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ORIGINAL PAPER

Predictors of Adoption and Reach Following Dialectical Behavior Therapy Intensive Training™

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Abstract
Dialectical behavior therapy (DBT) is an evidence-based treatment for borderline personality disorder. The DBT Intensive Training™ is widely used to train community clinicians to deliver DBT, but little is known about its effectiveness. This study prospectively evaluated predictors of adoption and reach of DBT among 52 community teams (212 clinicians) after DBT Intensive Training™. Pre-post training questionnaires were completed by trainees and a follow-up survey by team leaders approximately 8 months later. Overall, 75% of teams adopted all DBT modes and delivered DBT to an average of 118 clients. Lower training and program needs, fewer bachelor's-level clinicians, and greater prior DBT experience predicted adoption of more DBT modes. More prior DBT experience, smaller team size, more negative team functioning, and staff with lower job satisfaction, growth, efficacy, and influence predicted greater DBT reach. DBT Intensive Training™ appears effective in promoting DBT adoption and reach in routine clinical practice settings.

Keywords Dialectical behavior therapy · Implementation · Training · Borderline personality disorder · DBT intensive training

Introduction

Dialectical behavior therapy (DBT; Linehan 1993, 2014a, b) is a comprehensive multicomponent intervention with extensive evidence of efficacy for the treatment of borderline personality disorder (BPD; Kliem et al. 2010; Stoffers et al. 2012), a severe and complex disorder that is highly prevalent in clinical populations (e.g. Grant et al. 2008) and associated with high use of mental health services (Bender et al. 2001). Standard DBT consists of 4 weekly components: individual therapy, group skills training, therapist consultation team, and as-needed between-session telephone coaching. Strategies drawn from cognitive and behavioral interventions (e.g., behavioral assessment, contingency management, exposure, cognitive restructuring, and skills training), dialectics, and the acceptance strategies of validation and mindfulness are used across all 4 DBT components.

DBT is widely recommended as a front-line treatment for individuals with BPD, particularly those who are suicidal and self-harming (e.g., American Psychiatric Association 2001; National Institute for Health and Care Excellence 2009; Substance Abuse and Mental Health Services Administration's (SAMHSA) National Registry of Evidence-based Programs and Practices 2006). In the last decade, DBT has also been applied for several populations characterized by emotion dysregulation (see Ritschel et al. 2013). In an effort to meet the increasing demand for DBT services, over the past two decades DBT has been the focus of substantial dissemination efforts both within the United States and internationally. Indeed, it is considered one of the most successful dissemination efforts pursued by treatment developers of evidence-based psychological treatments (McHugh

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and Barlow 2012). However, little published research has formally evaluated the effectiveness of DBT dissemination methods.

Therapist training is the central component of DBT dissemination efforts, and the DBT Intensive Training™ Model (DBT-ITM) is the gold standard method of training clinicians to deliver DBT (Landes and Linehan 2012). The DBT-ITM was developed by Dr. Linehan, the DBT treatment developer, in response to the demand for DBT training following the publication of the first DBT randomized clinical trial (RCT; Linehan et al. 1991) and the DBT treatment manual (Linehan 1993). The DBT-ITM is designed for treatment teams of mental health providers and is composed of two 5-day workshops separated by a 6-month period for self-study and implementation. The primary goal of the DBT-ITM is to provide the training necessary for teams to successfully implement a comprehensive DBT program, which includes four modes of treatment: (1) individual therapy, (2) group skills training, (3) between-session phone coaching, and (4) therapist consultation team. Feedback from teams of clinicians regarding barriers to implementation has been used to continually improve the training model.

Little but promising research has been published on the effectiveness of the DBT-ITM in increasing adoption of DBT after training. The most extensive study involved surveying all teams trained via the DBT-ITM in the United Kingdom between 1994 and 2007 (Swales et al. 2012). Of the 105 intensively trained teams, 66 (62.8%) were actively running DBT programs and 39 (37.1%) had become inactive in the 2–15 years since receiving training. Active programs reported an average of 15.8 clients at any one time (range 2–60). A second study found that, at least 1 year after attending a DBT-ITM, a purposive sample of clinicians ($n = 79$) reported high rates of adoption of the four primary modes of DBT in their programs, including: individual therapy (96%), group skills training (99%), telephone consultation (87%), and therapist consultation team (97%; Ditty et al. 2015). Finally, a third study found that a DBT implementation initiative that included the DBT-ITM as well as other types of workshop training and consultation was associated with increased adoption of DBT components from pre-training to 8 months after training in the participating community-based agencies (Herschell et al. 2014). Taken together, these studies provide promising evidence for the effectiveness of the DBT-ITM in increasing initial and sustained adoption of DBT in diverse practice settings. However, only one study provided information about reach (i.e., number of clients treated) after DBT intensive training.

