

REGULAR ARTICLES

Dialectical Behavior Therapy for Patients with Borderline Personality Disorder and Drug-Dependence

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A randomized clinical trial was conducted to evaluate whether Dialectical Behavior Therapy (DBT), an effective cognitive-behavioral treatment for suicidal individuals with borderline personality disorder (BPD), would also be effective for drug-dependent women with BPD when compared with treatment-as-usual (TAU) in the community. Subjects were randomly assigned to either DBT or TAU for a year of treatment. Subjects were assessed at 4, 8, and 12 months, and at a 16-month follow-up. Subjects assigned to DBT had significantly greater reductions in drug abuse measured both by structured interviews and urinalyses throughout the treatment year and at follow-up than did subjects assigned to TAU. DBT also maintained subjects in treatment better than did TAU, and subjects assigned to DBT had significantly greater gains in global and social adjustment at follow-up than did those assigned to TAU. DBT has been shown to be more effective than treatment-as-usual in treating drug abuse in this study, providing more support for DBT as an effective treatment for severely dysfunctional BPD patients across a range of presenting problems. (Am J Addict 1999;8:279–292)

Substance abuse is a common and frequently grave problem for individuals with borderline personality disorder (BPD).

Specifically, individuals meeting criteria for BPD are more likely to also meet criteria for current substance abuse than individu-

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als with other psychiatric disorders, except Anti-Social Personality Disorder (ASPD),¹⁻⁵ and more commonly report a history of substance abuse.⁶ This comorbidity is not entirely due to the overlap in diagnostic criteria. Dulit and her colleagues⁷ found that 67% of BPD individuals met criteria for a current substance abuse disorder. When substance abuse was not used as a criterion of BPD, the incidence dropped to 57%, still a significant portion of the population.

Within the substance abuse treatment literature, comorbidity with BPD ranges from 5.2%⁸ to 32%.⁹ Among opiate addicts seeking methadone treatment, BPD was diagnosed in 12% of 150 subjects in one study¹⁰ and 5.2% of consecutive admissions (9.5% of all female admits) in another.⁸ In a study of cocaine-dependent inpatients, 32% met criteria for BPD during periods of both drug use and abstinence.⁹ Thirteen percent of new admits in an alcohol treatment program met criteria for BPD.¹¹ Within a polysubstance abuse inpatient sample, 17% were diagnosed with BPD.¹²

BPD substance abusers are uniformly more disturbed than substance abusers without a personality disorder (PD). Studies comparing substance abusing patients with and without a personality disorder found that those with a PD have significantly more psychiatric problems, including alcoholism, depression, behavioral dyscontrol, and legal difficulties, were at greater risk for HIV infection, and were more extensively involved in substance abuse than patients without a PD.¹⁰⁻¹⁴ One study that discriminated BPD from other PDs found that patients with BPD had more severe psychiatric problems than patients with other PDs.¹⁰ Another study compared patients with BPD only, substance abuse only, or BPD with substance abuse.¹⁵ Individuals comorbid for both disorders had significantly more psychopathology, self-destructive behaviors, and suicidal thoughts over a seven-year period.

Achieving treatment success with BPD populations has been difficult. In addition to the severity of the disordered behavior presented by individuals with BPD, treatment is frequently compromised by non-compliance. In pharmacotherapy trials for BPD, for example, drop-out rates have been very high,¹⁶ and medication compliance has been problematic, with upwards of 50% of patients reporting misuse of their medications and 87% of therapists reporting medication misuse by their patients, including taking dosages other than those prescribed or taking an overdose.¹⁷⁻¹⁹ BPD has also been associated with worse outcome in treatments of Axis I disorders, such as major depression,²⁰ obsessive-compulsive disorder,²¹ bulimia,^{22,23} and substance abuse.¹⁰

Randomized, controlled studies of treatments designed specifically for BPD are sparse. Other than studies examining Dialectical Behavior Therapy (DBT), we could locate only one published randomized controlled trial of a psychosocial intervention for BPD. Marziali and Munroe-Blum²⁴ found that structured, time-limited group therapy was more effective than individual psychotherapy in keeping patients in therapy, although it was not more effective on other outcome variables. Follow-up studies of BPD individuals who have received inpatient and outpatient psychiatric care suggest that traditional treatments in the community are marginally effective at best when outcomes are measured two to three years following treatment.^{25,26}

