Borderline personality disorder, substance abuse, and dialectical behavior therapy
van den Bosch, L.M.C.

Citation for published version (APA):
van den Bosch, L. M. C. (2003). Borderline personality disorder, substance abuse, and dialectical behavior therapy

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: http://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.
Efficacy of Dialectical Behavior Therapy: a Dutch randomised controlled trial

British Journal of Psychiatry 2003;182:135-140
Summary

*Background:* Dialectical Behavior Therapy (DBT) is widely considered a promising treatment for borderline personality disorder (BPD).

However, the available evidence for its efficacy published thus far should be regarded preliminary.

*Aims:* To compare the effectiveness of DBT with treatment-as-usual (TAU) for patients with BPD and to examine the impact of baseline severity on effectiveness.

*Method:* Fifty-eight women with BPD were randomly assigned to either 12 months of DBT or TAU in a randomised controlled design. Participants were clinical referrals from both addiction treatment and psychiatric services. Outcome measures included treatment retention, and course of suicidal, self-mutilating and self-damaging impulsive behaviours.

*Results:* DBT resulted in better retention rates and greater reductions of self-mutilating and self-damaging impulsive behaviours than TAU, especially among those with histories of frequent self-mutilation.

*Conclusions:* DBT is superior to TAU in reducing high-risk behaviours in patients with BPD.
Introduction

According to the APA Practice Guideline for the treatment of patients with borderline personality disorder (BPD), the primary treatment for BPD is psychotherapy, complemented by symptom-targeted pharmacotherapy if necessary (American Psychiatric Association, 2001). It is stated in this guideline that two psychotherapeutic approaches have been shown in randomised trials to have efficacy: psychoanalytic/psychodynamic therapy and Dialectical Behavior Therapy (DBT). The guideline has been criticised because it is primarily based upon evidence from uncontrolled or single case studies and clinical consensus (e.g., Tyrer, 2002).

Only few methodologically rigorous efficacy studies have been conducted. With respect to DBT, two randomised clinical trials of small to moderate size have been conducted (Linehan et al., 1991; Linehan et al., 1999a). In addition, several other unpublished or uncontrolled studies have been summarised by Koerner and Linehan (2000).

In a randomised controlled trial, we compared the effectiveness of DBT versus TAU in terms of DBT's primary targets (Linehan et al., 1999b), i.e. 1) treatment retention and 2) high-risk behaviours including 2a) suicidal, 2b) self-mutilating, and 2c) self-damaging impulsive behaviours. The secondary aim is to examine whether the efficacy of DBT is modified by baseline severity of parasuicide. This report is of the first 12 months of the trial.

Method

Sample recruitment

Female patients aged 18-70 with BPD residing within a 25-mile circle around Amsterdam, who were referred by a psychologist or psychiatrist willing to sign an agreement expressing the commitment to deliver 12 months of treatment-as-usual (TAU), were considered for recruitment. No restriction was made in terms of the referral source. Referrals originated from addiction treatment services, psychiatric hospitals, centres for mental health care, independently working psychologists or psychiatrists, and even from general practitioners and self-referral. The latter two categories were allowed to participate in the study only when they were able to locate a psychologist or psychiatrist willing to provide TAU. The exclusion criteria were: a DSM-IV diagnosis of bipolar disorder or (chronic) psychotic disorder, insufficient command of the Dutch language, and severe cognitive impairments. The diagnosis of BPD was established using both the Personality Diagnostic Questionnaire – DSM-IV
version (PDQ-4+) (Hyler, 1994) and the Structured Clinical Interview for DSM-IV personality disorders (SCID-II) (First et al., 1994). Positive endorsement of DSM-IV diagnostic criteria for BPD was required on both instruments.

In contrast to Linehan's trial (Linehan et al., 1991), the sample consists primarily of clinical referrals from both addiction treatment and psychiatric services and participants were not required to have shown recent parasuicidal behaviours.