In addition to evaluating outcomes of the DBT-ITM, it is also important to identify factors that may reduce or enhance adoption and reach among intensively trained teams. The systems-contextual model of dissemination and implementation provides a framework for conceptualizing the multiple contextual factors that may impact the effect of training on subsequent therapist behavior such as therapist and organizational characteristics (Beidas and Kendall 2010; Sanders and Turner 2005; Turner and Sanders 2006). Given the team-based approach of the DBT-ITM, variables regarding team characteristics would also be useful to examine.

In terms of therapist factors, therapists who identify as cognitive-behavioral in orientation, have a higher level of education, and more positive attitudes toward evidence-based practice (EBP) have been found to be more open to learning and using EBPs (e.g., Aarons 2004; Baer et al. 2009; Stewart et al. 2011). In addition, therapists who report greater confidence in their ability to deliver a treatment are more likely to adopt the treatment after training (Shapiro et al. 2012), including for DBT specifically (Herschell et al. 2014). Another important therapist attribute to consider is therapist burnout, which may be particularly high when working with high-risk and difficult-to-treat clients with BPD (Linehan 2000). Several studies have found that receiving training in DBT decreased therapist burnout and the experience of stress associated with providing treatment (Carmel et al. 2014; Perseius et al. 2007).

With regard to team variables, a retrospective study of intensively trained DBT clinicians found that better team cohesion, communication, and climate were correlated with adopting a greater number of DBT elements (Ditty et al. 2015). In addition, given that high staff turnover has been found to be a significant barrier to DBT implementation and sustainability (Herschell et al. 2014; Swales et al. 2012), teams with a larger number of members may be more successful in starting and maintaining a DBT program.

Organizational characteristics are also likely to influence implementation of DBT after intensive training. Among teams trained via the DBT-ITM in the United Kingdom, the most commonly reported reason for program 'death' was a lack of organizational support (68%), which included factors such as insufficient protected time to deliver DBT, absence of management buy-in, funding difficulties, and insufficient resources (Swales et al. 2012). Similarly, two studies have examined barriers to DBT implementation in public health systems through qualitative interviews with clinicians (Carmel et al. 2014) and administrators (Herschell et al. 2009). Both identified common organizational barriers including lack of administrative support or investment in DBT, resource concerns, and lack of reduction in clinical responsibilities needed to deliver DBT.

Preliminary research on the effectiveness of the DBT-ITM in increasing implementation of DBT has shown promising results. However, to our knowledge, no studies have prospectively evaluated predictors of adoption of each DBT treatment mode or reach of DBT in terms of the number of clients treated in a large, representative sample of teams attending the DBT-ITM. In addition, studies evaluating

factors associated with DBT adoption have largely been retrospective and/or have not evaluated factors at multiple levels that are likely to impact implementation. Thus, the main objective of this study was to extend the existing research by prospectively evaluating the adoption and reach of DBT after the DBT-ITM as well as identifying clinician-, team-, and organizational-level predictors of these implementation outcomes. In addition, consistent with the literature reviewed above, we hypothesized that teams with greater organizational support, better team functioning, more team members, and therapists with greater education, a CBT or DBT theoretical orientation, more experience delivering DBT, more positive attitudes toward EBP, greater confidence and motivation, and less burnout would adopt more DBT modes and provide DBT to more clients.

Method

Procedures

Recruitment and Informed Consent

All procedures were approved by the University of Washington Institutional Review Board. Participants were recruited from 9 DBT Intensive Training™ courses, all of which used an application process to select teams to attend. In addition, two teams from one Intensive were mandated to attend by their agency. The trainings were conducted in 6 different U.S. states from 2012 to 2013. Behavioral Tech provided scripted information about the study to each team of trainers which was delivered verbally as well as in written form to trainees at the beginning of Part 1, including specifying that participation was voluntary. Trainees were not compensated for their participation.

Part 1 and 2 Assessments

Assessment measures were distributed in packets to all trainees at the beginning of Part 1 and Part 2 of the training. With two exceptions, trainees completed the Part 1 measures on paper at standardized times during the training that mapped onto relevant teaching topics. For example, the measure assessing team needs was completed after teaching about the role of the DBT consultation team and was used to facilitate discussion among team members. Participants were asked to complete the two measures assessing demographics and prior training on their own outside of the training. At Part 2, trainees were asked at the beginning of the week to complete all measures on their own outside of the training. All packets were collected by the training staff at the end of the training.

Follow-Up Survey

An online follow-up survey was sent to team leaders 5 to12 months after Part 2 to assess DBT adoption and reach.

Subject Flow and Retention

A total of 427 trainees from 83 teams attended Part 1 of the training. Of these, 412 trainees (96.2%) representing 81 teams (97.5%) completed the Part 1 assessments and 396 trainees (92.7%) representing 78 teams completed the Part 2 assessments. Of the 80 team leaders who provided Part 1 data, 62 (77.5%) completed the follow-up survey. There were no significant differences in professional characteristics (degree, theoretical orientation, primary work setting, clinical experience, duration of employment at present job) between team leaders who did versus did not respond to the follow-up survey (p's = .08–.36). The time of completion (in months) after Part 2 for the overall sample was: $M = 8.69$; $SD = 3.50$ (range 5–16 months). Of the 62 responding team leaders, 52 (83.8%) were still with the team and provided data on their team's ($n = 212$ trainees) implementation of DBT.

