RESEARCH ON DIALECTICAL BEHAVIOR THERAPY: SUMMARY OF NON-RCT STUDIES

Compiled by Marsha M. Linehan, Ph.D., ABPP, Linda Dimeff, Ph.D., Kelly Koerner, Ph.D., & Erin M. Miga, Ph.D

1. Published Quasi Experimental Studies

Authors	Subjects/Setting	Design	Adherence to Standard DBT	Outcomes and Comments
Miller, Rathus, & Leigh (AABT, 1996, Nov). Rathus & Miller (2002)	Suicidal teens (M age=16); outpatient services in the Bronx, NY. 22% were male. Ethnicity: 68% Latino; 17% African American. DBT Ss met following inclusion criteria: BPD or BPD features plus current suicidal ideation or engaged in parasuicidal behavior within past 16 weeks.	Non-randomized control quasi-experimental pilot study comparing DBT for adolescents to treatment as usual. Of total (N=111), most severe teens were referred to DBT program. Ss in DBT received twice weekly individual and multi-family skills training; TAU Ss received twice weekly individual and family sessions.	Modifications to standard DBT included: inclusion of as-needed family therapy (added onto individual therapy) and inclusion of family members in group. Skills handouts modified for ease with teens and number of skills in modules reduced. Core mindfulness skills were taught 3 times, other modules were taught only once each. Treatment length was 12 weeks.	Ss in DBT group were significantly more likely to complete treatment than TAU Ss (62% vs. 40%). Ss in DBT had significantly fewer psychiatric hospitalizations (13% hospitalized in TAU vs. 0% in DBT-A). No significant differences in parasuicidal behaviors were observed. However, since Ss in DBT were recruited for this condition because of their suicidal behaviors, no difference between conditions on this outcome variable is noteworthy. Additional outcome measures from DBT (pre/post within DBT group): significant decreases in suicidal ideation, significant reductions in global severity index and positive symptoms distress index, and significant changes on SCL-90: anxiety, depression, interpersonal sensitivity, and obsessive compulsive, and trend toward significance on paranoid scale; reductions on Life Problems Inventory in total LPI scores as well as four problem areas: confusion about self, impulsivity, emotion dysregulation, and interpersonal difficulties.
Bohus, Haaf, Stiglmayr, et al. (2000).	BPD female Ss in an inpatient setting; had at least two parasuicide episodes in past two years.	Using a pre-post study design, Ss were assessed at admission to hospital and at one-month post-discharge.	All DBT Ss received DBT individual psychotherapy as well as DBT group skills training for the duration of their hospital stay. Additionally, skills coaching was provided in the milieu to further strengthen skills.	Significant decreases in the number of parasuicidal acts post-treatment as well as significant improvements in ratings of depression, dissociation, anxiety and global stress.
McCann & Ball, (1996). McCann, Ball, & Ivanoff (2000)	Primarily male forensic inpatients on medium & intermediate security wards; most committed violent crimes. 50% with BPD; 50% with ASPD. Recruited from 5 wards.	Quasi-experimental study comparing DBT (n=21) to treatment as usual (n=14) over 20 months. TAU was described as "individualized supportive care" that combined psychotropic medications, individual and group therapy.	DBT ward assumed DBT philosophy and patient assumptions. Individuals in DBT ward received DBT individual therapy, DBT group skills training, as well as skills coaching on the ward. Inpatients were encouraged to conduct a chain analysis of ward-interfering behavior, as well as therapy-interfering behavior.	In comparison to TAU, DBT Ss had a significant decrease in depressed and hostile mood, paranoia, and psychotic behaviors. Furthermore, DBT Ss had a significant decrease in several maladaptive interpersonal coping styles and an increase in adaptive coping in comparison to TAU. Finally, a trend towards reduction in staff burn-out was reported, again favoring DBT.

