unchanged over the course of treatment.
3. Short-term objectives for intervention might involve the specific increase of assertive anger in BPD, by using DBT-informed skills training; long-term objectives for intervention might involve specific decrease of rejecting anger in BPD.

ASSERTIVE ANGER MEDIATES EFFECTS OF DIALECTICAL BEHAVIOR-
INFORMED SKILLS TRAINING FOR BORDERLINE PERSONALITY DISORDER: A
RANDOMIZED CONTROLLED TRIAL

Introduction

Problematic anger is a hallmark feature of patients with borderline personality disorder (BPD). Anger may present as an intense, uncontrolled emotional state, interpersonal aggressiveness, harshness towards the self, or may be related to other emotional and interpersonal problems, such as self-harming behavior along with dysphoric and dissociative states (Benjamin & Wonderlich, 1994; Herpertz, 2011; Jones, Heard, Startup, Swales, Williams & Jones, 1999; Kleindienst, Bohus, Ludäscher et al., 2008; Reisch, Ebner-Priemer, Tschacher, Bohus, & Linehan, 2008; Russ, Clark, Cross, et al., 1996; Silk, 2000; Skodol, Gunderson, Pfohl, et al., 2002; Zanarini, Frankenburg, DeLuca et al., 1998). A treatment format which systematically addresses the intensity of problems related with anger is skills group training, a treatment component of dialectical behavior therapy (DBT; Linehan, 1993a/b; also see Korman, 2005). According to this conception, problematic anger is seen as a deficit of skills in accurately regulating and balancing out the emotional experience, and is understood as interfering with efficient action. The increase of emotion regulation and developing efficient interpersonal actions are both valuable treatment goals of any treatment for BPD (McMain, Pos & Iwakabe, 2010). Effects are shown in particular for the decrease of problematic anger at the end of DBT (Rizvi, Steffel, & Carson-Wong, 2013). This is particularly true for the skills group component of DBT (Linehan, Bohus, & Lynch, 2007; Linehan, 1993b).

Whereas DBT is a comprehensive treatment with several components, effective overall (e.g., Bohus, Haaf, Stiglmayr et al., 2000; Linehan, Comtois, Murray et al., 2006), several studies exist on the group component of DBT-informed skills training alone (e.g.,

Linehan, 1993a; Soler, Pascual, Tiana et al., 2009), some demonstrating specific effectiveness for change in problematic anger. For example, Koons, Chapman, Betts and colleagues (2006) showed pre-post-follow-up effects for a short version of a DBT-informed vocational training for patients with personality disorders, on dimensions like anger control, anger expression and work satisfaction. Soler and colleagues (2009) found in a 13-session skills training for patients with BPD, compared to a standard group therapy, more symptom reduction for the skills-group patients on dimensions such as depression, anxiety, irritability, affective instability and problematic anger. More research is needed for the specific skills training component, in particular conducted by research teams independent from the model developer. Such research on DBT-informed skills is also important in the light of the possibility of shortening this treatment component and demonstrating its effectiveness in a variety of contexts. Demonstrating effectiveness of shorter version of such a treatment component could help inform treatment and reimbursement decisions in various settings.

Neacsiu, Rizvi and Linehan (2010), based on Linehan's (1993a) work, differentiated between "justified" and "unjustified" anger by concluding (p. 837): "...expressing anger may be a behavior to increase, if emotional numbness or lack of assertiveness is the problem behavior, or to decrease if anger is not justified by the context and appears out of control". These assumptions remain to be tested. Anger in the present study is conceptualized according to a differentiated integrative emotion-focused perspective (Pascual-Leone & Paivio, 2013; Pascual-Leone, Gillis, Singh, & Andreescu, 2013) which enables to distinguish between several forms of anger, essentially between primary adaptive vs secondary maladaptive anger. Such a conception expands the notion of skills deficit, is broadly consistent with Linehan's initial formulation and Neacsiu and colleagues' (2010) conclusions and has the advantage of introducing different qualities of experiencing anger, which have the potential to predict symptomatic change.

Mechanisms of Change in Dialectical Behavior Treatments

Specific mechanisms of change involved in DBT skills group trainings, or DBT in general, has only been addressed in a limited number of studies. Process research of this sort may help to understand the actual factors and patient processes involved in change, and may help to improve the overall effectiveness of treatment, by introducing an understanding what actually drives symptom change (Kazdin, 2009). Earlier process-research (Benjamin, 1993) studied interpersonal processes in patients with BPD, with a particular focus on the expression of emotions related to interpersonal hostility (also see Benjamin & Wonderlich, 1994). Since then, emerging research on the mechanisms of change in DB treatments have mainly focused on patient's increased capacities for emotion regulation, as predicted by the model (Linehan et al., 2007). Recent neuroscientific evidence (Schnell & Herpertz, 2007; Schmitt, Winter, Niedtfeld, Schmahl, & Herpertz, 2013) supported the importance of neural circuits known to be related to emotional regulation and reappraisal. McMain, Links, Guimond 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. From an interpersonal perspective using the SASB method, Bedics, Atkins, Comtois and Linehan (2012) showed that change in introject – towards more self-assertive stances and less self-attacks - was related to a number of outcomes in DBT. In a patient sample presenting with depressive disorders, Feldman and colleagues (2009) showed that DBT skills training facilitated more effective emotion processing and expression, in particular more efficient coping with depression and less rumination. Finally, Neacsiu and colleagues (2010) conducted a mediation analysis on the use of specific DBT coping skills by patients with BPD undergoing DBT and concluded that the frequency of actual skills use by patients mediated change in several problem areas related with BPD, such as the decrease in suicide attempts, in non-suicidal self-harming behavior in depressive symptoms, as well as

increase in control of anger. However, this study did not demonstrate any mediating effect of changes in anger suppression or expression. The authors also acknowledged that retrospective self-report of using emotion regulation skills is subject to responder bias (both over- and underreporting were possible) and to memory biases.