**Randomisation procedure**
Following the completion of the intake assessments, patients were randomly assigned to treatment conditions. A minimization method was used to ensure comparability of the two treatment conditions on age, alcohol problems, drug problems, and social problems (as measured by the European version of the Addiction Severity Index [EuropASi; Kokkevi & Hartgers, 1995]).

**Treatments**
Patients assigned to DBT received 12 months of treatment according to the treatment manual (Linehan, 1993). The treatment combines weekly individual cognitive-behavioural psychotherapy sessions with the primary therapist, weekly skills training groups lasting 2-2.5 hours per session, and weekly supervision and consultation meetings for the therapists (Linehan, 1993). Individual therapy focuses primarily on motivational issues, including the motivation to stay alive and to stay in treatment. Group therapy teaches self-regulation and change skills, and self and other acceptance skills. Among its central principles is DBT's simultaneous focus on both acceptance and validation strategies and change strategies to achieve a synthetic (dialectical) balance in client functioning. The median adherence score on a 5-point Likert scale was 3.8 (range 2.5-4.5), indicating 'almost good DBT' in terms of conformity to the treatment manual.

Subjects in the TAU condition received clinical management from the original referral source (addiction treatment centres n=11; psychiatric services n=20). Patients in TAU received generally no more than 2 sessions per month from a psychologist, psychiatrist or social worker.

**Therapists**
Extensive attention was paid to the selection, training, and supervision of DBT-therapists. Individual therapists included 4 psychiatrists and 12 clinical psychologists. Group training was conducted in three separate groups led and co-led by social workers and clinical psychologists. Training, regular monitoring (videotapes), and weekly individual and group supervision were performed by the second author.
(L.M.C.B.), who received intensive training from Linehan in Seattle and is member of the international DBT training group.

Outcome assessments
Baseline assessments took place 1-16 weeks (median 6 weeks) before randomisation. DBT started at 4 weeks following randomisation. Two master's level clinical psychologists and one PhD-level clinical psychologist conducted all assessments. All research assessors were experienced diagnosticians who received additional specific training in the administration of the instruments.

Recurrent parasuicidal and self-damaging impulsive behaviours were measured at baseline and at 1, 2, 3, 4, and 52 weeks after randomisation using the appropriate sections of the Borderline Personality Disorder Severity Index (BPDSI) (Arntz et al., 2003), a semi-structured interview assessing the frequency of borderline symptoms in the previous 3-month period. The BPDSI consists of nine sections, one for each of the DSM-IV criteria for BPD.

The parasuicide section includes 3 items reflecting distinct suicidal behaviours (i.e., suicide threats, preparations to suicide attempts, and actual suicide attempts). The impulsivity section includes 11 items reflecting the manifestations of self-damaging impulsivity (e.g., gambling, binge eating, substance abuse, reckless driving). The parasuicide and impulsivity sections have shown reasonable internal consistencies (0.69 and 0.67, respectively), excellent inter-rater reliability (0.95 and 0.97, respectively), and good concurrent validity (Arntz et al., 2003). Three-month test-retest reliability for the total BPDSI score was 0.77.

Self-mutilating behaviours were measured using the Lifetime Parasuicide Count (LPC) (Comtois & Linehan, 1999) at baseline and the adapted (3-month) version was administered at 22 and 52 weeks after randomisation. The LPC obtains information about the frequency and subsequent medical treatment of self-mutilating behaviours (e.g., cutting, burning, pricking).

Completeness of data
Of the 5 follow-up assessments, subjects completed a mean of 3.7 assessments, with no significant differences between treatment conditions (Cochran Mantel-Haenszel test \( \chi^2 \) = 1.51; \( p = .14 \)). Eighty-one percent completed the week-52 assessment.