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Katz, Cox, Gunasekara, & Miller (2004)	Adolescent patients, aged 14 to 17 years, admitted for suicide attempts or suicidal ideation; psychiatric inpatient units.	Quasi-experimental pilot study (N=62, 10 boys, 52 girls) to evaluate the feasibility of DBT implementation in general child and adolescent psychiatric inpatient unit. Ss were 62 adolescents with suicide attempts or suicide ideation, admitted to one of two units, one of which applied DBT (n=26) and ther other TAU. Ss were assessed at pretreatment, - and a 1-year follow-up.	Adapted from adolescent DBT model developed by Miller et al. (1997). Two week program comprised of 10 daily, manualized DBT skills training sessions. Also seen twice per week for individual DBT psychotherapy and participated with DBT-trained nursing-staff in DBT milieu to facilitate skills generation. Staff met regularly for consultation meetings and DBT consultation was brought into evaluate the treatment program.	Follow up data was available for 26 DBT Ss (83% of those initially enrolled) and 27 TAU Ss (90% of those initially enrolled). The first study to evaluate implementation of DBT along with one-year clinical outcome follow up for suicidal adolescents on an inpatient unit compared to TAU. In comparison to TAU, DBT Ss had significantly fewer behavioral incidents and problems on the ward. There were no completed suicides in either group and both groups demonstrated highly significant reductions in parasuicidal behavior, depressive symptoms, and suicidal ideation at 1 year. Study supports feasibility to conduct abbreviated DBT program on an adolescent inpatient unit.
Comtois, Kerbrat, Atkins, Harned, & Elmwood (2010)	30 participants (80% female, M age= 37 years) with BPD. Public mental health service; outpatient clinic.	A pre-post evaluation examined the impact of DBT-Accepting the Challenges of Exiting the System (DBT-ACES) on outcomes of employment, hospital admissions, self-injury, and quality of life. Length of treatment included one year of standard DBT (SDBT), followed by one year of DBT-ACES. Participants assessed at pre and post SDBT, pre and post DBT-ACES, and at one year follow up after DBT-ACES.	After receiving 1 year of standard DBT, patients received DBT- ACES, an adapted form of DBT that teaches contingency management and exposure strategies that specifically aid psychiatrically disabled individuals in finding employment, and exiting the public mental health system. Individuals in DBT-ACES receive weekly individual DBT and skills group. Phone coaching/consultation team not mentioned in article.	Random-effects regression models (RRMs): participants significantly more likely to be employed or in school at the end of SDBT, and were more likely to be working 20 or more hours at end of DBT-ACES. Participants had significant reduction in inpatient admissions, and reported an improved quality of life between end of SDBT and end of DBT-ACES.
McDonell, Tarantino, Dubose, Matestic, Steinmetz, Galbreath, & McClellan (2010)	106 adolescent patients with histories of NSSI, suicidality, and mood disorder diagnoses (58 % female, M age=15 years) in long term inpatient care.	This controlled (nonrandomized) study compared DBT to TAU in an adolescent inpatient unit. Historical medical records were collected across both conditions, including diagnosis, length of stay, and NSIB. Global functioning, medications, and discharge placement were not available for comparison group.	Inpatient program included all elements of comprehensive DBT. However, Participants received varying "intensities" of DBT (i.e., DBT vs. skills group only) based on clinical need. All staff received DBT training, although the nature of this training was not specified.	Repeated measures ANOVA: patients in the DBT demonstrated significant reductions in psychiatric medications upon discharge, and significant increases in global functioning over time. Individuals in DBT group also demonstrated significant reduction in NSSI over time, while DBT had little effect on seclusion rates. Patients in DBT also had significantly lower rates of NSSI than controls.

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2. Unpublished Quasi Experimental Studies

Authors	Subjects/Setting	Design	Adherence to Standard DBT	Outcomes and Comments
Stanley, Ivanoff, Brodsky, Oppen-heim, & Mann (AABT, 1998, Nov).	All Ss were females with BPD.	Non-randomized pilot project comparing efficacy for patients in standard DBT with a matched group of patients receiving TAU in the community.	This study included all components of standard, comprehensive DBT but was provided for shorter treatment duration (six months) than Linehan's original trial. Hence, all skills were taught one time only.	Statistically significant reductions in self-mutilation behaviors, self-mutilation urges, suicidal ideation, and suicidal urges were observed favoring DBT. No differences in self-reported psychopathology were observed. There were no suicide attempts in either group during the duration of the study.

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3. Quasi-Experimental and Uncontrolled Studies Incorporating Elements of DBT/ Skills-only/Quasi DBT

Authors	Subjects/Setting	Design	Adherence to Standard DBT	Outcomes and Comments
Barley, Buie, Peterson, Hollings-worth, Griva, Hickerson, Lawson, & Bailey (1993).	Mostly female (79%) on an inpatient personality disorders unit. M age = 30 years (range=16-57). Length of stay in hospital: M = 106 days (range=3-629 days).	Quasi-experimental study (N=130). Study compares outcomes between Ss during three phases of integrating DBT onto unit: (1) no DBT; (2) phasing in/introducing DBT to unit; (3) full DBT program. To control for effects of time, investigators compared changes in parasuicide episodes across three intervals to changes in parasuicide rates across intervals on another psychiatric unit within hospital during same period of time.	Program was evolving from sole psychodynamic focus to incorporation of DBT; psychodynamic continued to inform case conceptualization and aspects of treatment with DBT skills training group as an adjunct to psychodynamic treatment. Included DBT skills training group, a separate "homework group" using problem-solving strategies when Ss didn't complete homework, and "fundamentals" group for new patients to provide general overview of skills and extensive exposure to crisis survival skills.	Mean monthly parasuicide rate on the personality disorders unit was significantly lower following the implementation of DBT on the unit. Rates of parasuicide on the general psychiatric unit were not significantly different at any of the three time periods. Results suggest that once incorporated onto the unit, use of DBT skills reduces parasuicidal behavior among Ss on a personality disorders unit. Because this study lacks randomization, other competing hypotheses for these findings are not eliminated. Its obvious strengths include its naturalistic setting on an inpatient unit.
Springer, Lohr, Buchtel, & Silk, (1996).	General inpatient unit. M length of stay = 13 days. Ss were selected for group on the basis of having a personality disorder.	Quasi-experimental study where investigators compared outcomes of Ss assigned to a treatment group that included DBT skills in a Creative Coping Group (CC) to a treatment as usual lifestyles and wellness discussion group.	Creative coping group format where Ss were encouraged to discuss parasuicidality in group. Ss only exposed to a limited number of DBT skills from three of four modules (emotion regulation, distress tolerance, and interpersonal effectiveness).	Ss in both conditions attended an average of six sessions and improved during their hospital stay. Ss in the CC treatment group were significantly more likely to believe that the lessons learned in group would help them manage their lives better upon discharge from the hospital. Investigators also note that Ss in the modified treatment group engaged in significantly *more* "acting out" behaviors during their hospital stay which they attribute to "discussing parasuicidality in the CC (creative coping) group and listening to patients describe their self-mutilative behaviors or fantasies." Two of the six individuals who engaged in self-mutilative acts while in the CC group had no prior history of such behavior. Authors conclude that adaptation of DBT to a short-term inpatient setting may not be in the patient's best interest because of possible contagion effect. This finding validates an important DBT principle described in Linehan's Skills Training manual: with chronically parasuicidal patients, do not encourage discussion of parasuicidal acts in a group setting because of contagion effects (p.24).