Anger in Dialectical Behavior Treatments: A Differentiated Perspective

The studies cited generally assumed that anger suppression is a feature of mental health and a desirable outcome of DB treatments. However, the lack of findings by Neacsiu and colleagues (2010) with regard to the mediation of patient's skills use for anger suppression and expression beg for a more differentiated understanding of the emotion of anger. Also, one may use direct behavioral observation of the patient as he or she processes and expresses anger in session, which seems closest to the actual patient processes responsible for change. A conception taking into account these limitations and related to emotion research was originally proposed by Greenberg and Paivio (1997; Greenberg, 2002) within the context of emotion-focused therapy: these authors propose a fundamental distinction between primary adaptive and secondary emotions; the former (i.e., primary adaptive) represent emotions that are freshly and immediately experienced as responses to changing circumstances and situations, the latter (i.e., secondary) represent emotions that constitute responses to primary emotions (or other internal processes, such as cognitions). These distinctions hold fundamentally true for all emotion categories (Greenberg & Paivio, 1997). According to this emotion-focused formulation, several kinds of anger may thus be defined and the present study will focus on two: secondary "rejecting" anger and primary adaptive "assertive" anger (Pascual-Leone et al., 2013; Pascual-Leone & Paivio, 2013; Pos & Greenberg, 2012).

Rejecting anger is defined as a reactive emotional state, aiming at getting rid of a particular content, by accusing or blaming the other - or by being very harsh with oneself. Such an emotional state is characterized by high arousal, low specific meaning and a voice of

the person which has a "talking at" quality. Such an emotional state is unresolved and is only productive when understood as an initial stepping stone towards more resolved emotional states. Such a state may be secondary to more core fear or shame feelings. Rejecting anger can be paralleled with what has been described for patients with BPD in terms of hostility, aggressiveness (Benjamin & Wonderlich, 1994; Koenigsberg, Harvey, Mitropoulou and colleagues, 2002), and also interpersonal opposition (Kramer, 2014).

In contrast, *assertive anger* is a fundamentally adaptive emotional experience – an unmediated and freshly experienced state of self-assertion, where the person stands up for him-/herself and defends his/her rights (Pascual-Leone & Greenberg, 2007). Specific DBT skills taught to BPD patients may foster assertive anger, for example a sequence of self-affirming communicative behaviors, attitudes and emotions, known under the DBT skills acronym of DEAR MAN (D: Describe, E: Express, A: Assert, R: Reinforce, M: (be) Mindful, A: Appear confident!, N: Negotiate; Linehan, 1993b). We take this distinction between rejecting and assertive anger as central for explaining symptom change in DBT skills training.

The investigation of the differentiated effects of anger, rejecting vs. assertive, in DBT treatments might help to deepen the understanding of the actual patient change processes. If this distinction is important, clinicians might make use of it by proactively fostering assertive anger using DBT skills training, whereas they may use other therapeutic methods to work with reducing rejecting anger. It may be assumed that short versions of DB skills training particularly foster change in assertive anger, as described above, whereas rejecting forms of anger may warrant more intense and long-term treatments; Gunderson and Links (2008) observed that such unproductive “dysphoric” states, if present in BPD, may be rather resistant to treatment. Given that in clinical practice, DB skills training is often combined with a form of individual therapy (see Pasieczny & Connor, 2011), an add-on randomized controlled trial is a promising design to address this research question, optimizing external validity. In this

context, emotion assessment should not only rely on self-report questionnaires, but, in line with Neacsiu and colleagues' conclusions, should rely on direct behavioral-process observation. Therefore, the present paper presents two studies examining two complementary and related questions: (a) What is the added outcome effect of DB skills training to non-specific treatment as usually practiced in the community? (b) What kind of anger changes with DB skills training and could it possibly mediate treatment effects?

Study 1

Rationale and hypothesis

The first study examines the outcome of a short version of DBT-informed skills training. The following was our hypothesis. When Dialectical behavior (DBT)-informed skills training is added to individual treatment as usual (TAU) for patients with borderline personality disorder (BPD), the combined treatment is more efficacious in reducing central problems (i.e., self-reported general symptomatology), when compared to TAU alone.

Method

Design

This single-blind randomized controlled add-on trial compared a 20-session-long skills group training for BPD to treatment as usual (TAU). Thus, the add-on design helps to optimize external validity of the trial. In addition, in light of the implementation of shortened versions of DBT-informed skills training, research on the additive impact of this treatment component in various mental health institutions is warranted (e.g., Pasieczny & Connor, 2011). Wait-list controls are generally used, or, for ethical reasons a baseline treatment as usual, which both have proven to be sound on methodological grounds (Elliott & Brown, 2002; Safer & Hugo, 2006).

In the present trial, patients in both conditions received TAU defined as individual treatment (i.e., psychotherapy, psychiatric treatment). However, one condition received an

additional 20-session dialectical behavior therapy (DBT)-informed skills group training delivered on a weekly basis (SKILLS), the other condition did not receive the skills training. Individual therapies involved psychodynamic, cognitive or psychiatric intervention and excluded any DBT interventions. The skills group treatments were conducted at a European French-speaking outpatient university psychiatry clinic. For ethical reasons, the participants assigned to the TAU-condition were also offered the opportunity to participate in the skills group treatment after the completion of all assessments related to the study (including after all follow-up assessments). Because the latter treatments were introduced for ethical reasons only, they were not assessed in the present study. The research protocol was approved by the university and hospital research Ethics Board. Participants did not pay for treatment, except a contribution according to national law. The research took place in an academic environment including researchers and co-authors working within a variety of models, including psychodynamic, humanistic and dialectical-behavioral which may have helped balance out specific researcher's allegiance effects.

Participants

Participants were recruited between October 2010 and January 2013, within four separate coordinated waves of recruitment. Inclusion criteria were the presence of a DSM-IV (APA, 1994) borderline personality disorder diagnosis, being older than 18 at the time of recruitment and willing to participate in a 20-session skills group therapy, in addition to their individual treatment. Exclusion criteria were the presence of a DSM-IV psychotic disorder or mental retardation. Moreover, patients who had already previously benefitted from any form of DBT-treatment in their lives were excluded from the study. DSM-IV diagnoses of BPD were established by trained clinicians for all patients using the Structured Clinical Interview for DSM-IV (SCID-II; First, Spitzer, Williams, & Gibbons, 2004). These clinicians were trained, prior to the study, during 2 months until reaching satisfactory performance levels.

Reliability of the DSM-IV axis II diagnoses was excellent ($\kappa = .89$). These analyses were done on independent ratings of video-taped SCID-II diagnostic interviews on a randomly chosen 10% ($n = 4$ patients) of all included patients. Co-morbid psychiatric disorders are shown in Table 1 (assessed by the MINI for axis I, Lecrubier, Sheehan, Weiller et al., 1997, and assessed by the SCID-II for axis II). The assessments and data handling were done mainly by two research assistants, with the help of a third; all were blind to the participants' treatment condition.