Training Structure

The DBT Intensive Training™ is provided in two 5-day trainings (Parts 1 and 2) separated by approximately 6 months of self-study. Training is team-based with team members seated together to facilitate discussion.

Part 1

The first 5-day workshop covers the main content areas of DBT, with structure and elements of DBT taught, modeled with video and/or role play, and practiced within teams. Each day teaching consists of mindfulness practice, chain analyses of tardiness or any other training-interfering behavior, review of feedback from the previous day, and teaching on new topics with team-based exercises and viewing of recorded therapy sessions. Several hours of the last day of Part 1 are devoted specifically to walking trainees through steps for implementing their DBT clinical program in their home setting during the 6-month initial implementation. Examples of topics covered include implementation issues such as who to treat, and how to recruit for the target population; how to navigate/restructure the system as it currently exists if necessary; how to overcome challenges to setting up all modes of DBT, etc.

Self-Study and Implementation

Between Parts 1 and 2, homework is assigned to promote clinical use of DBT and program implementation. Homework is completed by individual trainees (e.g., practice each DBT skill, conduct a chain analysis, read a book on behavior change) and by teams as a whole (e.g., define program inclusion/exclusion criteria, agree to consultation team agreements). In addition, all trainees must complete the DBT knowledge exam. During the implementation period, a suicide crisis call role-play is conducted with each team by one of the trainers. Additional consultation or structured contact with trainers may occur, but is not a standard part of training between Part 1 and 2.

Part 2

In the second 5-day workshop, teams present a case formulation, complete role plays related to their case, and present information about their programs. Trainers structure consultation on cases and program descriptions to ensure teams receive positive reinforcement and constructive feedback from other teams and the trainers. Additional training on areas of weakness is provided didactically or through practice. A major focus of Part 2 is to consult with each team about barriers to implementation in their clinical settings. During these individualized consultations all teams are invited to provide input and coaching such that a shared set of implementation strategies are developed. After completion of Part 2, all intensively trained teams are able to join a DBT list serve so they can consult with other DBT clinicians about clinical and implementation-related issues.

Measures

The outcomes in this study were the number of DBT modes (range 0–4) implemented at follow-up and the number of clients reached at follow-up. Predictor variables fell into three domains: (1) clinician characteristics, (2) team characteristics, and (3) organizational characteristics.

Implementation Outcomes

Adoption

The follow-up survey included a subset of items from the Program Elements of Treatment Questionnaire (PETQ; Schmidt et al. 2008), a self-report measure that was developed as a self-assessment tool for DBT programs. The present study utilized the 4 primary PETQ items assessing adoption of each of the standard DBT treatment modes (individual therapy, group skills training, therapist consultation team, and between-session telephone coaching) since Part 2 of the training. For each item, response options included: yes, no, some, and planned. Each item was re-coded to binary where 1 = yes, and 0 = no/some/planned and the items were summed to create a total count for analyses.

Reach

The follow-up survey also included a subset of items from the PETQ that assessed the number of clients receiving DBT individual therapy and/or group skills training since Part 2 of the training.

Clinician Predictors

Professional Characteristics

Participants professional characteristics were assessed at Part 1, including: (1) highest academic degree (recoded to 1 = Bachelor's degree or less, 0 = Master's or doctoral degree), (2) theoretical orientation (recoded to 1 = cognitive behavioral or DBT, 0 = not cognitive behavioral or DBT), and (3) number of DBT modes delivered prior to Part 1 (range 0–4).

Attitudes

The 15-item Evidence Based Practice Attitude Scale (EBPAS; Aarons 2004) assessed participants attitudes toward adoption of evidence-based practice (EBP) in four domains: (1) likelihood of adopting EBP given *Requirements* to do so, (2) intuitive *Appeal* of EBP, (3) *Openness* to new practices, and (4) perceived *Divergence* of usual practice with EBP. Items were rated on a 5-point Likert scale from 0 = "Not at all" to 4 = "To a very great extent." Items were averaged to create a total score for analysis (Cronbach's alpha = 0.78).

Confidence and Motivation to Deliver DBT

An adapted 16-item version of the Behavioral Anticipation and Confidence Questionnaire (BAQ; Dimeff et al. 2009) assessed participant's self-reported confidence in their ability to deliver various aspects of DBT, as well as their motivation to do so. Items were rated on a 5-point Likert scale with 1 = "Not Confident" or "Strongly Disagree" and 5 = "Very Confident" or "Strongly Agree". Items were averaged to create two subscales that showed good internal consistency: confidence (Cronbach's alpha = 0.88) and motivation (Cronbach's alpha = 0.84).