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Telch, Agras, & Linehan (2000).	Female Ss between 18 and 65 years of age in outpatient treatment program for Binge Eating Disorder.	Small preliminary pre-post design (N=11) adapting DBT to treatment of Binge Eating Disorder. 20 session-group format that includes skills training as well as behavioral chain analysis.	Ss only received DBT group skills training. With the exception of the interpersonal effective module, all DBT modules were taught. Additionally, chain analysis was taught as a self-management skill within group and Ss were instructed to conduct a chain analysis using specifically developed behavioral targets for mindful eating. Skill modules taught once, although a review of all skills in a particular module was provided at the end of each module.	Both the number of binge episodes and binge days decreased significantly from baseline to post-treatment and included weight loss. Three and six-month post-treatment assessment data showed strong continued abstinence from binge eating and maintenance of lower weight. No treatment drop outs were reported and attendance was strong.
Trupin, Stewart, Beach, Boesky (2002).	Juvenile female offenders in a mental health cottage in a correctional facility.	Quasi-experimental study comparing pre-post outcomes. Compared outcomes from cottage implementing DBT to a treatment as usual cottage with comparable characteristics. With Junveim	Application primarily of DBT skills as well as consultation team. Each skills module taught over four week period in 60-90 minute groups occurring 1 to 2 times weekly. Skills strengthening occurred through coaching in the milieu.	Behavioral problems (aggression, parasuicide, and class disruption) were significantly higher within the experimental cottage at pretreatment and decreased significantly during intervention compared to other cottage. Following the DBT intervention, staff in the DBT cottage used fewer restrictive punitive responses. Following the DBT intervention, youth showed significantly improved transition to and participation in on-campus therapeutic, educational and vocational services.
Sambrook, Abba, & Chadwick (2006)	34 participants with self-injurious behavior (4 skills groups were all female, 1 group included 2 men, 20-53 years). Skills group in outpatient program.	Pre-post evaluation study assessed a DBT- informed skills group for outcomes of self- injury, psychopathogy, and use of crisis services. Data was collected for 18 months prior to beginning a group, and for the subsequent 18 month period following the skills group.	The program included an Emotional Coping Skills (ECS) groups and individual pre-commitment meetings. Groups utilized DBT skills, including crisis survival, mindfulness, understanding and regulating emotions, and assertiveness modules. Clinicians were "trained in DBT" although nature of their training not specified. No phone coaching, individual therapy, or consultation team were included.	30% of the participants had significant decreases in number of inpatient hospitalization days, and 61% had decreases in outpatient appointments, evidencing a drop in crisis-related service utilization. Participants reported a significant decrease in CORE scores, a measure of general psychopathology and functioning, from pre to post treatment.

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Hoffman, Fruzzetti, & Buteau (2007)	55 family members of individuals with BPD (M age=53 years).	Replication of original, Hoffman et al. (2005) study, Pre-post study of family members completing Family Connections (FC). Participants assessed pre, post, and 3 months post completion.	Family Connections: 12 week education program based on Lazarus' stress –coping-and-adaptation model, and standard DBT/ DBT for families. Program provides: a) current information on BPD research and family functioning b) coping skills based on balance of acceptance and change c) relationship and family skills and d) opportunities to build family member support network. Group led by trained family members.	Hierarchical linear modeling: supported findings from the initial FC study (significant reductions in grief and burden, increases in master from pre to post-FC). Gender differences were found, women reported greater reductions in burden and grief across pre to post assessment than men.
Wasser, Tyler, McIlhaney, Taplin, & Henderson (2008)	14 adolescents (14 % female, M age= 14)	This pre-post treatment study utilized nonrandomized matching to compare adolescents in a residential DBT program (n=7) to another state that applied a Standard Therapeutic Milieu residential program (STM) (n=7). Secondary matching yielded a comparison of 12 adolescents per group on their second Axis I diagnosis. Length of residential stay ranged from 172 to 532 days, length of DBT was 17 weeks. Participants assessed at baseline and discharge.	DBT program consisted of weekly skills groups. 2 of the 6 clinicians had participated in a 2 day onsite training in DBT, and additional DBT training. Families attended sessions periodically. No individual DBT or consultation team. Fidelity to DBT was not assessed.	Repeated measures two-way ANOVA: significant within -subject improvement over course of treatment for depression, psychomotor excitation, and anxiety, while improvements for withdrawal and organicity were seen at the trend level. Participants in the STM were observed to have significant reductions in psychomotor excitation at discharge, as compared to the DBT group. No other significant between group differences were observed. Repeated measures t-tests: participants in the DBT group reported significant improvement in depression, and improvement in anxiety that approached significance. Improvement in anxiety also approached significance for participants in STM group.
Iverson, Shenk, & Fruzzetti (2009)	31 females (M age=41) with histories of domestic abuse victimization; outpatient clinic.	This pre-post pilot treatment study examined an adapted 12 week DBT group; participants assessed at pre and post-treatment.	Program ran a weekly 2 hr DBT skills group that closely followed Linehan's (1993) manual, as well as DBT relationship skills(Fruzzetti & Iverson,2006). Each clinician had engaged in "extensive DBT training" prior to coleading groups, and all therapists were supervised by Fruzzetti. Weekly consultation teams and phone coaching provided by group therapist. No Individual therapy.	Within subjects repeated measures ANOVA: women reported significant reductions in depression, hopelessness, social adjustment, and overall psychopathological symptoms at post treatment. Independent sample t-test: no significant differences between completers and non- completers on clinical outcomes, or based on whether the females lived with their abuser during the study. Women who dropped out of the study had fewer years of education than completers, but they did not differ on any other demographics.