Out of $N = 90$ patients approached for the study, $n = 39$ did not meet the inclusion criteria and $n = 10$ refused to participate; thus, $n = 49$ were excluded (see Figure 1). As a result, $n = 41$ patients were randomized into either condition; $n = 21$ patients were assigned to SKILLS; $n = 20$ patients were assigned to TAU. A total of $n = 10$ discontinued treatment (5 from SKILLS and 5 from TAU). It was not possible to collect research data for these patients at post-treatment and follow-up assessment points; discontinuation, if applicable, occurred between sessions 5 and 15. In all Intent-to-treat (ITT) analyses, a total of $n = 41$ patients was included (SKILLS ITT $n = 21$; TAU ITT $n = 20$); in all Completer analyses, a total of $N = 31$ patients was included (SKILLS Completers $n = 16$; TAU Completers $n = 15$). An internet-based block randomization program was used for each of the four waves separately. Sealed envelopes containing the allocated condition were prepared by an independent researcher and opened when a sufficient number of patients were recruited to form two treatment skills groups, composing together one recruitment wave.

Therapists and Treatment Groups

In total, $N = 6$ therapists were involved as group leaders of the DB skills trainings; each group was led by two therapists. Corresponding to the four waves of treatment explained above, four skills groups took place over three years (2 treatment groups in the first year, and one group in each of the following years). Therapists included four psychologists and two

nurses and all had at least 3 years of clinical experience in psychiatry at the time of the study; in addition, psychologists all had advanced or completed psychotherapy training in cognitive-behavioral models; nurses had a complete training for clinical management of patients with BPD. In addition to this general training, therapists were trained at the outset of the study, and as an ongoing process during the entire study in the DBT model in general and for the facilitation of skills group training in particular. All sessions were video-taped and supervised either right after the session, or using remote supervision during the three days following the session. Each supervision session lasted 90 minutes. The supervisor (and co-author) had received formal training in DBT and is an author of books in French language on DBT. The treatment groups were composed on average by $n = 5$ patients (ranging between 5 and 6).

Treatment conditions

Condition 1: Treatment as Usual (TAU)

The TAU condition involved individual treatment for both conditions. Frequency, theoretical orientation and length were administered according to clinical judgment and in keeping with regular practice. The individual treatments involved models that were unspecific to BPD, based on minimal training of the therapists. They fell into three global categories: psychodynamic (in the SKILLS condition: 11 patients, in the TAU condition: $n = 7$), cognitive-behavioral (SKILLS: $n = 3$; TAU: $n = 6$) and psychiatric treatments (SKILLS: $n = 7$; TAU: $n = 7$; Chi-Square statistics did not reveal a significant between-condition difference) and they took place in private or institutional practice. The frequency of sessions ranged between 1 session weekly and 2 sessions monthly. In total, $n = 15$ patients (SKILLS: $n = 7$; TAU: $n = 8$) started their TAU treatment at time of inclusion in the research protocol (average of sessions administered between intake and discharge: SKILLS: $n = 12$; TAU: $n = 10$). The remaining $n = 26$ patients (SKILLS: $n = 14$, TAU: $n = 12$) commenced their individual TAU treatment in the 12 months prior to inclusion (total average of sessions administered: SKILLS:

$n = 27$; TAU: $n = 29$). Psychopharmacological medication was available, if indicated, for all patients as part of the TAU (in both psychiatric and psychotherapeutic models; see Table 1). These frequencies were not different between the conditions (using Chi-Square statistics). The individual treatments were delivered by psychiatrists, psychologists and nurses. The individual therapists had between 2 and 20 years of experience in treating patients with BPD. Psychotherapists (psychologists and psychiatrists) were either in advanced training or had completed their training; nurses had a complete training in clinical management of patients with BPD.

Condition 2: Add-on Dialectical Behavior-informed skills group training

(SKILLS)

The SKILLS condition included the TAU condition in addition to a DB skills group. The treatment format for the group entailed a total of 20 90-minute sessions which took place once weekly. Skills training is based on DBT (Linehan, 1993a/b) and was shortened for reasons related to institutional constraints (i.e., limited length allowed of any group treatments; Page & Kramer, 2011). A manual was elaborated describing the exact techniques to be implemented and the materials for each session (Page, 2010). Specific DBT concepts were taught to the patients using excerpts from Linehan (1993a), complemented with a DBT-informed self-help book for patients with BPD (Page, 2006). Techniques used for skills training included:

a) Training in mindfulness techniques: The basic skills of observing, describing, and participating in a mindful and effective way were reviewed and exercised. Attentional control, non-judgmental awareness, focusing on only one thing were also taught.

b) Training in emotion regulation strategies: Training of skills to decrease affect lability was provided by using identification and description of emotions. Cognitive

reappraisal skills, mindfulness for emotion regulation and acting in an opposite manner were taught in-session and assigned as homework.

c) Interpersonal effectiveness as part of emotional effectiveness: Training of assertive communication was provided and used in-session and as homework.

d) Training in distress tolerance: Focus on the negative emotions was trained, along with radical acceptance.

Instrument

Outcome Questionnaire – 45.2 (OQ-45; Lambert, Burlingame, Umphress et al., 1996). This self-report questionnaire is comprised of 45 items assessing outcome progress in psychotherapy and includes a global score as well as three sub-scale scores: symptomatic distress, interpersonal relationships, and social role. These items are assessed on a Likert-type scale ranging from 1 (never) to 4 (always). The scale has been translated and validated in French (Emond, Savard, Lalonde, Boisvert, Boutin, & Simard, 2004). This questionnaire was given before the first group session, after the last group session and at 3 month-follow-up. Cronbach's alpha for the current sample was $\alpha = .91$.

Procedure

Each recruitment wave was advertised within the psychiatry department where the study took place, in addition to broader information in the community. In order to be included in the treatment, the patients met with the program-related researcher for 1-2 screening sessions, which explained the study and the group treatment program to them. These sessions aimed at clarifying the patient's motivation and served to check inclusion criteria in detail. Diagnostic criteria were reviewed in a separate assessment interview. Once the patient gave informed consent and inclusion criteria were verified, a spot in the upcoming treatment group was reserved for him/her. When all spots were filled (wait time was between 1 and 4 months), patients were randomly assigned to a condition. The add-on of the skills group component

was scheduled to start either within 3 weeks (to complete the SKILLS condition) or after 8 months (TAU, as an optional follow-up to study participation).