Statistical analysis
For the analysis of treatment retention, chi-square analysis was used. The course of high-risk behaviours as measured with LPC and BPDSI was analysed using a general linear mixed model (GLMM) approach (procedure Mixed from SAS version 6.12; SAS
Institute, Cary, NC). Preliminary to the GLMM analyses, examination of the variable characteristics revealed highly skewed distributions of the BPDSI parasuicide and impulsivity and the LPC total score. A shifted log transformation was performed on each of those variables. A Bonferroni-correction to the level of significance was applied resulting in an $\alpha$ of $0.013 (0.05/4)$.

Within the GLMM approach, we used a 2-step procedure: 1) the covariance structure was fitted using restricted likelihood (REML) and a saturated fixed model, and 2) the fixed model was refined using maximum likelihood (Verbeke & Molenberghs, 1997). The main advantage of the GLMM approach over standard repeated measurement MANOVA is that it allows for inclusion of cases with missing values, thereby providing a better estimate of the true (unbiased) effect within the ITT sample. To examine the effect of DBT on the course of high-risk behaviours, we used a model with time, treatment, and time-by-treatment interaction.

To correct for possible initial differences, baseline severity was added as a covariate. To examine the impact of initial severity on outcome, we implemented a model with time, baseline severity, treatment condition and the two-way and three-way interactions between these variables.

Results

Recruitment and subject characteristics

Of the 92 patients referred to and considered for this study, 64 patients were eligible and gave written informed consent. Thirty-one subjects were assigned to DBT and 33 subjects were assigned to TAU. Two subjects assigned to the TAU condition were dropped from the intention-to-treat (ITT) analyses because they did not accept the randomisation outcome and therefore refused to further cooperate with the study protocol, and four subjects assigned to DBT were dropped because they refused to start treatment. Flow through the study and the main reasons for non-recruitment are shown in Figure 1.
Total number of clinical referrals: 92

Number excluded: 28
Reasons for exclusion:
no BPD: 12, exclusions criteria: 2 dropout: 9,
no signed agreement from referring therapist: 5

Number eligible and randomised: 5

Number allocated to DBT: 31
Number allocated to TAU: 33

Number starting DBT as allocated: 27
Number starting TAU as allocated: 31

Number reaching end-point: 17
Number reaching end-point: 7

Number with week-52 follow-up measurement: 24
Number with week-52 follow-up measurement: 24

**Figure 1** Flow chart of recruitment and attrition of study participants.

Severity of borderline personality disorder, addiction severity and age were not significantly associated with attrition from intake phase to inclusion in the ITT sample. There were no significant differences between treatment conditions on sociodemographic variables, number of DSM-IV criteria for BPD met, history of suicide attempts, number of self-mutilating acts, or prevalence of clinically significant alcohol and/or drug use problems (see Table 1).
Characteristics | DBT (n=27) | TAU (n=31) | Total
--- | --- | --- | ---
Dutch nationality, No. (%) | 26 (96%) | 30 (97%) | 56 (97%)
Never married, No. (%) | 15 (56%) | 21 (68%) | 36 (65%)
Living alone, No. (%) | 9 (33%) | 12 (39%) | 21 (36%)
Unemployed, No. (%) | 7 (26%) | 5 (16%) | 12 (21%)
Disability pension, No. (%) | 15 (56%) | 19 (61%) | 34 (59%)
Age, y (sd) | 35±1 (8.2) | 34±7 (7.4) | 34±9 (7.7)
Education, y (sd) | 12±6 (3.3) | 13±6 (3.8) | 13±3 (3.6)
Number of BPD criteria, M (sd) | 7±3 (1.3) | 7±3 (1.3) | 7±3 (1.3)
History of suicide attempt, No. (%) | 19 (70%) | 22 (71%) | 41 (71%)
History of self-mutilation, No. (%) | 25 (93%) | 29 (94%) | 54 (93%)
Lifetime self-mutilating acts, median | 13 | 14 | 14.2
Addictive problems, No. (%) | 16 (59%) | 16 (52%) | 32 (55%)

1 According to Structured Clinical Interview for DSM-IV personality disorders (SCID-11);
2 According to European version of Addiction Severity Index (EuropASI);
3 According to Lifetime Parasuicide Count (LPC).