Linehan's DBT was originally empirically validated in a randomized controlled trial comparing DBT to treatment-as-usual (TAU) in the community.²⁷ Using a sample of women with BPD, DBT was more effective than TAU for reducing suicidal behaviors, therapy drop-out, use of psychiatric inpatient beds, and anger, as well as for improving interpersonal functioning and global adjustment. Results were main-

tained when numbers of outpatient psychotherapy hours, total outpatient treatment hours, and total mental health treatment hours were controlled.²⁸ In a second study of psychotherapy process in four BPD cases,²⁹ patient experience of dialectical balancing of acceptance and change were more highly associated with subsequent reductions in suicidal behaviors than pure change or pure acceptance techniques.

Our primary aim in this research was to adapt the original Dialectical Behavior Therapy manual³⁰ for a population of substance abusing women with BPD and to compare its efficacy to a treatment-as-usual control condition. Given that DBT effectively decreased parasuicidal behavior and other areas of behavioral dyscontrol in our original trial, we hypothesized that DBT also would be effective in decreasing substance abuse for individuals with BPD when specifically targeted in treatment.

METHOD

Subjects

Individuals were referred to our program by area clinicians and were given a screening interview that included the Structured Clinical Interview for DSM-III-R (SCID)³¹ and the International Personality Disorders Exam (PDE).³² Subjects were 28 women between the ages of 18 and 45 years who met criteria for BPD on both the PDE and the SCID-II and met criteria for Substance Use Disorder for opiates, cocaine, amphetamines, sedatives, hypnotics, anxiolytics, or Polysubstance Use Disorder on the SCID. Individuals were excluded if they met criteria for Schizophrenia, another Psychotic Disorder, or Bipolar Mood Disorder on the SCID, or mental retardation on the Peabody Picture Vocabulary Test-Revised.³³ Subjects were matched on age, severity of drug dependence (based on SCID ratings), readiness to change,³⁴

and global adjustment (Axis V, DSM-IV) using a minimization random assignment procedure, and they were randomly assigned to a treatment condition (DBT = 12; TAU = 16). All subjects provided written informed consent before beginning the study.

Treatments

Dialectical Behavior Therapy with Replacement Medications. All patients received the core elements of the standard manualized DBT evaluated in previous studies.^{27,35,36} DBT comprises strategies from cognitive and behavioral therapies and acceptance strategies adapted from Zen teaching and practice; it is a synthesis of both validation and acceptance of the patient, on the one hand, with persistent attention to behavioral change on the other. The change procedures consist of systematic and repeated behavioral analyses of dysfunctional chains of behavior, training in behavioral skills, contingency management to weaken or suppress disordered responses and strengthen skillful responses, cognitive restructuring, and exposure-based strategies aimed at blocking avoidance and reducing maladaptive emotions. The acceptance procedures consist of mindfulness (e.g., attention to the present moment, assuming a non-judgmental stance, and focusing on effectiveness) and a variety of validation and stylistic strategies.^{37,38} The treatment was provided in weekly individual psychotherapy (1 hour), group skills training sessions (2 hours plus a 15-minute wind-down), skills coaching phone calls with the primary therapist (when needed), and weekly team meetings of all therapists aimed at reducing therapist burn-out and increasing therapists' capability in treating these patients. Individual sessions are based on clearly prioritized targets and focus on enhancing motivation (e.g., to quit using drugs and to continue therapy), and the foci of specific sessions

are determined by the patient's behavior since the previous session. Group skills training teaches mindfulness, distress tolerance, emotion regulation, interpersonal effectiveness, and self-management skills.

Several modifications and additions were added to standard DBT for use with this substance abusing population.³⁹ A new set of "attachment" strategies were added to DBT. These strategies consisted of a set of organized interventions designed to increase the positive valence of the therapy and the therapist, as well as to reach out to and bring back "lost" patients. A dialectical stance on drug use was developed in recognition that, on the one hand, cognitive-behavioral relapse prevention approaches⁴⁰⁻⁴² are effective in reducing the frequency and intensity of drug use following a period of abstinence from drug use, and, on the other, "absolute abstinence" approaches are effective in lengthening the interval between periods of use.^{43,44} "Dialectical abstinence," i.e., a synthesis of unrelenting insistence on total abstinence before any illicit drug abuse with an emphasis on radical acceptance, non-judgmental problem-solving, and effective relapse prevention after any drug use, followed by a quick return to the unrelenting insistence on abstinence, seeks to balance these two positions.