Statistical Analyses

At the outset of the study, a power analysis was conducted based on previously published research on the effect of DBT-informed skills group training on outcome variables. With a presumed power of .80, a 25% drop-out rate and a two-tailed alpha of .05, the power analysis yielded a minimum of $N = 40$ patients to be included.

Outcome analyses. Outcome analyses were done using the Intent-to-Treat (ITT) sample with full data sets ($N = 41$ patients). The test of adequacy of randomization involved t -tests for all continuous variables and χ^2 for all dichotomous variables. Frequency of drop-out was also tested. In order to test the between-group difference of treatment of the outcome variable, a MANCOVA was conducted for the three sub-scales of the OQ-45, taking symptom level (total score on OQ-45) at intake as covariate. We also tested the effect of time by using repeated measures ANOVAs.

Control analyses. Since the present study involved four recruitment waves (each with a SKILLS condition and a TAU condition), with each a separate set of randomization being performed, it was necessary to test for the potential confounds related to the specific recruitment wave. Therefore, the hypothesis was re-tested using the wave number (i.e., varying between 1 and 4) as covariate and where results differed from the main analysis, they were reported. Missing data resulted in the strategy of last observation carried forward (LOCF). Both analyses (LOCF and non-LOCF) were conducted and reported if the result differed. In cases where it did not differ, we used LOCF. All statistical analyses were performed using the SPSS 21 software.

Results

Preliminary analyses

No between-group effects appeared for all variables at baseline (see Table 1). In particular, there were no between-group differences at intake (OQ-Symptom distress: $t(1, 39) = 0.36, p = .72$; OQ-Interpersonal relationships: $t(1, 39) = 0.30, p = .76$; OQ-Social role: $t(1, 39) = 0.58, p = .57$). With regards to the number of axis I co-morbid disorders, there was a trend ($p = .06$) in the sense that TAU had slightly more diagnoses, however this difference did not reach statistical significance. In light of the comparability of all other symptomatic indices, in particular the central BPD symptoms and number of axis II co-morbid diagnoses, we did not control further for the number of axis I co-morbid diagnoses. The completer analysis revealed no significant between-group differences at intake (OQ-Symptom distress: $t(1, 29) = -0.04, p = .97$; OQ-Interpersonal relationships: $t(1, 29) = 0.10, p = .78$; OQ-Social role: $t(1, 29) = -0.29, p = .78$).

Treatment attrition concerned in total $n = 10$ patients (24%), $n = 5$ (24%) for SKILLS and $n = 5$ (25%) for TAU. These numbers did not differ statistically ($\chi^2(1) = .01, p = .93$) and were below the average reported in the literature for treatments lasting one year (Barnicot et al., 2011); moment of discontinuation was not different between the groups. Due to missing questionnaires post-treatment, the data point at 3-month follow-up involved $N = 33$ observations ($n = 17$ for SKILLS; $n = 16$ for TAU; two patients who had dropped out of treatment continued to fill in the questionnaires).

Testing for Outcome Differences

For the Intent-to-Treat (ITT) analyses (see Table 2) using a MANCOVA (i.e., symptom level at intake as covariate) on the three subscales of the OQ-45 taken together, there was a significant omnibus effect favoring overall symptom reduction for SKILLS ($F(3, 34) = 2.92; p = .04$), compared to TAU. Given the omnibus effect, specific ANCOVAs were

interpreted: there was one sub-scale measuring problems related to social role which yielded a significant condition effect with a small (and almost medium) effect size ($d = 0.48$). Social role involves problems in the individual's roles of worker, student or family member, in particular interpersonal conflicts and inefficiency in these roles. Importantly, repeated measures ANOVAs (Time effects) showed a systematic symptom reduction for all patients between intake and discharge across all problem domains.

These main condition effects remained stable for the completer-analyses (MANCOVA: $F(3, 24) = 2.94, p = .05$; respectively, for symptom distress: $F(1, 30) = 1.46; p = .24$; for interpersonal problems: $F(1, 30) = 0.32; p = .58$; for social role: $F(1, 30) = 7.52; p = .05$). The wave number did not have an effect on these results (ITT: $F(3, 36) = 0.25, p = .86$), which was comparable for the completers.

For the 3-month follow-up, the analog condition effect was not significant anymore (LOCF-analysis, MANCOVA, taking the level of symptoms at intake as covariate: $F(3, 34) = 1.26, p = .30$; respectively, for symptom distress: $F(1, 40) = 0.14; p = .71$; for interpersonal problems: $F(1, 40) = 0.49; p = .49$; for social role: $F(1, 40) = 0.57; p = .46$). This was true for both Completer (LOCF) and ITT analyses.

STUDY 2

Rationale for the study and hypotheses

After demonstration of outcome of the 20-session version of DBT-informed skills training in study 1, it remained an open question as to what kind of anger, if any, might relate to reported symptom changes. In order to answer this question, we adopt a differentiated emotion-focused perspective on anger (see Introduction; Pascual-Leone & Paivio, 2013). Based on the literature on emotional change in BPD (see Gunderson & Links, 2008), it could be hypothesized that change in assertive anger is a central mechanism of change in DBT-

informed skills training, whereas rejecting anger is should remain stable over time. Therefore, we formulated the following hypotheses for study 2.

Hypothesis (1): While the frequency of rejecting anger remains stable over time for both treatment conditions, the observed expression of assertive anger increases more in the DBT-informed skills group training, as compared to TAU. Hypothesis (2): Change in the observed frequency of assertive anger mediates the link found in study 1 between group assignment and symptom decrease at discharge.

Subjects

The completer sample ($N = 31$) described in Study 1 was used.

Instruments

In addition to the OQ-45 described in Study 1, the following process measure was applied.