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Ritalin, Wickholm-Pethrus, Hursti, & Jokinen (2009)	13 family members of individuals with BPD (M age 44); family outpatient group skills program.	Pre-post pilot study evaluated a 9 week Family Connections program on outcomes of burden, psychic health, and well-being. Participants assessed at pre and post treatment.	Program was 9 week adaption of Fruzzetti's Family Connections program: 12 week education program based on Lazarus' stress – coping-and-adaptation model, as well as standard DBT and DBT for families. Program provides: a) current information on BPD research and family functioning b) coping skills based on balance of acceptance and change c) relationship and family skills and d) opportunities to build a support network for family members. Group is led by trained family members.	Paired samples t-tests: significant improvement in global psychiatric health, anxiety levels, and perceived family member burden at post-treatment. No significant differences found on measures of quality of life, and reduction of depressive symptoms approached significance. Family members also perceived as less critical and less emotionally over involved at post-treatment.
Shelton, Sampl, Kesten, Zhang, & Trestman (2009)	63 participants (71% female, M age=28) with impulsive behavior problems; correctional facilities in Connecticut.	This non-equivalent control group design evaluated a 16 week DBT-corrections-modified (DBT-CM) skills group for participants in a prison setting. Participants assessed at baseline, week 16 (post skills group), and at 6 and 12 month follow up. Participants randomly assigned to a DBT-coaching or case management condition following completion of the 16 week skills group.	Program consisted of a twice-weekly skills group held over 16 weeks, followed by weekly 30 minute case management or DBT coaching sessions. No individual therapy or weekly consultation teams included. Details regarding the skills and structure of the DBT-CM group not provided.	Mixed effects regression models: participants had significantly fewer disciplinary tickets from baseline to post skills group, and male participants in particular were less physically aggressive at follow-up. Participants also demonstrated healthier means of coping at follow up. Further, participants in the DBT coaching group demonstrated greater reductions in psychopathology at 6 month follow up than the case management condition. The most drastic reductions in symptoms over the course of treatment seen among adolescent males and females.
Waltz, Dimeff, Koerner, Linehan, Taylor & Miller (2009)	30 individuals with BPD (97 % female, M age=32); university treatment development clinic.	RCT-within subjects design evaluated association between experimental video (Opposite Action) viewing and outcomes of DBT skills knowledge, acquisition and homework practice. Assessed on outcome expectancies before and after experimental video, given a pretest and posttest knowledge measure after each video viewing. Participants completed homework sheet on skills use and effectiveness for 1 week period following video viewing.	This study evaluated one DBT skill from the Emotion Regulation module, Opposite Action.	Paired-samples t-tests: participants demonstrated significant increase in DBT skills knowledge and increased confidence that skill would be helpful. Experienced a significant decrease in intensity of painful emotions after utilizing opposite action skill.