Burnout

The 19-item Copenhagen Burnout Inventory (CBI; Kristensen et al. 2005) assessed burnout (i.e., physical and psychological fatigue and exhaustion) in three areas: (1) personal, (2) work, and (3) client. Items were rated from 0 = "To a very low degree/never" to 100 = "To a very high degree/always" and averaged for analysis. Cronbach's alphas were: 0.82 (personal burnout), 0.66 (work burnout) and 0.78 (client burnout).

Team Predictors

Team Members

Given the high assessment completion rate, the total number of team members was computed based on the number of people per team who completed any part of the assessment battery at Part 1.

Team Functioning

The 29-item Team Needs Assessment (TNA; Wisconsin Department of Public Instruction; unpublished instrument) assessed team leader performance and factors that are contributing to the team's success as well as those areas where improvement may be needed. Items were rated on a 5-point Likert scale from 1 = "Strongly agree" to 5 = "Strongly disagree" and averaged for analysis. The results of an exploratory factor analysis yielded 3 factors: (1) *Positive functioning* (e.g., "Team environment is characterized by honesty, trust, mutual respect, and team work"; Cronbach's alpha = 0.79), (2) *Negative functioning* (e.g., "Team climate is uncomfortable and unrelaxed; there are obvious tensions or signs of boredom"; Cronbach's alpha = 0.81), and (3) *Team leader functioning* (e.g., "The Team Leader has given me clear roles and work assignments"; Cronbach's alpha = 0.82).

Organizational Predictors

Barriers to Implementation

The 39-item Barriers to Implementation Inventory (BTI; Behavioral Tech, LLC. (n.d.), unpublished instrument) is a list of obstacles that teams may encounter when implementing DBT. Participants are asked to indicate (Yes or No) which obstacles they perceive as having posed challenges to their DBT program. Barriers are structured by the following domains: team problems (e.g., team members left, difficulty meeting regularly), administrative problems (e.g. productivity needs, no release time provided for learning and implementing a new program), theoretical/philosophical problems (e.g. non-behavioral theoretical orientation; not willing to take phone calls or extend limits), and structural problems (e.g., lack of individual therapists). Items were summed to create a total score for analysis (Cronbach's alpha = 0.89).

Organizational Readiness to Change

The 129-item Texas Christian University Organizational Readiness for Change Scale-Program Staff version (TCU ORC-S; Lehman et al. 2002) was used to assess organizational functioning and readiness for change. This measure focuses on motivation and personality attributes of program leaders and staff, institutional resources, and organizational climate. Items are scored from 1= "Disagree strongly" to 5= "Agree strongly" and averaged to create the following four subscales: (1) *Motivation to change* assesses perceived needs for additional training as well as the degree of external pressure for change (Cronbach's alpha = 0.89), (2) *Program resources* evaluates the perceived adequacy of different resources (e.g., office facilities, staffing, training, equipment) used in their program (Cronbach's alpha = 0.80), (3) *Staff attributes* assesses the extent to which staff are characterized by growth, efficacy, influence, adaptability, and job satisfaction (Cronbach's alpha = 0.82), and (4) *Organizational climate* assesses perceived clarity of mission, cohesion, autonomy, communication, stress, and openness to change between the members of the program (Cronbach's alpha = 0.83).

Statistical Analyses

Analyses were conducted using data from the 52 teams ($n = 212$ trainees) whose team leaders completed the follow-up survey. Descriptive statistics were conducted to calculate the sample characteristics as well as numbers and types of DBT modes that were adopted and number of clients treated at follow-up.

Predictor analyses examined the effects of therapist, team, and organizational characteristics on the number of DBT modes implemented (adoption) and the number of clients receiving DBT (reach) at follow-up. Analyses were performed using the Generalized Linear Model (GLM) procedure treating both outcomes as count variables with negative binomial distributions. Three teams reported extreme outlying values on the reach outcome (i.e., at least 1 standard deviation higher than the next closest team). To prevent excessively high skew, for all GLM analyses these three teams were capped at the next highest value reported in the sample. This improved model convergence and did not substantively change the results. Analyses for each outcome were conducted in two steps. The first step was to identify predictors that were related to the outcome by running separate GLMs for each predictor. To allow for examination of the multivariate effect of predictors, in a second step a GLM

was run that included all of the significant predictors identified in the first models. Data collected at Part 1 were used for stable predictor variables (therapist professional characteristics and the number of team members). Data collected at Part 2 were used for predictors that may have changed during the course of training (organizational characteristics, team functioning, and therapist attitudes, confidence, motivation, and burnout). Data for the outcomes were from the follow-up assessment. Given that the outcome variables were for the team as a whole, all Part 1 and 2 predictors were aggregated by team for analysis.