A "transitional maintenance" replacement medication pharmacotherapy protocol was added for individuals with stimulant or opiate dependence. This approach assumes that while a life without drugs is laudable and necessary, substance abusers often do not have the requisite skills in their repertoire at the start of treatment to achieve this end. With a goal in mind of replacing drug use with use of behavioral skills ("replacing pills with skills"), we developed a program consisting of four months of drug maintenance (to provide time for skills acquisition), four months of drug tapering (for skills strengthening), and four months of no drug replacement

(for skills generalization). Illicit stimulants were replaced with methylphenidate, and opiates were replaced with methadone. During the maintenance phase, dosages were determined with the patient to prevent withdrawal symptoms. The maximum dose of methylphenidate given was 20 mg daily, and the maximum dose of methadone given daily was 70 mg. Patients on drugs other than opiates or stimulants (e.g., cannabis) were not offered drug replacement. One polydrug addict (with heavy use of both cocaine and methamphetamines) and all three opiate addicts selected the transitional maintenance program. Of the seven remaining DBT patients, two entered and dropped the study before this option was available or offered, two chose immediate detoxification, two were abusing drugs other than stimulants or opiates, and one was too medically unstable for the program.

DBT individual therapists included two psychologists (including the first author, who treated one patient), one psychiatrist, and two master's level clinicians selected for their experience working with drug addicts. Pharmacotherapy was conducted by a psychiatrist using DBT clinical management. All components of treatment were offered to patients free of charge.

Treatment-as-usual (TAU). The primary aim of this study was to determine whether DBT was efficacious for these substance-dependent women with BPD. While it is customary practice when conducting clinical research trials to compare the treatment of interest to an assessment-only control condition to determine its efficacy, the severity of behavioral dysfunction of individuals with BPD as well as their risk for suicide necessitate use of a control condition that minimally resembles the standard of care these individuals would receive in the community. For this reason, we selected a naturalistic control condition in which to

compare DBT in order to determine whether or not DBT is efficacious for this particular patient population. The TAU condition was designed to control for several key threats to internal validity, including time and attention. Subjects either were referred to alternative substance abuse and/or mental health counselors and programs in the community, or were allowed to continue with their individual psychotherapists if they were receiving services at the time of the pretreatment assessment. Subjects who dropped their first therapist were offered additional referrals throughout the one-year treatment period. Consistent with practice within community mental health in the State of Washington, TAU included as needed meetings with case managers. TAU services were paid primarily through Medicaid; in some cases, individuals paid for treatment themselves. Efforts were made to ensure TAU subjects were not prohibited from receiving services due to lack of funds.

ASSESSMENT

Independent clinical interviewers, blind to the subjects' treatment conditions, conducted assessments at pre-treatment, 4, 8, 12, and 16 months. For subjects who received DBT, the 4-, 8-, and 12-month assessment appointments were timed from the beginning of group therapy. Because groups could only accept new subjects between (not during) topic areas, subjects could begin individual therapy up to four weeks before their first group session. Post-treatment assessments were scheduled to follow the termination of treatment. Timing of TAU subjects' 4-, 8-, and 12-month assessments was determined by yoking each TAU subject with the next subject who entered the study and was assigned to DBT. Assessments were scheduled for the same time period as their yoked partners. Average number of days between assess-

ments did not differ between the two treatment conditions (DBT = 136 ± 12 , TAU = 124 ± 18 , $t(16) = 1.58$, n.s.).

Measures

Drug abuse was assessed using structured clinical interviews and urinalyses. Information about the quantity and frequency of subjects' drug and alcohol use at each assessment period was measured by the time-line follow-back assessment method,⁴⁵ a highly reliable structured interview. A measure of proportion of days abstinent from alcohol and drugs was calculated as the ratio of days reported abstinent to total days between assessment periods. As validation for interviewers' assessments of subject's drug use, urine samples for urinalyses were collected at each assessment period and at random on one occasion between assessment periods. Subjects were contacted by telephone and instructed to return to the laboratory for a random urinalysis within 24 hours of the initial contact to provide a urine specimen. Urine specimens were analyzed using the fluorescent polarization immuno-assay (FPIA) technique by Abbott (using an AxSYM instrument) by a university medical laboratory for cannabis, cocaine, amphetamine, barbiturate, opiates, benzodiazepines, phencyclidine, methadone, methaqualone, and propoxyphene. A stringent definition was used in coding urinalysis data. Specimens were considered "dirty" if results for any drug (other than replacement medications for DBT subjects who were in transitional maintenance) were positive, if the subject missed a random urinalysis, or if the subject provided a random urinalysis occurring outside the 24-hour window. A "proportion clean" score was calculated for each subject as the ratio of clean urinalyses to total urinalyses scheduled for each assessment period.