Classification of Affective Meaning States (CAMS; Pascual-Leone & Greenberg, 2005). The CAMS is an observer-based rating system for the process-assessment of distinct affective-meaning states in therapy sessions, based on a synthesis of current emotion-focused theory (Greenberg & Paivio, 1997) with empirical observations from a series of intensive case studies (Pascual-Leone & Greenberg, 2007). The original CAMS assesses 10 affective-meaning states: global distress, fear/shame, rejecting anger, negative evaluation, need, relief, hurt/grief, assertive anger, self-compassion, and acceptance/agency. In addition, a non-specific code is also used to preserve coding integrity: mixed/uncodable. Given our interest in anger for the present study, we only analyzed the emotion process data for rejecting and assertive anger. The other codes were also given for coding integrity of the assessment, but were not analyzed. Reliability was established on 24 (out of a total of 62 sessions; 39%) sessions; inter-rater reliability of the total scale rated for the present study was at an average

kappa of .88 (SD = .16; range between .63 and 1.00). For assertive anger, reliability was kappa = .99 and for rejecting anger, reliability was kappa = .99 as well.

Procedures

For the behavioral process assessment of emotion, all patients underwent a semi-directive and structured individual 50-minute psychological interview (Perry, Fowler & Semeniuk, 2005) between group session 1 and 2 (called early) and between group session 19 and 20 (called late), of the dialectical behavior skills group. Such semi-directive interviews have been developed as a research tool from clinical practice; thus, the interview is comparable to the context of an intake psychotherapy interview. The focus of the interview is the «patient's life in general» and five tasks should be performed by the interviewer: (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 and (5) Formulation of a synthesis. All the research interviews were video-recorded and analyzed using the CAMS. Coding unit for emotion categories in the present study was two minutes, which yielded 22 to 28 codes per session. Observer-rater codings were done by two trained psychologists, a senior researcher and a PhD candidate. Both previously had intensive training and supervision in the use of the CAMS (40 hours) with the developer of the scale. The training cases were different than those analyzed in the present study. Both interviewers and raters of the CAMS were blind to the condition of each participant.

Statistical analyses

In order to test the between-group difference of the process-variables, two separate ANCOVAs were conducted for each variable at discharge (assertive anger, rejecting anger), taking their respective level at intake as covariate. A full mediation model was used, according to the recommendations by Baron and Kenny (1986), to test the hypothesis that

change in assertive anger mediated the link between group assignment and symptom decrease at discharge. Statistical mediation requires four steps to be fulfilled (Baron & Kenny, 1986; Johansson & Hoglend, 2007): (1) the predictor (i.e., group assignment) is significantly related with outcome (i.e., symptom decrease at discharge; direct treatment effect), (2) the predictor is significantly related with change in the mediator (i.e., change in assertive anger) over the course of treatment (treatment effect on the mediator), (3) the change in the mediator is significantly related to outcome (effect of the mediator on outcome), (4) in the complete model, where the effect of the mediator is controlled for, the treatment effect on outcome is eliminated or significantly lessened (residual treatment effect). Significance of mediation of the effects (at discharge and follow-up) is tested using Sobel's statistics.

Results

Preliminary analyses

Frequencies of each of the two types of anger (assertive and rejecting) did not differ between the two groups measured early in the process (assertive: $t(1, 29) = -.82; p = .42$; rejecting: $t(1, 29) = .49; p = .62$).

Anger Change in Dialectical Behavior-Informed Skills Training

The mean frequency of late rejecting anger did not differ in either group, when taking into account the mean frequency of early rejecting anger (ANCOVA: $F(1, 30) = 0.01, p = .92, d = 0.13$), however, there was a medium - almost large -, and significant effect of condition for the mean frequency of late assertive anger, when taking into account the early mean frequency of assertive anger (ANCOVA: $F(1, 30) = 1.01, p = .02, d = 0.78$). The treatment wave number did not have an effect on these results. In short, the skills training groups did not significantly change the amount of rejecting anger experienced and expressed by patients, however, it did significantly increase the amount of healthy assertive anger expressed by patients.

When conducting a full mediation model, it appeared that change in assertive anger mediated the link between group assignment and decrease in problems related to social role (measured as difference between intake and discharge of the treatment; Sobel's test coefficient = 2.13; two-tailed $p = .05$; see Figure 2). This mediation effect was not significant for the same variables measured at 3-month follow-up: the Sobel's test was not significant ($R^2 = .02$; Sobel's test = .14, two-tailed $p = .89$). In order to confirm that the more probable direction of change is that assertive anger mediates the link between group assignment and change in social role, we also tested the reverse hypothesis: that change in social role might mediate the link between group assignment and change in assertive anger (dependent variable). However, as anticipated, Sobel's test for the reverse model was non-significant (1.58, two-tailed $p = .11$).

Illustrating the change process. The following excerpts illustrate each form of anger, according to the Classification of Affective Meaning States (CAMS; Pascual-Leone & Greenberg, 2005), taken from the psychological interview assessment in the present study (Note. The behavioral-process coding of anger using the CAMS involves several non-verbal and para-verbal markers of the emotion, such as tone of voice, stance. The following examples were chosen to demonstrate prototypicality from a strictly verbal viewpoint.). In the initial psychological interview, patient 3438, before entering TAU, reported having difficulty with expressed anger towards herself when she talked about self-harming behaviors (i.e., cutting wrists). The following excerpt was taken about halfway into the interview and was rated as rejecting anger:

"I am so full of rage inside (...) and as I think about it, I tell myself that this is happening right now [*comments on the rage inside in the here and now*]. I even ask myself why I'm doing this [*refers to self-harming behavior*]. No answer there, just weird... (...) I feel overwhelmed, I was so pissed off when I was at work, I just had to

leave and go do it [*self-harming behavior*]. Instead of talking to someone about what's happening, I just escape. And I am just so angry!" (3438-first interview, before TAU, minutes 18-20 of interview).

In contrast, a different patient (3435) illustrates assertive anger in her comments during the discharge interview at the end of the skills training. She initially suffered from lack of confidence and from impulsivity and DB skills training focused on interpersonal and emotional effectiveness. She made the following statement at the very beginning of the discharge interview and it was rated as assertive anger:

"I'm able to stand up for myself now (...) For example, my boyfriend has his agenda, he talks to me in a harsh voice 'What's happening in your life this week?' (...) He keeps track of all my appointments in his own agenda, even the ones that don't concern him. There I realized: these are my appointments! [imagines talking to the boyfriend] 'don't write down my appointments in your agenda (...) That's bullshit, you're intruding on my life, I'm not ok with that!!' That's what I said to him, I refuse to let things go that way." (3435-second interview, after SKILLS, minutes 4-6 of interview).