Table 1. Demographic and clinical characteristics of 58 participants.

Treatment retention
Significantly more patients who were receiving DBT (63%) than control subjects (23%) maintained therapy with the same therapist for the entire year ($x^2=9.70; p=0.002$). This difference is maintained when two control patients who were assigned to other therapists within the same institutes were counted as non-dropouts ($x^2=6.72; p=0.010$).

High-risk behaviours
The frequency and course of suicidal behaviours was not significantly different across treatment conditions: neither treatment condition ($t_{1,137}=0.03; p=0.866$) nor the interaction between time and condition ($t_{1,166}=0.22; p=0.639$) reached statistical significance. An additional analysis revealed that, although less patients in the DBT group (7%) than control subjects (26%) attempted suicide during the year, this difference was not statistically significant ($x^2=3.24; p=0.064$).

Self-mutilating behaviours of patients assigned to DBT gradually diminished over the treatment year, whereas subjects assigned to TAU gradually deteriorated in this respect: a significant effect was observed for the interaction term time*condition ($t_{1,44.4}=10.24; p=0.003$) but not for treatment condition ($t_{1,69.1}=3.80; p=0.055$) (Figure 2).
The most frequently reported self-mutilating acts were cutting, burning, pricking and head banging. At week 52, 57% of the TAU patients reported to have engaged in any self-mutilating behaviour at least once in the previous 6-month period (median 13 times), against 35% in DBT (median 1.5 times) (median test $x^2 = 4.02; p = .045$).

![Figure 2](image)

*Figure 2*  Frequency of self-mutilating behaviours in the past 3 months at week 22 and week 52 since the start of treatment-by-treatment condition. DBT indicates Dialectical Behavior Therapy; TAU indicates treatment-as-usual.

In terms of self-damaging impulsive behaviours, patients assigned to DBT showed more improvement over time than control subjects: a significant effect was evident for the interaction term time*condition ($t_{1,64} = 2.60; p = .010$) but not for treatment condition ($t_{1,122} = 1.02; p = .315$) (Figure 3).

**Confounding by medication use**
Medication use was monitored by administration of the Treatment History Interview (Linehan & Heard, 1987) at weeks 22 and 52. The greater improvement in DBT patients could not possibly be explained by greater or other use of psychotropic medications by these patients.
In both conditions, 74% of the patients reported any use of medication from one or more of the following categories: 1) benzodiazepines, 2) SSRIs, 3) tricyclic antidepressants, 4) mood stabilizers, and 5) neuroleptics. Use of SSRIs was reported by 52% of DBT and 61% of TAU patients ($\chi^2 = 0.44; p = .509$). These findings reject the possibility of confounding by medication use.

**Impact of baseline severity on effectiveness**

The sample was divided according to a median split on the lifetime number of self-mutilating acts. The number in the lower severity group ranged from 0 to 14 (median 4.0); in the higher severity group from 14 to more than thousand (median 60.5). The two groups did not differ with respect to the total score on the BPDSI and EuropASI severity scores.
Figure 4 Frequency of self-mutilating behaviours in the past 3 months at week 22 and week 52 since the start of treatment-by-treatment condition and baseline severity group. Membership of severity groups is determined by median split on the lifetime number of self-mutilating acts (i.e., <14 versus ≥14). DBT indicates Dialectical Behavior Therapy; TAU indicates treatment-as-usual.

For suicidal behaviours, an almost significant effect was evident for the three-way interaction term time*severity*condition ($t_{1,170}=4.81; p=.029$), indicating a trend towards differential effectiveness of DBT among high-severity individuals. For self-mutilating behaviours, a significant effect was evident for the three-way interaction term time*severity*condition ($t_{1,40.4}=16.82; p=.000$) and the interaction term severity*condition ($t_{1,67.6}=9.63; p=.003$), indicating that the DBT was differentially superior to TAU among high-severity patients but not among their low-severity counterparts (Figure 4). No differential effectiveness was found for self-damaging impulsivity.