Authors certify that we accept responsibility for the conduct of the study and for the analysis and interpretation of the data, that we helped write the manuscript and agree with the decisions about it, that we meet the definition of an author as stated by the International Committee of Medical Journal Editors, and that we have seen and approved the final manuscript. We certify that neither the article nor any essential part of it, including tables and figures, will be published or submitted elsewhere before appearing in the Journal. Authors declare that there are conflicts of interest associated to this research (stated at the end of the article).

Results

Demographic Information and Training Experience

Trainee ($n = 212$) demographics as well as educational and work background are presented in Table 1. Participants were primarily female (78.3%), White/Caucasian (77.2%), Masters-level (59.6%) mental health counselors (34.5%), social workers (26.9%) and psychologists (25.8%) working in outpatient treatment facilities (51.3%). Prior to attending Part 1 of the training, 82.2% of the therapists had conducted DBT group skills training or skills training with individual clients, 58.5% had conducted DBT individual therapy, 55.2% had participated in a DBT consultation team, and 53.8% had provided between-session telephone coaching to clients receiving DBT.

Predicting the Number of DBT Modes Adopted

Overall, 75.0% of teams ($n = 39$) reported that they had adopted all four DBT modes after training. The remaining teams reported adopting three DBT modes ($n = 6$, 11.5%), 2 DBT modes ($n = 4$, 7.7%), 1 DBT mode ($n = 2$, 3.8%), and no DBT modes ($n = 1$, 1.9%). The average number of DBT modes adopted per team was 3.54 (SD = 0.94). See Table 2 for descriptive data by mode. Results of the univariate GLM analyses are shown in Table 3 and descriptive data for all significant predictors from the GLM analyses are shown in Table 4 for each level of DBT adoption.

Table 1 Therapist characteristics

	N	%
Gender		
Female	148	68.3
Male	41	21.7
Ethnicity		
White/Caucasian	146	77.2
Native American/American Indian/Eskimo	4	2.1
Black/African American	10	5.3
Asian/Asian American	2	1.1
Hispanic/Latino	22	11.6
East Indian	1	0.5
Middle eastern/Arab	4	2.1
Highest degree		
< 4 year degree	21	11.1
Masters	112	59.6
M.D.	8	4.3
Psy.D.	13	6.9
Ph.D.	25	13.3
Profession/discipline		
Psychologist	48	25.8
Psychiatrist	5	2.7
Psychiatric nurse	3	1.6
Social worker	50	26.9
Mental health counselor/therapist or technician	64	34.5
Other	6	3.2
Licensed or certified in your state		
Yes	146	76.8
No	44	23.2
Years of experience in the health care field		
0–6 months	3	1.6
6–1 months	2	1.1
1–3 years	11	5.9
3–5 years	32	17.1
Over 5 years	139	74.3
Work best describes what you do		
Clinical	163	87.2
Research	13	7
Administrative	6	3.2
Teaching	5	2.7
Primary work setting		
Outpatient treatment facility	97	51.3
Private practice	27	14.1
Inpatient treatment facility	15	7.9
Residential treatment facility	22	11.6
Day treatment facility	4	2.1
Correctional/forensic facility	4	2.1
Other	20	10.6

Rate of missing data ranged from 10.4 to 14.6%

Table 2 Descriptive data on adoption and reach at follow-up

Adoption	Yes		No		Some		Planned	
	N	%	*N*	%	*N*	%	*N*	%
Individual DBT therapy	44	84.6	2	3.8	5	9.6	1	1.9
Group DBT skills training	50	96.2	0	0.0	2	3.8	0	0.0
Therapist consultation team	48	92.3	1	1.9	2	3.8	1	1.9
Between-session phone coaching	42	80.8	3	5.8	3	5.8	4	7.7
Reach	Individual DBT only		Group DBT only		Individual & group DBT		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Number of clients treated[a]	11.2	26.6	51.5	214.3	48.1	81.2	118.2	287.4

Descriptive data are based on the raw data

[a]The data presented include the original values of the three extreme outlier teams. Descriptive data for the capped value used in the GLM analyses was: total number of clients treated ($M = 71.6$, $SD = 92.2$)

Table 3 Generalized linear models predicting number of DBT modes adopted at follow-up

Predictors	Parameter estimates		Tests of type III model effects	
	B	SE	Wald χ^2 (1)	*p*
Therapist characteristics				
% with bachelor's degree or less	−0.42	0.20	4.17	**.04**
% CBT/DBT theoretical orientation	0.07	0.13	0.27	.60
Prior number of DBT modes delivered	0.08	0.03	5.74	**.02**
EBPAS total	0.34	0.18	3.52	.06
Confidence	0.17	0.14	1.48	.22
Motivation	0.01	0.13	0.01	.93
CBI personal burnout	0.00	0.01	0.04	.84
CBI work burnout	0.00	0.00	0.06	.80
CBI client burnout	0.00	0.00	0.06	.80
Team characteristics				
Number of team members	0.01	0.02	0.24	.63
TNA positive functioning	−0.11	0.09	1.62	.20
TNA negative functioning	−0.04	0.07	0.28	.60
TNA team leader functioning	−0.05	0.07	0.48	.49
Organizational characteristics				
BTI total	−0.01	0.01	2.62	.10
ORCS motivation to change	−0.03	0.01	8.64	**.003**
ORCS program resources	0.00	0.00	0.01	.90
ORCS staff attributes	0.01	0.01	0.27	.61
ORCS organizational climate	0.02	0.01	2.43	.12