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Davenport, Bore & Campbell (2010)	17 participants (82 % female, M age=29 years) with BPD. Outpatient metropolitan DBT program attached to a private hospital.	This controlled (nonrandomized) study compared participants that had completed DBT in the past 3 years (n=10) to participants who were in a "pre-treatment" control condition (n=7). Those in pre- treatment, control condition were either waitlisted for DBT or were in first 8 weeks of DBT skills group. Length of treatment was 14 months; participants assessed at one timepoint, scores were then compared to assess differences in personality traits between "pre-treatment" and "post-treatment" groups.	The DBT program followed the model developed by Linehan (1993) and included skills group, consultation team, phone coaching and individual DBT. Details around frequency and content of sessions, and DBT adherence not provided.	Nonparametric tests: pre-treatment group had significantly lower scores on self-control, agreeableness and neuroticism, compared to post treatment group. Further, participants in post treatment group did not significantly differ from norms on each test, except for high scores on neuroticism.
Keuthen, Rothbaum, Shaw Welch, Taylor, Falkenstein, Heekin.. Jenike (2010)	10 females (M age=30 years) with a primary diagnosis of trichtillomania (TTM); hospital-based outpatient program.	This uncontrolled pre-post pilot study examined the application of a 11-week DBT-enhanced habit-reversal treatment (HRT) for TTM severity, global improvement, and emotion regulation capacity. After 11 week acute treatment, four booster sessions held over 3 month period. Participants assessed at baseline, post-treatment, and at the 3-month maintenance point.	Standard DBT not conducted; DBT acceptance and change strategies were incorporated into a HRT protocol for TTM. Details regarding the nature of the DBT strategies not provided. DBT skills groups, phone coaching and consultation teams not included.	Two-tailed Wilcoxon signed ranks tests: significant improvement in TTM severity and impairment, depression and most emotion regulation scores, between baseline and post treatment. TTM severity , depressive and anxiety symptoms, and emotion regulation capacity were significantly improved from pre- treatment to 3-month maintenance. Spearman correlations: generally revealed that changes in hair pulling severity were significantly associated with changes in emotion regulation capacity, from pre to post treatment, and from pre-treatment to 3 month maintenance.
Sakdalan, Shaw & Collier (2010)	6 participants with intellectual disabilities (ID) in a forensic setting (17% female, M age= 26 years)	This pilot pre-post study evaluated an adapted 13 week DBT program for individuals with intellectual disabilities. Participants assessed at pre and post treatment.	Program adapted from Linehan's (1993) manual and Verhoeven's coping skills program. The program included 1.5 hr group sessions that focused on quality of life and therapy interfering behaviors and utilized materials and teaching example suitable to the needs of the target population.	T-tests: significant increases in strength related areas and global functioning, and significant decreases in risk behaviors over the course of treatment. All participants reported enjoying the program and felt they learned a great deal, but recommended more help with homework, more use of visual aids, and further simplification of hand-out information.

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Williams, Hartstone, & Denson (2010)	140 individuals with BPD, 68 individuals completed group program(81 % female, M age=19-59 years). Community outpatient clinic.	This quasi-experimental study measured effectiveness of a 20 week DBT skills group for BPD symptoms and service utilization. All individuals receiving group DBT were in individual DBT (n=31) or individual TAU (n=109). Participants assessed pre and post treatment.	The program consisted of a weekly 2 hour DBT skills group and either individual DBT or individual TAU. All DBT therapists met for weekly consultation team, no DBT phone coaching provided.	One- way and mixed ANOVAs: participants in individual DBT had significantly higher completion rates than those in individual TAU. Inpatient hospitalization days and symptoms of BPD, depression and anxiety all decreased significantly for those who completed Group DBT across both individual therapy conditions.
Rizvi, Dimeff, Skutch, Carroll, & Linehan (2011)	22 individuals (82% female, M age= 34 years) who met criteria for BPD and Substance Use Disorder (SUD). Participants were enrolled in 1 of 3 standard outpatient DBT programs.	This quasi-experimental study was conducted to test the feasibility and outcomes of using DBT Coach, mobile device technology designed to facilitate the in vivo use of opposite action (OA) skills. Participants used DBT Coach for a period of 10-14 days; measures were administered to clinician and participant at pretrial and post trial, and emotion ratings were recorded every time participant used DBT coach. Participants also asked to complete a very brief assessment about their phone use and substance urges on a daily basis.	Participants were enrolled in one of three comprehensive DBT programs in the Pacific Northwest.	Hierarchical linear modeling: significant reduction in emotional intensity and urge to use substances from pre coaching to post coaching. Individuals also reported a significant decrease in psychopathology and urge to use substances, and increase in ability to identify and appropriately use OA, over course of entire trial.

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Roepke, Schroder-Abe, Schutz, Jacob, Dams, Vater...Lammers (2011)	40 women with BPD (*M* age 30). DBT inpatient program.	Quasi- experimental study compared 12-week inpatient DBT (n=20) to 12-week outpatient TAU (n=20). measures were administered at pre -treatment, and after 10 therapy sessions to avoid hospitalization discharge effects.	Weekly 1hr individual therapy, weekly skills group(3 hrs), mindfulness, peer group meetings, & group psychoeducation(8 hrs total), therapist consultation team (2 hrs/week). No phone coaching as individuals were in inpatient milieu. DBT program followed Linehan's manual adapted for inpatient milieu (Bohus et al., 2004). All DBT therapists had completed DBT certification in Germany, or were in final stages of completion. Certification included 96 hrs of theory training, one or more supervised therapy cases, leading a 6 month skills group, and a final oral examination.	ANCOVA: significant increases in self -concept clarity, as well as basic and global self -esteem, in DBT intervention group only. Changes in global self -esteem were primarily attributed to improvements in social and emotional self-esteem in particular.
Wolf, Ebner-Priemer, Schramm, Domsalla, Hautzinger, & Bohus (2011)	24 females with BPD (ages 22-47). DBT group skills training(ST) in outpatient context, and computer based skills training(CBST).	RCT compared 24-week group ST alone (n=11) to group ST & CBST (n=13). Participants assessed at pre -treatment and 1 week post treatment.	Skills training group was 2 hrs in duration, and "generally followed Linehan's manual, with some content shortened and modified." Details regarding modifications not provided. Individual therapy was either psychodynamic or behavioral individual therapy, not DBT. No consultation team or phone coaching. Senior skills group leaders supervised monthly by an experienced DBT supervisor.	Individuals in ST + CBST demonstrated a greater increase in DBT skills acquisition, greater ability to link DBT concept to appropriate module, and spent more time studying skills than individuals in ST only group.