General Discussion

The present randomized controlled trial examined two complementary questions. First, we wanted to know if adding a 20-session module of dialectical behavior skills group training to an otherwise standard and non-specific individual treatment (TAU) had an effect on symptom change for individuals with borderline personality disorder (BPD). Second, we investigated if this treatment module had an adding effect on the experience and expression of anger. Assertive anger was hypothesized to mediate positive outcome changes at the end of treatment. The data supported these hypotheses. The dialectical behavioral-informed skills training (adjunctive to TAU) produced greater symptom change at discharge, when compared to TAU. Effect sizes found in our study were also consistent with those reported in a meta-

analysis (Bell, Marcus, & Goodlad, 2013) on the effects of add-on designs in psychotherapy, in particular for discharge. Effects were not demonstrated at follow-up, unlike in a number of other outcome studies on DBT (see Telch, Agras & Linehan, 2001). This lack of finding may be due to a number of reasons, for example the drop-outs from the research study post-treatment which lowered statistical power, or, alternatively, the loss of the significant effect for the 3-month follow-up period may be related to the insufficient dosage due to the shortened treatment format. Sustained treatment effects may require longer training in the acquisition of these specific skills. This question should be tested by further studies focusing on the appropriate dose of DB skills training.

It may also be noteworthy that the treatment as usual alone did not have an effect on symptoms measured on the OQ-45. While this is striking, it may be due to the heterogeneity of the treatments included in the TAU. In any case, because we have chosen to focus on a very specific outcome (– self-reported social role after DBT-informed skills), it may be that our study has overlooked changes in other outcome domains which might be specific to the TAU.

Changes in anger: assertive vs. rejecting anger

An important finding in the present study is the demonstration that DBT-informed skills training had an impact on a specific type of anger, as measured by an intensive process behavioral assessment of a standardized psychological interview early and late in treatment. First, rejecting anger, a secondary and in itself unproductive form of emotion, remained stable in both groups. This result indicates that there was some problematic anger, which is known to be part of the BPD pathology (see Benjamin & Wonderlich, 1994; Gunderson & Links, 2008) and that this did not change for the treatment completers - even though the treatment had an additive effect. Specifically in cases with personality disorders such as BPD, rejecting anger can be understood as a trait-like core feature in emotional presentation and coping

styles (Pascual-Leone et al., 2013). It is believed that having a reactive angry style of this kind may drive several transient state-related behavioral problems, like self-harming behavior, aggressiveness, interpersonal conflicts and suicidal ideation in patients with BPD (e.g., Brown, Comtois, & Linehan, 2002). When it is part of a characterological pattern, this particular emotion may require longer and more comprehensive therapeutic means, such as acknowledging and working through the often vulnerable emotions of shame, hurt and fear that may underlay the defensive and reactive presentation of rejecting anger (Pascual-Leone & Greenberg, 2007; Pascual-Leone & Paivio, 2013). The transformation of such underlying emotions (e.g., shame) is not part of most versions of behavioral skills training. In accordance with the observation that rejecting anger did not change in our sample, Gunderson and Links (2008) reported that emotions associated with dysphoric states in patients with BPD, even when treated, are typically persistent and Reisch and colleagues (2009) observed in an ambulatory assessment of emotion that the expression of anger (i.e., presumably in its rejecting form) is systematically preceded by the experience of some type of fear in individuals with BPD.

The differential findings with respect to change in sub-types of emotion support parts of the model of emotional transformation put forth by Pascual-Leone and Greenberg (2007). Earlier research supporting that model indicates that expressions of global distress and rage may still occur independent from outcome even at the end of treatment, while only productive emotions that represent advanced meaning making - in this case the healthy entitlement of assertive anger - will predict the difference between outcome groups (Kramer, Pascual-Leone, Despland, & de Roten, 2015; Pascual-Leone, 2009).

Change in assertive anger as mechanism of change

The frequency of assertive anger increased for the therapy completers, as function of the DBT-informed skills training, whereas this effect was not found in the non-specific TAU-

condition. Most importantly, assertive anger statistically mediated symptom decrease at the end of treatment. These results are in line with specific treatment targets defined by DBT treatments. Assertive behaviors, emotions and attitudes are facilitated in these treatments and are understood as the core of efficient coping with distress (Linehan et al., 2007). The result from the present study suggests that adding DBT-informed skills groups had an effect on the underlying in-session experience of specific emotions, when they are systematically assessed using a standardized interview format. After SKILLS, the patients with BPD not only had a healthier role in their work, family or study environments, reflected by fewer problems related to their social roles, but they were also able to emotionally rely on themselves, connecting better with their inner needs and were able to hold ground in the case of adversity. This capacity may be understood as a core resource related to the emotion of anger, which in the DBT skills group is accessed using behavioral skills techniques enabling the patient to make use of the inherent force of this emotion and use it for one's adaptive goals (Greenberg & Paivio, 1997; Neacsiu et al., 2010, Pascual-Leone & Paivio, 2013). Thus, our study shows that explicit skills training and behavioral prompting may offer sufficiently powerful scaffolding to facilitate the increase of assertive anger as a healthy change process.

Differentiating different types of anger, as recommended by Linehan (1993a) and Neacsiu and colleagues (2010) and fully developed by Pascual-Leone and colleagues (2013) from an integrative emotion-focused psychotherapy perspective, is central for the understanding of the effects of DBT skills training. In addition, the present study compensated for some of the methodological limitations related to self-assessment of skills use: the present study relied on assessment of anger using behavioral-process observation. As such, the distinction between rejecting and assertive anger sheds a different light on the results of Neacsiu and colleagues (2010), which did not show an effect in anger expression and suppression. We could speculate that the two types of anger were not differentiated in

Neacsiu's study: assertive anger needs to be fostered in patients with BPD as short-term treatment goal, whereas rejecting anger needs to be either dampened or worked through, as a long-term treatment objective.