Bold values indicate $p < 0.05$

Each row is from a separate GLM

CBT cognitive behavioral therapy, *DBT* dialectical behavior therapy, *EBPAS* evidence-based practice attitudes scale, *CBI* copenhagen burnout inventory, *TNA* team needs assessment, *BTI* barriers to implementation, *ORCS* organizational readiness to change scale

Therapist Characteristics

As shown in Table 3, teams with a lower proportion of therapists with a Bachelor's degree or less and therapists who had experience delivering more DBT modes prior to Part 1 had adopted significantly more DBT modes at follow-up. Table 4 includes the averages for these predictors for each level of DBT adoption for descriptive purposes.

Team Characteristics

As shown in Table 3, GLM analyses examining the association between team characteristics and DBT adoption were not significant.

Organizational Characteristics

As shown in Table 3, higher scores on the ORCS Motivation to Change subscale predicted adoption of significantly fewer DBT modes at follow-up. See Table 4 for descriptive data on this subscale by level of DBT adoption.

Combined Model

A multivariate GLM analysis that included the three significant predictors from the individual models was significant (Likelihood ratio χ^2 (3) = 12.48, $p < .01$). In this model, the ORCS Motivation to Change subscale predicted adoption of significantly fewer DBT modes (B = −0.02, SE = 0.01, $p < .03$). The number of DBT modes adopted was not significantly related to the proportion of therapists with a Bachelor's degree or less ($p = .18$) or the number of DBT modes delivered prior to Part 1 ($p = .08$).

Table 4 Descriptive data on significant predictors of adoption and reach at follow-up

Predictor	Number of DBT modes adopted ($N=52$ teams)									
	0 modes ($n=1$)		1 mode ($n=2$)		2 modes ($n=4$)		3 modes ($n=6$)		4 modes ($n=39$)	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*S D*	*M*	*SD*
% with bachelor's degree or less	0.75	–	0.20	0.28	0.06	0.10	0.07	0.16	0.10	0.18
Prior number of DBT modes delivered	0.00	–	0.00	0.00	0.67	1.15	1.19	1.32	1.58	1.19
ORCS motivation to change	39.03	–	35.86	5.4 7	29.05	1.35	30.62	4.23	28.68	3.95
Predictor	Number of clients reached ($N=52$ teams)									
	0–18 clients ($n=12$)		19–36 clients ($n=13$)		37–70 clients ($n=14$)		71 + clients ($n=13$)			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*		
Prior number of DBT modes delivered	0.71	0.86	0.93	1.12	1.82	1.22	1.98	1.24		
Number of team members	5.75	1.36	5.38	1.80	5.07	2.27	4.46	1.13		
Team negative functioning	2.02	0.50	2.23	0.71	2.22	0.34	2.27	0.53		
ORCS staff attributes	39.68	3.23	37.67	3.00	38.67	2.91	37.43	3.20		

The reach variable was split into quartiles for descriptive purposes

DBT dialectical behavior therapy, *ORCS* organizational readiness to change scale. The number of clients reached was divided into quartiles for descriptive purposes

Predicting the Number of Clients Reached

Overall, teams reporting delivering DBT individual therapy and/or group skills training to an average of 118.2 clients since Part 2 ($SD=287.4$). The average number of clients receiving each mode separately and both combined is provided in Table 2. Results of the univariate GLM analyses are shown in Table 5 and descriptive data for all significant predictors from the GLM analyses are shown in Table 4 by quartile of number of clients reached.

Therapist Characteristics

As shown in Table 5, GLM results indicated that teams with therapists who had experience delivering more DBT modes prior to Part 1 provided DBT to significantly more clients. No other therapist characteristics significantly predicted the number of clients reached. Table 4 includes the average of this significant predictor by quartile of number of clients reached.

Team Characteristics

As shown in Table 5, GLM results indicated teams with fewer clinicians and more negative functioning provided DBT to significantly more clients. Positive team functioning and team leader functioning were not significantly related to the number of clients reached. Table 4 includes the average of this significant predictor by quartile of number of clients reached.

Organizational Characteristics

As shown in Table 5, GLM results indicated that lower scores on the ORCS Staff Attributes subscale predicted providing DBT to significantly more clients. No other organizational characteristics significantly predicted the number of clients reached. Table 4 includes the average for this significant predictor by quartile of number of clients reached.