Discussion

Summary of the findings

This randomised controlled trial of DBT yielded three major results. First, DBT had a substantially lower 12-month attrition rate (37%) than TAU (77%). Second, DBT resulted in greater reductions of self-mutilating behaviours and self-damaging impulsive acts than TAU. Importantly, the greater impact of DBT could not be explained by differences across conditions in the use of psychotropic medications. Finally, the beneficial impact
on the frequency of self-mutilating behaviours was far more pronounced among those who reported higher baseline frequencies as compared with those reporting lower baseline frequencies.

**Significance of the findings**
The current study results – being highly concordant with previously published studies – are significant for several reasons. First, this is the first clinical trial of DBT that was not conducted by its developer and that was conducted outside the US. This study supports the accumulating evidence that mental health professionals outside academic research centres can effectively learn and apply DBT (Hawkins & Sinha, 1998), and that the therapy can be successfully disseminated in other settings (Barley et al., 1993; Springer et al., 1996) and other countries. Second, a relatively large sample size allowed more rigorous statistical testing of DBT’s efficacy than former trials, thereby mitigating some of the recently expressed concerns about the status of DBT as the treatment of choice for BPD (Scheel, 2000; Tyrer, 2002).

Third, our findings indicated that patients receiving TAU deteriorated over time, suggesting that non-specialised treatment facilities might actually cause harm rather than improvement to patients. Finally, in contrast to Linehan et al.’s (1991) original trial, the sample consists of clinical referrals from both addiction treatment and psychiatric services and subjects with substance use disorders (SUD) were not excluded.

Our study provides evidence that standard DBT can be applied in a heterogeneous group of borderline patients with and without SUD. This is consistent with a previous report, showing that borderline patients with SUD are largely similar to those without SUD in terms of type and severity of borderline symptomatology, treatment history, family history of substance use disorders and adverse childhood experiences (Bosch et al., 2001). Together, these findings imply that addictive behaviours in patients with BPD can best be considered a manifestation of the borderline pathology rather than a condition that constitutes significant clinical heterogeneity and justifies the exclusion of these patients from efficacy studies.

**Clinical implications**
Based upon multiple effectiveness studies, it is now well established that DBT is an efficacious treatment of high-risk behaviours among patients with BPD. This is probably due to some of DBT’s distinguishing features, i.e. 1) routine monitoring of the risk for these behaviours throughout the treatment program; 2) an explicit focus on the modification of these behaviours in the first stage of treatment; 3) encouragement of patients to consult with therapists by phone preceding these behaviours; and 4) prevention of therapist’s burnout through frequent supervision and consultation group meetings (Linehan, 1993).
Across studies, however, DBT has not shown efficacy in terms of a reduction of depression, hopelessness, and improvements in survival and coping beliefs or overall life satisfaction (Scheel, 2000). In addition, the current report showed that DBT was differentially effective in reducing self-harm in chronically parasuicidal borderline patients, whereas the impact of DBT in low-severity patients was similar to TAU.

Together, these findings suggest that DBT should – consistent with the original aims of DBT (Linehan, 1987) – only be a treatment of choice for chronically parasuicidal borderline patients, and should perhaps be extended or followed by another treatment, focussing on other components of BPD, as soon as the high-risk behaviours are sufficiently reduced.

Alternatively, it can be hypothesised that DBT is a treatment of choice for patients with severe, life-threatening impulse control disorders rather than for BPD per se, implying that also some patients with other severe impulse regulation disorders (e.g., substance use disorders or eating disorders) might benefit from DBT. The latter interpretation is consistent with the development of modified versions of DBT for the treatment of BPD patients with a comorbid diagnosis of drug dependence (Linehan et al., 1999a) or patients with a binge-eating disorder (Wiser & Telch, 1999).