4. Uncontrolled Studies

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Comtois, Elwood, Holdcraft, Smith & Simpson (2007)	24 participants (96% females, M age=34 years) with histories of chronic self injurious behavior; community mental health(MH) center.	Pre-post replication study examined the 1 year DBT for suicidal and self injurious behavior in community MH context. Participants assessed at pre and post treatment.	Followed comprehensive DBT, with adaptations for community MH population (i.e., twice- weekly 90 minute skills group, DBT-oriented case management as needed, DBT medication management, periodic administrative meetings to structure environment to support DBT). All clinicians intensively trained and over 7 years DBT experience, trained by Dr. Comtois, a senior trainer and former DBT research therapist.	Nonparametric pre-post comparisons: significant reductions in self injurious behavior, number of inpatient admissions and days hospitalized, and number of crisis systems utilized from pre to post treatment . DBT community MH program had higher attrition rate than previous DBT trials. Secondary analyses: community DBT model saved over $12, 000 in hospital charges after one year of DBT.
Chen, Matthews, Allen, Kuo, & Linehan (2008)	8 females (Median age=31 years) with BPD and Binge Eating Disorder (BED) or Bulimia Nervosa (BN); outpatient program.	Uncontrolled case-series design examined 6-month DBT for patients with Binge-eating or BN, and BPD. Participants assessed at pre, post, and 6 month follow up.	Followed comprehensive DBT protocol, with some minor adaptations for an Eating Disordered(ED) population (i.e., binge eating into the treatment hierarchy, treatment model, and diary card). Program only 6 months in length (24 sessions) due to funding constraints.	Significant improvements in all outcomes (self-injury, objective binge-eating, general eating disorder pathology, social functioning., number of non-ED Axis I disorders) over course of treatment. More specifically, effect sizes from pre to post treatment on measures of suicidal behavior, self -injury and non-ED disorders Axis I were medium, and effect sizes for binge eating and eating pathology were large. For the 5 clients with BED and BPD, changes in BMI were variable over the course of treatment, with some losing and some gaining weight at follow up.
Hjalmarsson, Kaver, Perseius, Cederberg, & Ghaderi (2008)	27 female adolescents (M age=20 years) with self-injurious behaviors; outpatient.	Within- subjects design examined 1-year DBT on self -injurious behavior. Participants assessed at pre, mid and post treatment.	Included most modes of standard DBT (Linehan, 1993). Unclear whether phone coaching was provided. Clinicians supervised by a supervisor who had been trained by Alan Fruzzetti. Clinicians followed criteria for a modified treatment adherence protocol: a) session should follow treatment hierarchy b) use of diary cards c) include skills in chain analyses d) assign homework and 3) focus on validation, commitment, balancing of acceptance and change strategies	ANOVA: significant improvements in depression and borderline personality features, as well as anxiety, interpersonal sensitivity, and paranoia over course of treatment (moderate to large effect sizes). Intent-to-treat analyses: generally mirrored completer analyses. Parasuicidal behaviors decreased significantly over course of treatment.

4. Uncontrolled Studies

Authors	Subjects/Setting	Design	Adherence to Standard DBT	Outcomes and Comments
Salbach-Andrae, Bohnekamp, Pfeiffer, Lehmkuhl, & Miller (2008)	12 female adolescents (M age=16.5 years) with Anorexia Nervosa (AN) or Bulimia Nervosa (BN); child and adolescent outpatient psychiatry department in Germany.	Pre-post case-series treatment study evaluated a 25-week DBT program for participants with AN or BN. Participants assessed at pre and post treatment.	Program adapted from Linehan, 1993; Miller, 2007, included weekly 50 minute individual DBT(targeting and chain/solution analyses), weekly 100 minutes skills group, weekly therapist consultation group, and intersession phone contact with primary therapist. DBT was adapted for ED population (i.e., disordered eating was incorporated into the diary card & treatment hierarchy, a supplementary 'Dealing with Food and Body Image' module was included in skills group. All clinicians had received intensive DBT training, and an outside consultant evaluated the treatment program.	Paired-sample t-test: significant reduction in vomiting and binge frequency at post treatment, and significant reduction in food restriction. Further, participants demonstrated significant reductions in symptoms of general psychopathology and eating pathology at post-treatment. While all of the patients with restricting AN remitted, none of the patients with BN fully remitted at the end of treatment.
Woodberry & Popenoe (2008)	28 adolescents (82% female, M age=16 years) with suicidal behavior, NSSI or other behavioral problems; naturalistic service-oriented outpatient psychiatry clinic.	Uncontrolled pre-post treatment study evaluated a 15 week DBT treatment package for adolescents with behavioral problems, and their family members. Adolescents and their family members filled out measures of teen functioning at pre and post treatment.	The adapted Adolescent DBT program closely followed Linehan's standard DBT and Miller's adapted DBT program for adolescents and families. Included weekly individual DBT, weekly multi-family skills group, therapist consultation team including review of tapes, and phone coaching between sessions. 5 of the clinicians had attended BTECH intensive trainings, 2 others had attended shorter trainings, and 11 clinicians trained by review of the Linehan text. Many clinicians completed self-assessments following individual sessions to increase DBT adherence.	Matched pairs t-tests: adolescents demonstrated significant reductions in suicidal ideation at end of treatment. 63 % of the original 46 consented adolescents completed the program, while 86% of the parents of treatment completers attended 11 out of 15 skills group sessions. Adolescents self-reported significant reductions in depression, anger, dissociation, impulsivity and relationship functioning at post treatment. Parents similarly reported a reduction in adolescents' depression, internalizing symptoms, and total behavioral problems.