Combined Model

A multivariate GLM analysis that included the four significant predictors from the individual models was significant (Likelihood ratio $\chi 2$ (4) = 16.87, $p=.002$). In this model, teams with therapists who had experience delivering more DBT modes prior to Part 1 (B = 0.38, SE = 0.13, $p<.01$) provided DBT to significantly more clients. The number of clients receiving DBT was not significantly related to the number of team members ($p=.94$), team negative functioning ($p=.28$), or ORCS Staff Attributes ($p=.19$).

Discussion

To our knowledge, this is the first study to prospectively examine predictors of DBT adoption and reach in a representative sample of clinicians receiving training via the DBT-ITM. Our results showed high rates of adoption of each of the four modes of DBT (> 80%) and a larger number of clients treated ($M=118.2$; SD = 287.7) within

Table 5 Generalized linear models predicting number of clients reached at follow-up

Predictors	Parameter estimates		Tests of type III model effects	
	B	SE	Wald χ^2 (1)	*p*
Therapist characteristics				
% with bachelor's degree or less	0.37	1.08	0.11	.74
% CBT/DBT theoretical orientation	0.21	0.74	0.08	.78
Prior number of DBT modes delivered	0.42	0.14	9.48	**.002**
EBPAS total	0.03	1.03	0.00	.98
Confidence	−0.44	0.66	0.44	.51
Motivation	−0.93	0.58	2.56	.11
CBI personal burnout	−0.03	0.02	1.18	.28
CBI work burnout	0.00	0.02	0.03	.87
CBI client burnout	0.00	0.02	0.02	.90
Team characteristics				
Number of team members	−0.21	0.09	5.46	**.02**
TNA positive functioning	0.42	0.41	1.05	.31
TNA negative functioning	0.69	0.34	4.15	**.04**
TNA team leader functioning	0.65	0.33	3.81	.05
Organizational characteristics				
BTI total	−0.04	0.04	0.82	.36
ORCS motivation to change	0.00	0.05	0.00	.97
ORCS program resources	−0.03	0.04	0.61	.43
ORCS staff attributes	−0.13	0.06	5.04	**.03**
ORCS organizational climate	−0.04	0.06	0.50	.48

Bold values indicate $p < 0.05$

Each row is from a separate GLM

CBT cognitive behavioral therapy, *DBT* dialectical behavior therapy, *EBPAS* evidence-based practice attitudes scale, *CBI* copenhagen burnout inventory, *TNA* team needs assessment, *BTI* barriers to implementation, *ORCS* organizational readiness to change scale

approximately 8 months of completing the DBT Intensive Training™. Overall, 75% of teams adopted all 4 modes of DBT (i.e. individual therapy, group skills training, consultation team and between-session telephone coaching) and only 2% of teams had not implemented any DBT mode. These outcomes are similar to those found in previous studies of clinicians receiving training via the DBT-ITM (Ditty et al. 2015; Swales et al. 2012) and suggest that the DBT-ITM is an effective method of integrating DBT into routine practice settings and reaching a high number of clients with a severe disorder (Swales et al. 2012). More generally, these findings indicate that DBT can be delivered in its comprehensive, multi-modal format by clinicians with a range of educational backgrounds working in diverse community mental health settings.

The high rate of adoption associated with the DBT-ITM is particularly notable given that this training model primarily consists of two workshops and does not include formal consultation or ongoing support. This stands in contrast to research indicating that workshops are unlikely to change subsequent clinician behavior and that consultation or other forms of ongoing support are typically needed to achieve high rates of implementation (e.g., Beidas et al. 2012; Lopez et al. 2011; Walters et al. 2005). Theory and research provide several potential explanations for the effectiveness of the DBT-ITM. First, providing two workshops that occur 6 months apart ensures that there will be extended contact with trainers compared to traditional one-time workshop training models. This type of extended contact is recommended to help clinicians move through the professional development process from initial development of new skills to confident application of these skills in clinical practice (Lyon et al. 2011). Although extended contact is often provided in the form of regular consultation and ongoing support after workshop training, requiring attendance at subsequent in-person training, particularly one that is focused on providing brief clinical and program consultation to each team as well as consolidation of prior learning, may fulfill the same function.

Second, the use of a team-based training format may increase the likelihood of adoption and increase reach compared to standard workshops that focus on training individual clinicians. Receiving training as a team may help to reduce the impact of common organizational barriers to implementation of EBTs (e.g., staff turnover, insufficient individual time for program development) and improve clinician motivation (e.g., by generating a sense of a shared mission and increasing accountability). In addition, the DBT therapist consultation team is intended to provide a sustainable method for clinicians to receive ongoing support and feedback from peers within their organization, and may reduce or eliminate the need for consultation from external experts. This approach is similar to peer collaboration strategies used in training approaches from multiple disciplines, including techniques such as peer coaching and peer-to-peer supervision (Henning et al. 2008; Lyons et al. 2011; Murray et al. 2008), and may be a cost-effective alternative to expert coaching and consultation.