Types and amounts of medical and psychological treatments received during

the study were measured by the Treatment History Interview.⁴⁶ A number of other scales were included to allow replication of other improved outcomes found in previous studies of DBT. Parasuicidal behaviors were measured by the Parasuicide History Interview.^{47,48} The Social History Interview (SHI), an adaptation of both the psychosocial functioning portion of the Social Adjustment Scale and the Longitudinal Interview Follow-Up Evaluation base schedule,⁴⁹ allowed for the determination of Global Social Adjustment (GSA) and Global Adjustment Scale (GAS) scores. Interviewers made GSA and GAS ratings for the worst week of the last month of the assessment period and for the best week overall. State and trait anger were measured by the State-Trait Anger Expression Inventory.⁵⁰

than \$5,000 in the prior year; only 12% earned \$20,000 or more in the prior year. Sixty-three percent were single, and 15% were currently married (see Table 1). Seventy-four percent of the sample met SCID criteria for substance dependence for more than one drug, 58% for current cocaine abuse or dependence, and 52% for alcohol dependence. Eight subjects primarily abused cocaine; six, opiates; four, marijuana; three, methamphetamine; one, hallucinogens; and one, both cocaine and methamphetamine. Subjects also met SCID current criteria for an average of 2.6 (± 2.1) other Axis I non-substance use disorders, most commonly Major Depressive Disorder (79% lifetime; 50% current) and post-traumatic stress disorder (38% current and lifetime; see Table 2). Twelve percent were diagnosed with ASPD. There were no significant differences between conditions on any of these demographic and diagnostic variables, indicating that randomization to treatment condition had been successfully achieved. There were no significant

RESULTS

Mean subject age was 30.4 ± 6.6 years. Fifty-four percent of the sample earned less

TABLE 1. Subject Characteristics

Characteristic	Total (N = 27)	DBT (n = 12)	TAU (n = 15)
Age <i>M</i> (SD)	30.4 (6.6)	30.4 (6.4)	30.4 (7.0)
Ethnicity (%):			
European Descent	78%	67%	87%
African-American	7%	17%	0%
Latina	4%	8%	0%
Other	11%	8%	13%
Education (%):			
High school grad or GED	22%	25%	20%
Some college/college graduate	63%	58%	67%
Income, Last Year (%):			
Less than \$5,000, %	54%	36%	67%
\$5,000 to \$19,999, %	35%	55%	20%
\$20,000 and above, %	12%	9%	13%
Marital status (%):			
Single	63%	50%	73%
Married	15%	25%	7%
Separated	7%	8%	7%
Divorce	15%	17%	13%

Note: Due to administrative error, we do not have demographic data for one subject who dropped out before pretreatment.

TABLE 2. Subjects' Comorbid Current Axis I Disorders by Condition*

	DBT	TAU
Depression		
Major Depressive Disorder	55%	45%
Dysthymia	36%	55%
Anxiety Disorders		
Panic Disorder	36%	0%
Agoraphobia without Panic	0%	9%
Social Phobia	9%	36%
Specific Phobia	30%	9%
Obsessive-Compulsive	30%	27%
Post Traumatic Stress	50%	27%
Generalized Anxiety Disorder	40%	9%
Eating Disorders		
Anorexia Nervosa	0%	9%
Bulimia Nervosa	10%	10%
Binge-Eating Disorder	20%	0%
	Mean lifetime diagnoses	Mean current diagnoses
Number of substance use disorders	5.3 ± 2.0	2.7 ± 1.4
Number of other Axis I disorders	2.7 ± 2.2	2.6 ± 2.1

*Diagnoses according to Structured Clinical Interview for DSM-III-R (SCID).

differences between conditions at pre-treatment on primary substance abused. Additionally, the groups did not differ on the number taking a medically sufficient dosage of a psychotropic medication at the time of the pre-treatment assessment; one DBT and two TAU subjects were using psychotropic medications at a clinically-sufficient dose before beginning treatment.