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Worrall & Fruzzetti (2009)	56 DBT clinicians(78% female).	This feasibility study assessed an internet-based training system (ITS) designed to help train peer supervisors in DBT. Clinicians randomly selected to view one of 5 mock sessions, and rate the session on a variety of DBT-relevant criteria. Clinician answers were then compared to "expert ratings" and clinicians were given feedback on their performance.	Not applicable	Clinicians who used the ITS were able to effectively discriminate between high and low quality DBT, and participants reported that the ITS was very or extremely useful for supervising and training new clinicians.
DiGiorgio, Glass, & Arnkoff (2010)	129 clinicians (79% female, 25—65 years) who completed at least one type of Behavioral Tech-sponsored DBT training.	Uncontrolled study examined relationship between therapist factors (theoretical orientation, degree type, and training) and client factors (diagnosis) to DBT adherence.	The study assesses adherence to DBT through measure called Inventory of DBT Individual Psychotherapy Sessions that parallels DBT concepts outlined in Linehan's 1993 manual. Does not assess Standard DBT.	Over 50% of the clinicians were master's level, and 66% reported a primary orientation of CBT. 39 % had completed a DBT intensive. Therapists more closely adhered to DBT treating clients with BPD vs. other disorders (anxiety). DBT adherence did not differ based on therapist orientation or intensive training attendance.
Kroger, Schweiger, Sipos, Kliem, Arnold, Schunert & Reinecker (2010)	24 females (M age=31 years) with a diagnosis of Anorexia Nervosa(AN) or Bulimia Nervosa(BN) and BPD, as well as a history of non-response to eating disorder treatment; specialized BPD inpatient unit in Germany.	This uncontrolled treatment study examined the efficacy of a 3 month DBT inpatient program(Kroger, 2006) for symptoms relating to BPD-ED. Participants assessed at baseline, end of treatment, and at 15-month follow-up.	Weekly 1 hr individual therapy, 100 minute skills group 3 times per week, and weekly consultation. No phone coaching as it was an inpatient milieu, but coaching and crisis interventions conducted by a nurse on consultation team. Physicians, psychologists and nurses on consultation team were supervised by senior clinicians who are board-certified by the German association for DBT. Senior clinicians also reviewed tapes at regular intervals.	38% of participants with AN recovered, and 50% instead met criteria for BN-BP at follow-up. 54% of participants with BN no longer met criteria. Participants with AN reported significant reductions in eating disorder symptoms at post-treatment and follow-up, and significant increases in BMI at follow up only (large effect size). Participants with BN demonstrated significant improvement in global functioning and general psychopathology at post-treatment and follow-up, while participants with AN demonstrated significant improvement at follow-up only. No significant improvements in BPD observed at either time point, among either ED group.

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McFetridge & Coakes (2010)	40 individuals (M age 31 years) with BPD. Residential therapy within a DBT-informed treatment community in the UK.	This pre-post evaluation study used historical data from the periods of 2000-2007 to assess patient's baseline scores on quality of life, hospital admissions, life events, and used a separate measure on clinical risk and distress (CORE-OM). Researchers mailed questionnaires to patients 5 years (on average) after end of treatment to assess quality of life and life events. Typical length of treatment was 8 months.	Twice weekly DBT skills training and weekly individual DBT "diary-focused interventions". Individuals participated in twice daily community meetings, twice weekly group analytic therapy groups, and a weekly individual therapy with a clinician of unknown orientation. Majority of staff had attended DBT intensive training, and attended weekly consultation team meetings.	T-tests: significant reductions in hospitalizations, psychiatric medications and clinical risk, for those ex-clients who completed the residential therapy program, as compared to non-completers. No significant reductions in clinical risk and distress observed at follow up amongst the non-completers. Qualitative data included suggest that some clients experienced changes in sense of identity, important life events and relationships. Lack of randomization precludes the authors from drawing more definitive conclusions about the benefits of this adapted DBT residential program.
Perroud, Uher, Dieben, Nicastro, & Huguelet (2010)	447 individuals (83% female, M age=30 years) with current suicidal or non-suicidal self-injurious behavior, or other impulse control problems; outpatient treatment program.	This pre-post evaluation study examined an intensive 4 week DBT program (I-DBT) for BPD symptoms, depression, and hopelessness. Participants assessed at baseline and end of treatment.	All therapists had undergone a DBT intensive training led by Linehan and colleagues. DBT program included individual therapy, group skills training (2-4 hrs/day), phone coaching, and weekly team meetings.	Linear mixed models: I- DBT led to significant reductions in depression, hopelessness, and overall symptom distress. Those who completed a second course of DBT-I reported further reductions in general symptom distress, but not depression or hopelessness. High scores on schizoid and narcissistic personality traits predicted poorer response to treatment.
Axelrod, Perepletchikova, Holtzman, & Sinha (2011)	27 women (M age=38 years) who met criteria for BPD and substance dependence; community outpatient substance abuse treatment program.	This uncontrolled treatment study examined the impact of 20-week DBT on substance use and emotion regulation capacity. Participants assessed at baseline, middle, and end of treatment.	DBT outpatient program part of a state-wide DBT training initiative in Connecticut that was overseen by Linehan and colleagues. A DBT trainer (Sinha) supervised other clinicians. Comprehensive DBT.	One-way repeated measures ANOVA: significant reductions in depression from pre to mid- treatment, significant improvement in emotion regulation from pre to post treatment. Significant reduction in substance use from pre to post treatment. Improved emotion regulation appeared to partially account for decreases in substance use over time.