**Limitations**

One limitation of the present study is that DBT was compared with treatment-as-usual or unstructured clinical management. This has been recommended as a first step to establish the efficacy of a treatment (Teasdale et al., 1984; Linehan et al., 1991), but it allows no conclusions about the effect of the experimental treatment compared to other manualized treatment programs.

The observed effect size of DBT might be different from DBT’s true effect size because of a number of factors. First, it should be noted that – although the research assessors were not informed about the treatment condition of their interviewees – it is unlikely that they maintained this ‘blindness’ throughout the project. Patients might have told them or this information could easily be derived from some of the interviews. This concern is somewhat mitigated by the fact that the research focused on objective behaviours rather than subjective perceptions and experiences. Second, it is important to note that an effect of DBT was observed in spite of the potentially equalizing impact of the attention paid to patients by the research assessors during multiple repeated measurements, including the substantial efforts made to contact patients for appointments. Third, because we selected patients in ongoing therapy who were willing to terminate this treatment, some of the patients might have perceived assignment to TAU a less desirable randomisation outcome than assignment to DBT. Finally, the observed effect might be biased by a possible Hawthorne effect in terms of greater enthusiasm among DBT as compared to TAU therapists.
Although the latter two factors could have resulted in an advantage of the DBT condition in terms of patient satisfaction or the quality of the working alliance, additional analyses revealed that the two conditions were highly similar in terms of scores on the three subscales of the Working Alliance Inventory (Horvath & Greenberg, 1989), i.e. development of bond, agreement on goals, and agreement on tasks. This observed similarity is rather striking since the quality of the working alliance is often considered a prerequisite of efficacy in psychotherapy (e.g., Lambert & Bergin, 1994) and because a substantial part of DBT's distinguishing features is dedicated to the establishment of a working alliance (Linehan, 1993). Perhaps, the efficacy of DBT results from the persistent and enduring focus on certain target behaviours rather than an 'optimal' working alliance.

**Further directions**

The patients in this study have been followed up at 18 months to examine whether the treatment results are maintained after discharge. Those results will be published elsewhere. Future research should focus on comparison with concurrent therapies such as schema-focused cognitive therapy (Young, 1990) and psychoanalytically oriented partial hospitalisation (Bateman & Fonagy, 2001), as well as on the effective mechanisms at work. Potential mediators of favourable outcomes are, for example, reduced catastrophizing, enhanced skills for regulating affect and coping with life events, or an increase of reasons for living (Rietdijk et al., 2001). Knowledge about the specific mechanisms that make DBT work might enable therapists to better direct the focus in treatment, and possibly stimulate dismantling studies that aim to investigate the efficacy of the respective individual components of DBT.

**Clinical implications**

Based upon multiple, independent clinical trials, it is now well established that DBT is an efficacious treatment of high-risk behaviours among patients with BPD.

The available evidence suggests that DBT should be extended or followed by another treatment, focussing on other components of BPD, as soon as the high-risk behaviours are sufficiently reduced.

Accumulating evidence suggests that mental health professionals outside academic research centres can effectively learn and apply DBT, and that DBT can be successfully disseminated in other settings and other countries.

A tentative interpretation of the available studies is that DBT is a treatment of choice for patients with severe, life-threatening impulse control disorders rather than for BPD per se. In fact, there is a consistent lack of evidence that DBT is efficacious for other core features of the pathology in patients with BPD, such as interpersonal instability, chronic feelings of emptiness and boredom, and identity disturbance.
Limitations

Although the research assessors were not informed about the treatment condition of their interviewees, it is unlikely that they maintained this 'blindness' throughout the project.

Comparing DBT with treatment-as-usual allows no conclusions about the efficacy of DBT relative to other manualized treatment programs.

The observed effect might be biased by greater enthusiasm among DBT as compared to TAU therapists. This concern is somewhat mitigated by the finding that DBT was not superior in terms of patient-reported working alliance.
References