Outcome analyses on the drug abuse variables were conducted on the intent-to-treat sample (DBT = 12, TAU = 16). For these analyses, missing data were dealt with by carrying forward the latest data available or, if no data were available, using the worst possible outcome. Major outcome analyses, other than those of initiation and retention of subjects in treatment, were also performed on subjects treated (defined as receiving more than 6 sessions) and who provided outcome assessments beyond pretreatment (seven DBT subjects and all 11 TAU subjects). Specific directional treatment outcomes were predicted, and we therefore conducted

planned comparisons using a significance level of .05 (one-tailed).

Drug Abuse

With pre-treatment scores co-varied, an analysis of covariance of the treated sample (DBT $n = 7$; TAU $n = 11$) using the structured interview found a significantly higher proportion of drug and alcohol abstinence days for subjects assigned to DBT versus those assigned to TAU at 4 and 8 months, the overall year total, and 16 months; a trend toward significance was observed at 12 months (see Table 3 and Figure 1). Using the more stringent intent-to-treat sample (DBT $n = 12$; TAU $n = 16$), similar results were found at 4 months, the year total, and at 16 months.

Results from analysis of covariance (co-varying urinalysis scores at the pre-treatment assessment) of the urinalysis data generally mirrored those from the structured interviews: DBT subjects pro-

TABLE 3. Interviewer-Assessed Proportion Days Abstinent from Drugs and Alcohol by Treatment Condition for Treated and Intent-To-Treat Samples

	DBT		TAU		F Value	Effect Size
	Mean	(SD)	Mean	(SD)		
Pre-Treatment Assessment						
Treated	0.29	(0.26)	0.32	(0.29)	—	—
Intent-to-treat	0.36	(0.26)	0.22	(0.28)	—	—
Pre to 4-month						
Treated	0.82	(0.19)	0.46	(0.37)	6.53*	1.02
Intent-to-treat	0.63	(0.34)	0.32	(0.37)	3.16*	.80
4 to 8-month						
Treated	0.79	(0.28)	0.56	(0.27)	3.76*	.81
Intent-to-treat	0.62	(0.35)	0.38	(0.34)	1.50	.65
8 to 12-month†						
Treated	0.89	(0.24)	0.62	(0.39)	2.53‡	.75
Intent-to-treat	0.67	(0.38)	0.39	(0.44)	1.67	.64
Year Total†						
Treated	0.83	(0.14)	0.56	(0.24)	7.85*	1.12
Intent-to-treat	0.63	(0.33)	0.35	(0.34)	2.83*	.93
12 to 16-month§						
Treated	0.94	(0.17)	0.60	(0.36)	6.12*	1.03
Intent-to-treat	0.94	(0.17)	0.58	(0.36)	4.04*	.59

* $p < .05$.

†TAU $n = 10$.

‡ $p < .10$.

§TAU $n = 8$.

Note: DBT = Dialectical Behavior Therapy; TAU = treatment-as-usual; treated sample $n = 18$, intent-to-treat sample $n = 28$.

duced significantly more clean urinalyses than TAU subjects during the pretreatment to 4-month interval, over the entire year, and between 12 and 16 months, with a trend between the 4- to 8-month period. When the intent-to-treat samples were analyzed, a trend was found during the 4- to 8-month period and during the 12- to 16-month period (see Table 4).

Treatment Initiation, Exposure, and Retention

Six subjects dropped the study before or immediately after pre-treatment assessment (TAU = 5, DBT = 1). Two DBT subjects began treatment but dropped by the sixth individual therapy session (i.e., before completing 15% of the treatment) and are considered non-treated. Two DBT sub-

jects provided no data after pre-treatment; of these, one dropped treatment after the sixth session, and one died of an apparently accidental drug overdose during the four-month assessment.