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Drossel, Fisher, & Mercer (2011)	24 caregivers of individuals with dementia (79% female, 38-87 years). Caregivers met one or more risk factors for elder abuse (current/ past involvement with Elder Protective Services, current/ past substance use, and/or physical disabilities or depressive symptoms; community outpatient clinic.	Uncontrolled pilot study examined adapted 8-week DBT program for high-risk caregivers. Participants assessed at pre and post treatment.	Linehan's (1993) manual adapted for a caregiver population, with references to NSSI, suicidality, and psychopathology replaced with examples suited to caregivers and caregiver burden. Weekly, 2.5 hour DBT skills group held in context of other caregiver services (i.e., psycho-education and problem-solving, phone boosters for skills, and 24/7 helpline. Individuals were in individual therapy, theoretical orientation unknown. Group leaders had been trained in DBT at University of Nevada Reno, other leaders had received previous DBT course instruction or some training.	T-tests: caregivers reported significant increases in psychosocial functioning and use of problem focused coping, decreases in fatigue and improved emotional well-being. 40 % of participants reported reductions in depressive symptoms by at least 10% over course of treatment.
Fleischaker, Bohme, Sixt, Bruck, Schneider, & Schulz (2011).	12 female adolescents (13-19 years of age) with non-suicidal self-injurious behavior(NSSI) and/or suicidal behavior in past 16 weeks; DBT outpatient psychiatric department.	Pilot uncontrolled study investigated DBT-Adolescent (DBT-A) on 12 teens. Length of treatment ranged from 4 to 6 months, participants assessed at baseline, 2-4 weeks into therapy, 4 weeks after end of therapy, and at 1 year follow up.	DBT-A included individual therapy (1 hr/week), multi-family skills group (2 hrs/week), and phone coaching as needed.	Intent to treat analyses: number of BPD criteria, NSSI and suicidal behavior all decreased significantly over course of treatment.

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James, Winmill, Anderson, & Alfoadari (2011)	25 adolescents (84% female, M age =15 years) with a history of persistent self-harm; community outpatient treatment among teens in looked after care system in UK.	This pre-post treatment study examined an adapted 1 year DBT program for teens in a looked after care system. Participants assessed at pre and post treatment.	Program adapted from Linehan's (1993) manual and 12 week package developed by Rathus and Miller (2002). Modes of treatment included weekly 2 hour DBT skills group, telephone consultation, outreach, consultation team, and weekly individual sessions. No individual DBT, individual treatment integrated techniques from CBT, psychodynamic, client-centered, and other approaches.	Paired t-tests: significant reduction in depression, hopelessness scores, and lower frequency of self-harm. No significant changes in automatic thoughts, quality of life or attachment styles at end of treatment. Rates of treatment drop-out relatively high (28%), those who dropped out appeared more depressed and more hopeless, but had higher GAF ratings than those who remained in treatment.
Steil, Dyer, Priebe, Kleindienst, & Bohus(2011)	29 females (20-51 years) with history of childhood sexual abuse (CSA). The majority of patients had received previous treatment for PTSD, and 90% of the sample met criteria for Major Depressive Disorder, 62% reported a history of one or more suicide attempts. DBT-PTSD Residential Program in Germany.	This uncontrolled pilot pre-post evaluation study examined relative change in PTSD severity, depression, anxiety, and other psychopathology over course of DBT-PTSD treatment. Average length of treatment was 82 days. Participants assessed at baseline, end of treatment, and 6-week follow up.	The DBT-PTSD residential program followed the guidelines as described by Bohus, 2004; Swenson, Witterholt, & Bohus, 2007. Program consisted of two weekly 35 min. individual therapy sessions. 25% of the individual sessions dedicated to exposure. Weekly groups held that included the following: 90 min skills training, 60 min group intervention targeting self -esteem, three 25 min mindfulness sessions, and 60 minutes of PTSD-specific psycho-education. No phone coaching/consultation team noted, and therapists' level of DBT training unclear.	Hierarchical linear growth models: DBT-PTSD treatment resulted in significant reductions in patient's PTSD, depressive and anxiety symptoms from baseline to follow-up.