Limitations and perspectives

The present study has several limitations, in particular the ones known for add-on designs in psychotherapy (Bell, Marcus, & Goodlad, 2013): we need to highlight that we did not control for time nor for added attention in one group and effects observed might be due to these confounding factors. By focusing on in-session emotion, we did not assess the skills use by the patients in daily life which were shown to be an important mediator of symptom change. Similarly, we only assessed types of anger in a structured interview performance format, but did not use ambulatory assessment (e.g., as done by Reisch and colleagues, 2008), in order to assess the patient's experience of anger in everyday life. The treatment was conducted in French and despite our efforts, coding in this language of therapist adherence to DBT was unobtainable at this stage. However, formal adherence may be demonstrated as a post-hoc analysis in the future, if and when that becomes feasible. Outcome was assessed on self-report questionnaires which may be subject to responder bias. The smaller effects at 3-month follow-up did not allow us to make firm conclusions with regard to longer-term effects of the 20-sessions intervention. Even though the mediation model formally tested the counter-assumption (of change in social role as mediator), each variable was assessed only twice and process and outcome assessments were only one week apart, which calls for extreme caution when trying to draw conclusions related to potential causality.

Despite these limitations, this study is the first to have systematically assessed different types of anger as correlate of change in DBT-informed skills training and the first to have demonstrated statistical mediation for change in assertive anger in these treatments. Furthermore, this was done using a valid behavioral-process measure from in-session

observations. Whereas the distinction between assertive and rejecting anger has clinical implications, it should also be explored further with regard to change processes in DBT. For example, tracking more subtle changes in the actual therapy hour might help to understand the actual behaviors association with resolution of different kinds of anger in psychotherapy patients with BPD.

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Table 1.

Characteristics of the patients as a function of group at baseline ($N = 41$)

Variables	Condition		χ^2	<i>p</i> -value
	SKILLS ($n = 21$)	TAU ($n = 20$)		
	<i>n</i> (%)	<i>n</i> (%)		
Gender (Female)	20 (95)	16 (80)	2.22	.16
Marital status			0.72	.70
Never married	11 (52)	11 (55)		
Married	6 (29)	7 (35)		
Separated, divorced	4 (19)	2 (10)		
Employment			4.69	.20
Unemployed	16 (76)	12 (60)		
Protected activity	1 (5)	1 (5)		
Part-time	4 (19)	3 (15)		
Full-time	0 (0)	4 (20)		
Medication	15 (71)	13 (65)	0.20	.66
Current DSM-IV diagnoses			0.01	.91
Depressive disorder	14 (67)	13 (65)		
Anxiety disorder	6 (29)	8 (40)		
Eating disorder	1 (5)	5 (25)		
Substance abuse	6 (29)	10 (50)		
Intelligence limitation	1 (5)	2 (10)		
Sexual disorder	1 (5)	1 (5)		
Attention disorder	2 (10)	0 (0)		
Axis II cluster A	1 (5)	0 (0)		

Axis II cluster B	6 (29)	2 (10)		
Axis II cluster C	3 (14)	2 (10)		
	M (SD)	M (SD)	<i>t</i> (1, 39)	<i>p</i> -value
Age	35.14 (9.67)	33.60 (8.57)	0.54	.59
Education (years)	12.67 (1.74)	12.10 (2.43)	0.86	.39
GAF	70.71 (8.41)	70.75 (9.50)	-0.01	.99
Number of BPD symptoms	6.86 (1.39)	7.25 (1.59)	-0.85	.43
N current axis I disorder	1.62 (1.07)	2.35 (1.31)	-1.95	.06
N current axis II disorder	0.52 (0.87)	0.25 (0.44)	1.26	.22

Note. Intent-to-Treat sample. All diagnostic information in co-morbidity with DSM-IV

Borderline Personality Disorder (BPD). TAU: individual treatment as usual; SKILLS: TAU plus dialectical-behavior skills group training.

Table 2.

Therapeutic outcome as a function of treatment assignment ($N = 41$)

Outcome	Condition		pre-post ANOVAs		ANCOVAs	
	SKILLS ($n = 21$)	TAU ($n = 20$)	$F(3, 34)$	ES	$F(1, 40)$	ES
OQ-45						
-Symptom Distress			7.86**	0.25	1.20	0.20
Intake	57.38 (16.70)	55.56 (16.20)				
Discharge	50.33 (21.30)	54.10 (14.93)				
-Interpersonal			7.09**	0.15	0.30	0.08
Intake	22.81 (7.30)	22.15 (6.54)				
Discharge	21.05 (8.48)	21.70 (7.65)				
-Social Role			12.13**	0.15	7.66*	0.48
Intake	15.81 (6.47)	14.74 (5.14)				
Discharge	12.76 (7.79)	16.00 (5.42)				

Note. Intent-to-Treat Sample. MANCOVA: $F(3, 34) = 2.92, p = .04$. Covariate in all

(M)ANCOVAs: symptom level at intake.

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

Figure 1.