Because treatment in the TAU condition frequently included individual sessions with a case manager in addition to individual counseling, exposure to treatment in TAU was first analyzed by summing hours of psychotherapy and sessions spent with a case manager that were provided to TAU subjects. This total was then compared to DBT individual psychotherapy sessions. No significant differences were found between conditions in receipt of individualized treatment-related contact (DBT $M = 43.14 \pm 10.67$; TAU $M = 31.6 \pm 27.88$, $F[1, 15] = 1.07$, n.s.). When case management hours are excluded from

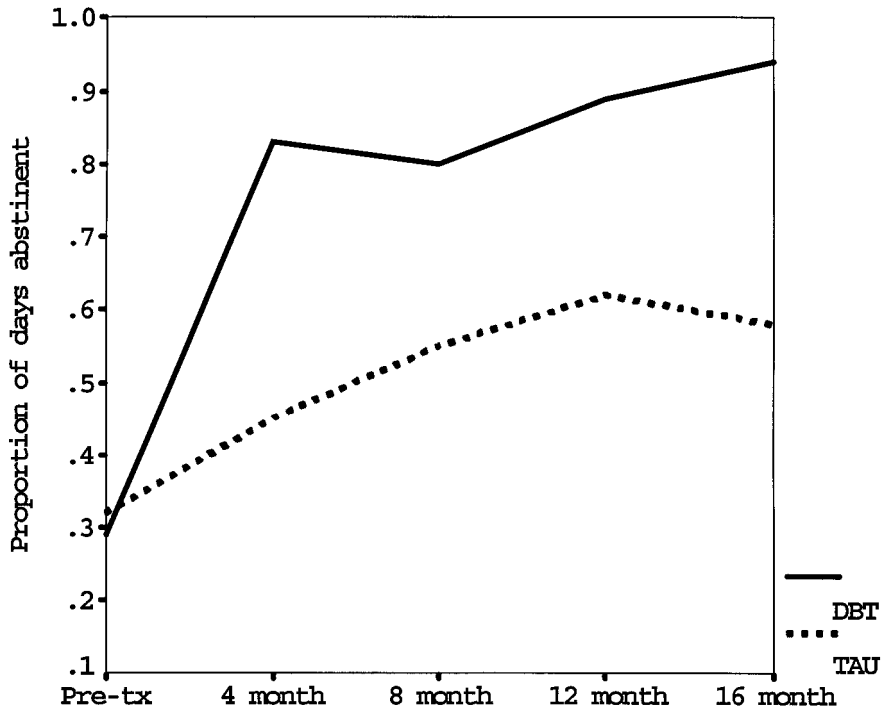


FIGURE 1. Proportion of days abstinent from drugs and alcohol by treatment condition for treated sample.

these analyses, DBT subjects receive significantly more psychotherapy than do TAU subjects (DBT $M = 43.14 \pm 10.67$; TAU $M = 21.88 \pm 32.32$; $F[1, 15] = 2.07$, $p < .05$). Rarely did TAU subjects participate in group psychotherapy.

Determining drop-outs from treatment depends on how one looks at the data. In DBT, a subject was considered a drop-out if four consecutive weeks of scheduled individual sessions or four consecutive weeks of scheduled group sessions were missed for any reason. In TAU, a subject was considered a drop-out if she never went to therapy or if she dropped out of therapy at any time following a first session. Fisher's exact p was used to evaluate treatment drop-out rates. Using these criteria and looking only at those subjects who completed pre-treatment, a trend emerged in favor of DBT. Four of 11 (36%) dropped from DBT (excluding the accidental over-

dose), compared to eight of 11 (73%) from TAU (Fisher's exact $p = .10$). If all subjects who never showed for their first treatment session and the subject who died are counted as having dropped, treatment drop-out rates are higher: 45% for DBT and 81% for TAU.

In DBT, three of the four DBT drop-outs were cocaine dependent, and the one death was a woman who was both addicted to heroin and cocaine. In TAU, all five individuals who dropped treatment shortly before or after the pretreatment assessment were cocaine dependent, as were three of the eight that dropped during the treatment year.