Third, trainers in the DBT-ITM pay close attention to increasing clinician motivation throughout the trainings, including a particular focus on the use of contingency management strategies (e.g. Clancy and Tornberg 2007). Teams are reinforced with praise or validation for completing tasks and changing attitudes/behaviors. Similarly, the team with the highest rate of homework completion during the self-study and implementation phase is publicly recognized for their achievement. Non-completion of assignments and other training-interfering behaviors are targeted with behavioral chain analyses, problem solving, and contingency management strategies. These strategies are consistent with

recommendations to attend to provider motivation during training (Lyon et al. 2011) and may be effective in reinforcing pro-implementation behavior change among trainees.

The results related to predictors of adoption and reach also provide insight into factors that may help to increase the effectiveness of the DBT-ITM. In terms of therapist characteristics, greater prior experience delivering DBT predicted more adoption and reach, whereas having a Master's degree or higher predicted greater adoption. Consistent with prior work that has emphasized the importance of staff selection for EBT training (Fixsen et al. 2005), these results suggest that organizations may want to preferentially select staff with these characteristics to attend DBT Intensive Training™. Alternatively, implementation outcomes may be improved if clinicians are encouraged to gain experience with some aspects of DBT (e.g., skills training) prior to attending DBT Intensive Training™. In the present sample, 82.2% of the therapists had prior experience delivering DBT skills training and 53.8– 58.5% had prior experience delivering the other modes of DBT. It is not uncommon for clinicians to begin delivering some aspects of DBT without formal or intensive training (e.g., after reading the manual or attending an introductory workshop), and the present results suggest this may be beneficial when done as preparation for participation in DBT Intensive Training™ and is particularly likely to increase reach in the immediate post-training period.

Team characteristics did not significantly predict adoption, but were related to reach. Specifically, teams with fewer clinicians and more negative functioning provided DBT to significantly more clients during the follow-up period. In addition, poorer ratings of staff attributes predicted greater reach, indicating that programs that placed less value on clinician growth and in which clinicians had lower efficacy, influence, adaptability, and job satisfaction were likely to provide DBT to more clients. These findings suggest that greater reach may primarily be an indicator of challenging work conditions in which a small number of clinicians are required to maintain high caseloads of severe clients with limited support. Prior research has indicated that these types of work conditions, including low social support from supervisors and co-workers and limited professional opportunities, are strong predictors of poor job satisfaction and intentions to leave among social workers in mental health care (Acker 2004). Taken together, these findings highlight the importance of finding a balance between meeting the business demands of mental health care by providing services to a large number of clients and fostering a supportive team environment that encourages clinician growth.

Organizational characteristics related to general training and program needs were the strongest predictor of subsequent adoption of DBT modes. In particular, teams that reported needing more training and guidance at Part 2 (e.g., in assessing client problems and needs, improving behavioral management of clients, developing more effective group sessions, and raising the overall quality of counseling) adopted significantly fewer DBT modes after training. Of note, this ORCS Motivation to Change subscale was significantly correlated with the proportion of bachelors' level clinicians on the team ($r = .47$, $p < .001$), likely reflecting the fact that individuals without advanced degrees may not have received formal education in basic counseling skills. This finding suggests that it may be useful to provide additional support to teams who self-identify as needing more training after the traditional DBT-ITM, while also suggesting this may be particularly necessary for teams with a higher number of bachelors' level clinicians.

The present study had several methodological limitations. First, this study is an uncontrolled, pre-post trial and more rigorous randomized controlled trials are needed to compare the DBT-ITM to other training models. Second, the present sample consisted almost entirely of teams that applied to attend a DBT Intensive Training™ and therefore may have been particularly motivated to learn and use DBT. The effectiveness of the DBT-ITM should also be evaluated in other clinician samples, such as those who are mandated to attend training. Third, characteristics of the clients treated by the teams were not evaluated, and client-level variables would also be useful to evaluate as predictors of adoption and reach in future studies. Similarly, the present study did not evaluate the impact of training on client-level outcomes or clinician adherence to DBT, and these would be important outcomes to evaluate in future research. Finally, the follow-up period was reasonably brief, and future research would benefit from evaluating the long-term sustainability of implementation after attending a DBT-ITM.

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Compliance with Ethical Standards

Conflict of interest Drs. DuBose and Ivanoff are employees of Behavioral Tech, LLC, an organization that provides professional training in Dialectical Behavior Therapy (DBT), including DBT Intensive Training. Drs. Harned, Korslund, DuBose, Ivanoff, and Linehan are compensated for providing training and consultation in DBT. Dr. Linehan receives royalties from Guilford Press for books she has written on DBT and from Behavioral Tech, LLC for DBT training materials she has developed. She also owns Behavioral Tech Research, Inc. a company that develops training and clinical products for DBT. Dr. Navarro-Haro and Tianying Chen declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All procedures were approved by the University of Washington Institutional Review Board. This article does not contain any studies with animals performed by any of the authors.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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