Flow chart of the study

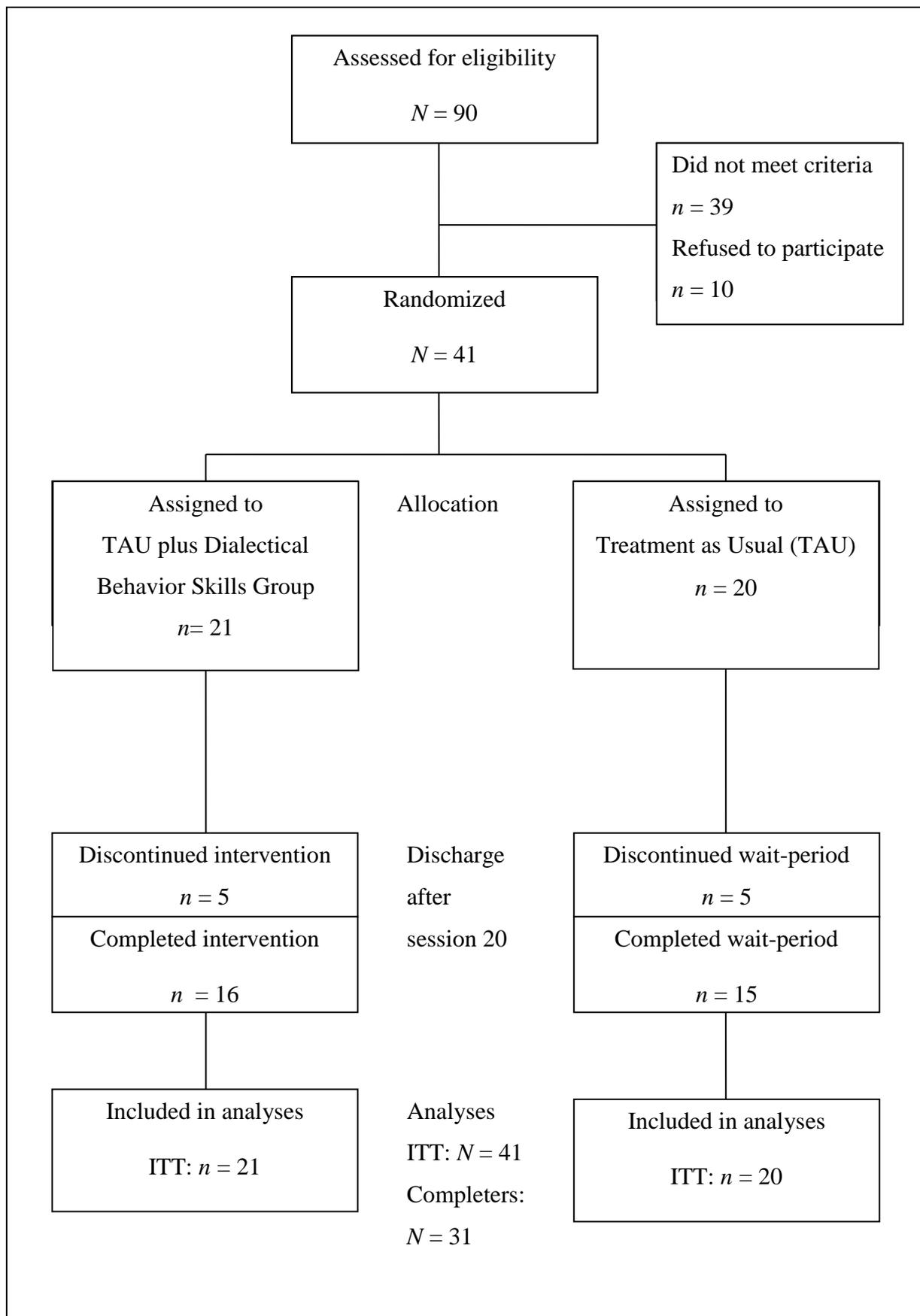
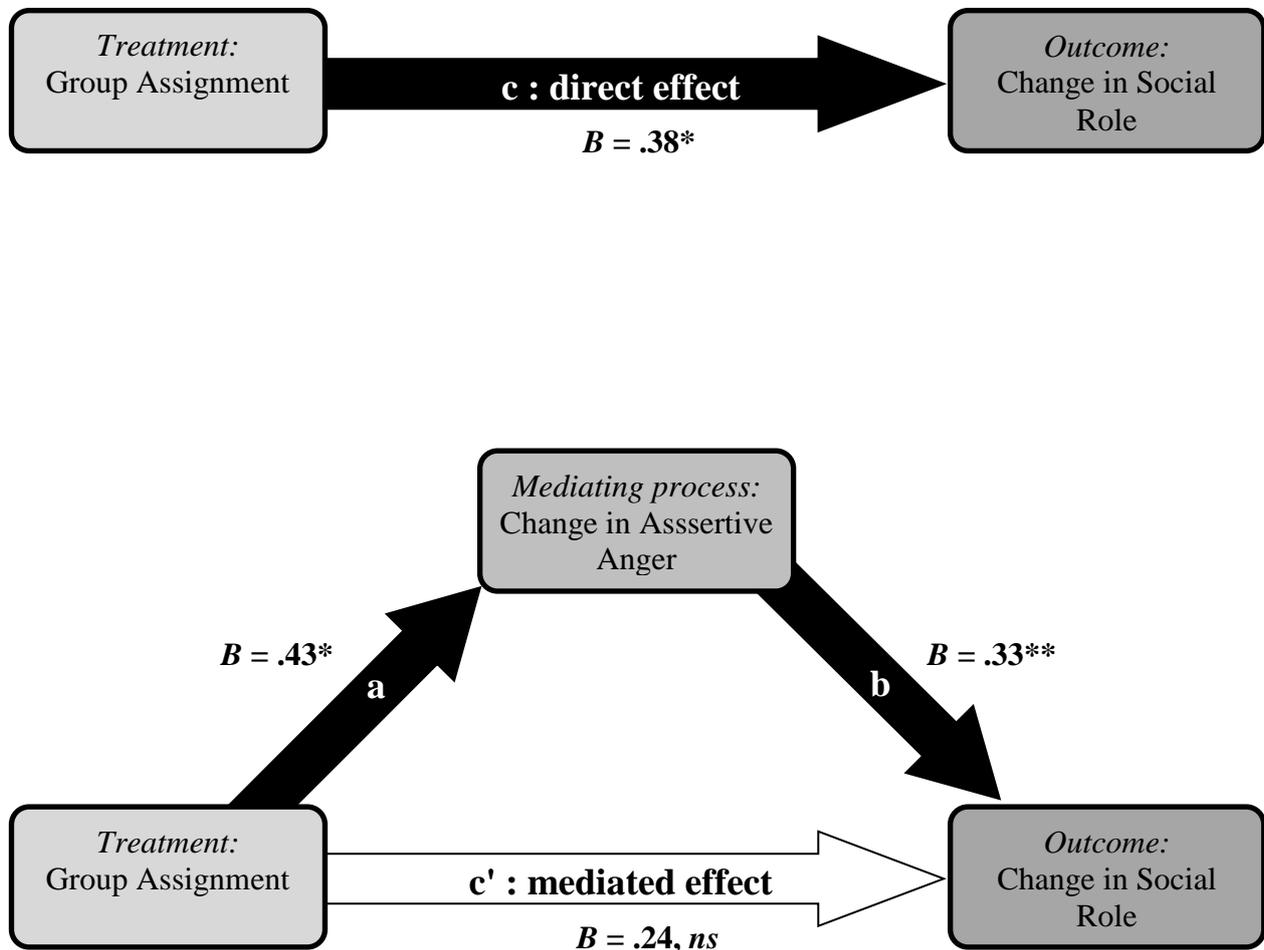


Figure 2.

Change in assertive anger mediates link between group assignment and decrease of problems in social role (Completers; $N = 31$)



Note. All β s corrected. Outcome measured as change between intake and discharge after 20 sessions. Mediation model $R^2 = .23$; Sobel's test for significance of mediation: 2.13; * = two-tailed $p < .05$.