Psychopathology

There were no between-group differences on other outcome measures (e.g., parasuicide episodes, GSA, GAS, or anger)

TABLE 4. Proportion of Urinalyses Clean by Treatment Condition for Treated and Intent-To-Treat Samples

	DBT		TAU		F Value	Effect Size
	Mean	(SD)	Mean	(SD)		
Pre-treatment Assessment						
Treated	0.43	(0.53)	0.55	(0.52)	—	—
Intent-to-treat	0.33	(0.40)	0.38	(0.50)	—	—
Pre to 4-months						
Treated	0.64	(0.38)	0.31	(0.34)	6.27*	.86
Intent-to-treat	0.38	(0.43)	0.22	(0.31)	2.13†	.42
4 to 8-months						
Treated	0.57	(0.45)	0.36	(0.39)	2.49†	.50
Intent-to-treat	0.33	(0.44)	0.22	(0.31)	1.27	.21
8 to 12-months						
Treated	0.50	(0.41)	0.36	(0.45)	0.93	.32
Intent-to-treat	0.33	(0.39)	0.25	(0.41)	0.57	.21
Year Total						
Treated	0.57	(0.36)	0.33	(0.32)	4.65†	.63
Intent-to-treat	0.35	(0.39)	0.23	(0.31)	1.65	.24
12 to 16-months						
Treated	0.50	(0.50)	0.18	(0.34)	4.73*	.75
Intent-to-treat	0.29	(0.40)	0.13	(0.29)	2.41†	.56

p < .05.

†*p* < .10.

Note: DBT = Dialectical Behavior Therapy; TAU = treatment-as-usual; treated sample *n* = 18, intent-to-treat sample *n* = 28.

during treatment or at the 12-month post-treatment follow-up. At the 16-month follow-up assessment, however, DBT subjects showed better social and global adjustment, with significantly lower (better) scores on the GSA (DBT *M* = 2.25 ± 0.75, TAU *M* = 2.92 ± 0.71, *F*[1, 12] = 3.98, *p* < .05 for best week scores; DBT *M* = 3.04 ± 0.89, TAU *M* = 3.74 ± 0.67, *F*[1, 12] = 2.94, *p* = .056 for last month scores) and higher scores on the GAS (DBT *M* = 69 ± 12, TAU *M* = 49 ± 10, *F*[1, 12] = 22.24, *p* < .001 for best week scores; DBT *M* = 62 ± 10, TAU *M* = 44 ± 10, *F*[1, 12] = 22.19, *p* < .001 for last week scores). Subjects as a group showed significant reductions over time on frequency of parasuicide episodes and state and trait anger (all repeated measures ANOVAs using the Greenhouse-Geisser ϵ correction; for parasuicide episodes, *F*(3,39) = 3.96, *p* < .02; for state

anger, *F*(3,36) = 6.88, *p* < .01; for trait anger, *F*(3,32) = 6.41, *p* < .01). There were no between-group differences found in types and amounts of medical and inpatient psychiatric treatments received.

DISCUSSION

This comparison of Dialectical Behavior Therapy (DBT) to treatment-as-usual (TAU) in the community found three major results. First, we found a significant reduction in substance abuse among subjects assigned to DBT compared to those assigned to TAU. These results were found with both intent-to-treat and treated samples and were corroborated by urinalysis results. The between-group mean effect sizes in these analyses, varying between 0.6 and 1.1, are considered large in behavioral science research.⁵¹ Second, DBT

more effectively retained subjects in therapy, with a 64% retention of DBT subjects (excluding the accidental overdose), compared to 27% of TAU subjects that remained in treatment with their primary therapist for the duration of treatment. Third, improvements in social and global adjustment in the DBT condition are observed and reached significance when compared to TAU at follow-up. The absence of significant pre-treatment differences between DBT and TAU subjects, together with random assignment to condition, rule out interpretations of our results based on known preexisting differences. Along with our previous research findings that DBT reduces suicidal behaviors and improves social and global adjustment, results from this study provide further evidence of DBT's efficacy for behavioral and emotional dysfunctions in individuals with BPD. Of note is that in two consecutive studies, DBT has now been demonstrated efficacious in improving BPD patients' primary presenting problem.

Further support for the contention that DBT was the variable contributing to the greater improvements in subjects assigned to DBT comes from a series of post-hoc analyses we did comparing outcomes as a function of therapist adherence to the DBT treatment manual. Adherence was based on scores on the DBT Expert Rating Scale⁵² combined with observations of therapy tapes and supervision by the first author (MML). Four subjects completed therapy with therapists who achieved consistent DBT adherence (including the one subject treated by MML), and three subjects completed therapy with therapists who did not achieve consistent DBT adherence. With pre-treatment urinalysis scores covaried, adhering DBT therapist-client dyads had a significantly higher proportion of urinalyses clean at 12 months (adhering adj. $M = 81.13 \pm 28.87$, non-adhering adj. $M = 10.54 \pm 28.87$, $F[1,4] = 9.60$, $p < .02$) and the year total (adhering adj. $M = 80.84 \pm$

28.46 , non-adhering adj. $M = 28.88 \pm 41.95$, $F[1,4] = 5.71$, $p < .05$). A trend was found at 4 months (adhering adj. $M = 86.03 \pm 28.87$, non-adhering adj. $M = 38.97 \pm 50.00$, $F[1,4] = 3.56$, $p < .07$). Given the small sample sizes, this apparent relationship between adherence to DBT and outcome must be viewed with caution. However, the greater improvement of subjects with adhering therapists suggests that sufficient training, therapist adherence to the DBT manual, and therapist competence may be important predictors of outcome.

Although there were significant reductions in both episodes of parasuicide (including suicide attempts) and state as well as trait anger, the reductions were not significantly larger for subjects assigned to DBT than for those assigned to the TAU condition. For parasuicide episodes, the base rate was low at pre-treatment, and both groups quickly reached the floor. With respect to anger, the mean pre-treatment anger scores in this study were over ten points lower than were scores in our previous study with suicidal patients.³⁶ The mean one-year reductions from pre-treatment to post-treatment, however, were almost identical in both studies (a five-point decrease for suicidal subjects assigned to DBT compared to an eight-point decrease for drug abusers assigned to DBT, and a one-point increase for suicidal subjects assigned to TAU compared to a three-point decrease for drug abusers assigned to TAU). This prediction needs testing with a larger sample size in light of the fact that this trial's small sample size compromised statistical power.

In our previous study with suicidal patients, drop-out was 16%.²⁷ Although the 36% incidence here is higher, the attrition rate in DBT for both suicidal and drug abusers is low for a one-year treatment. Factors contributing to the high retention rate in DBT may include an emphasis in DBT on targeting therapy-interfering behaviors (e.g., missing or coming late to

sessions). Additionally, DBT emphasizes ongoing validation of patient behavior and building a strong, supportive relationship early in treatment in order to prevent treatment drop-out. Finally, DBT clearly defines what constitutes dropping out (four consecutive missed sessions of any one mode of treatment). This policy, in combination with our active therapy attachment strategies, may prevent DBT patients from drifting out of therapy.

This study has a number of limitations. First, it was conducted at the same institution where the treatment was developed. Thus, results may have been due to factors associated with treatment allegiance, as evidenced by differential drop-out rates following randomization to treatment condition. Second, there were relatively few subjects in each treatment condition, which compromised statistical power to find other differences that might exist. Third, it remains unclear how our results would generalize to less dysfunctional individuals, to males, or to other impulsive behaviors. Fourth, although they were directly trained and supervised by the first author, there were differences in therapist adherence levels in DBT. Fifth, because DBT subjects received more treatment on the whole than TAU subjects, we cannot completely rule out time and attention alone (vs. actual efficacy of DBT) as factors influencing outcomes. However, other studies conducted in our laboratory have demonstrated that increased time and contact alone does not account for improved outcomes.²⁸ Finally, DBT subjects did not pay for treatment, while TAU subjects did (although the majority of payment was through Medicaid and other public assistance funding). Can we attribute the superior retention rate of DBT to this fact? We cannot summarily rule out this possibility. However, we could not find any discernible differences in cost of therapy or payment method between TAU subjects who remained in treatment and those who

dropped out. Furthermore, high drop out rates among clients with BPD are common, even when a sliding fee scale is used (J. F. Clarkin, Ph.D., oral communication, January 1992).

Despite these limitations, this study has a number of strengths. First, although some aspects of the treatment were being added to the treatment manual during the delivery of treatment, all aspects of standard DBT were implemented throughout all phases of the research and with all DBT subjects. Second, all assessment measures used to evaluate outcomes in this study were identical to those used in our original outcome research,²⁷ thereby holding ourselves to a standard of identical measures. Third, we made use of a fairly rigorous urinalysis standard in our data analysis procedure, as all major drugs of abuse were tested for all subjects and a total abstinence standard was used to evaluate whether a particular urinalysis was dirty or clean. Additionally, all missing urinalyses were coded as "dirty." Fourth, the statistical significance of our results, despite small sample sizes, suggests a powerful effect of the treatment, at least with respect to its primary targets: reducing substance abuse, retaining subjects in treatment, and improving social and global adjustment.

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