
The Dialectical Behavior Therapy Ways of Coping Checklist: Development and Psychometric Properties



Andrada D. Neacsiu
University of Washington



Shireen L. Rizvi
Rutgers University



Peter P. Vitaliano
University of Washington



Thomas R. Lynch
University of Exeter



Marsha M. Linehan
University of Washington

Skills training is a crucial mode of treatment in dialectical behavioral therapy (DBT; Linehan, 1993b), yet a psychometrically sound measure of DBT skills use does not exist. We adapted the Revised Ways of Coping Checklist (RWCCL; Vitaliano, Russo, Carr, Maiuro, & Becker, 1985) to create the DBT Ways of Coping Checklist (DBT-WCCL). Using factor analysis procedures, two subscales emerged: one assessing coping via DBT skills, the DBT Skills Subscale (DSS), and one assessing coping via dysfunctional means, the Dysfunctional Coping Subscale (DCS). Principal component, internal consistency, test-retest reliability, and content validity analyses suggested that the scale has good to excellent psychometric properties. In addition, the DSS successfully discriminated patients who received skills training during 4 months of treatment from patients who did not. Moderators of skills use are also discussed. The DBT-WCCL appears to be a

Correspondence concerning this article should be addressed to: Andrada D. Neacsiu, University of Washington, Behavioral Research and Therapy Clinics, Department of Clinical Psychology, Box 351525, Seattle, WA 98195-1525; e-mail: andrada@u.washington.edu

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Borderline personality disorder (BPD) is a severe disorder marked by a pervasive pattern of instability in affect, interpersonal relationships, self-image, and behavior (American Psychiatric Association, 2000). An individual with BPD is characterized by difficulties in emotion regulation (Linehan, Bohus, & Lynch, 2007), interpersonal relationships (Kramers, Spinhoven, Van der Does, & Van Dyck, 2006), and distress tolerance (Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006). Dialectical behavior therapy (DBT) is an evidence-based treatment for BPD shown effective in eight randomized clinical trials (for a review, see Lynch, Trost, Salsman, & Linehan, 2007). The treatment comprises four components: skills training and telephone coaching, which focus on teaching and generalizing use of skillful behaviors; individual therapy, which focuses on crisis management, strengthening skills, and trouble-shooting not using skills; and therapist team meetings, which emphasize effective skills use by DBT therapists. DBT is based on the assumption that skills deficits and insufficient motivation contribute to the failure of BPD individuals to use skillful means in daily life situations, particularly in response to stressful events. Hence, the treatment targets emotion dysregulation and its aftereffects by enhancing motivation and teaching skills aimed at areas of deficit (Linehan, 1993a).

Linehan (1993b) developed a set of concrete skills translated from behavioral research and other evidence-based treatments. There are more than 50 skills grouped into four modules, each designed to target a different area of skills deficits in BPD: (a) *mindfulness skills*: emphasizing observing, describing, and participating in the present moment effectively and without judgment; (b) *emotion regulation skills*: including an array of strategies for changing emotions quickly, as well as strategies for changing the tendency to respond emotionally in everyday life situations; (c) *interpersonal effectiveness skills*: ranging from basic social skills training, to assertiveness and goal-oriented interpersonal problem solving; and (d) *distress tolerance skills*: including short-term strategies to control impulsive actions and long-term strategies to radically accept difficult life events (Linehan, 1993b).

Several research studies have shown that the skills training mode of DBT is an important component of treatment (Hesslinger et al., 2002; Koons et al., 2006; Lynch, Morse, Mendelson, & Robins, 2003; Miller, Wyman, Huppert, Glassman, & Rathus, 2000; Nelson-Gray et al., 2006; Telch, Agras, & Linehan, 2001). These findings however, do not directly address the question of how specifically skills training is beneficial. The basic DBT assumption, that increased DBT skills use is a mechanism of change in DBT, has not yet been directly tested. Addressing this question has thus far been hampered by the absence of a measure designed specifically to assess DBT skills use. Although use of behavioral skills more generally has been assessed in a number of studies, none of the existing measures capture the full array of DBT skills and, thus, may not be useful tools in DBT studies. For example, comprehensive coping measures that assess problem-solving skills, use of social support skills, and emotional coping skills exist. However, important skills taught in DBT are not covered in such measures nor is there a single measure that covers each of the four modules of DBT skills training. The voluminous number of

coping measures that exist in the literature (for a review, see Parker & Endler, 1992) makes a comprehensive review difficult; nevertheless we provide some examples to illustrate limitations in existing measures for assessing DBT skills.

One of the most widely used measures of coping is the Revised Ways of Coping Checklist (RWCCCL; Vitaliano, Russo, Carr, Maiuro, & Becker, 1985). A revision of the Ways of Coping Checklist developed by Folkman and Lazarus in 1980, the measure assesses both positive and negative methods of coping with stressful situations including problem-focus, seeking social support, blaming self, blaming others, wishful thinking, and avoidance. A variety of other general self-report coping measures such as the COPE (Carver, Scheier, & Weintraub, 1989), the Coping Self Efficacy Scale (CSE; Chesney, Neilands, Chambers, Taylor, & Folkman, 2006), the Coping Responses Inventory (CRI; Moos, 1997), the Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990), and the Ways of Coping Scale (WCS; Lazarus & Folkman, 1984) are comprehensive, psychometrically robust instruments. Nevertheless, a number of factors limit their utility as comprehensive assessments of DBT skills use. First, although these measures have items that map onto several of the skills taught in DBT, many other DBT skills, such as reducing vulnerability to emotions, the wide variety of distress tolerance skills, or mindfulness skills, are not represented. Second, many items in these measures refer to more general or vague methods of coping and do not specify a particular strategy or skill. For example, a coping item on the CSE is “stopped feeling sad,” but there is no indication as to how specifically the person achieved that outcome. Third, many items that attempt to determine if the individual avoided a problem do not differentiate between skillful, adaptive avoidance, which is emphasized in DBT (e.g., temporarily pushed away thinking about a stressor and focused on something else), and maladaptive avoidance (e.g., using substances to avoid thinking about a problem). Although maladaptive avoidance is measured in instruments such as the COPE (Carver, Scheier, & Weintraub, 1989), adaptive avoidance has not yet been explicitly assessed in coping measures.

In addition to coping measures, a number of instruments exist that could be used to assess processes related to one of the four DBT skills modules. For example, there are a number of measures of emotion regulation (e.g., Catanzaro & Mearns, 1990; Gratz & Roemer, 2004), though most of these measures target difficulties with emotion regulation and not the use of specific emotion regulation strategies. An exception is the 10-item Emotion Regulation Questionnaire (ERQ; Gross & John, 2003), which assesses reappraisal of emotion (an effective strategy) as well as expressive suppression of emotional stimuli (an ineffective strategy; Gross & Levenson, 1997). These strategies however, do not include skills like mindfulness of current emotion or reducing vulnerability to emotion, which are also taught in DBT.

The Distress Tolerance Scale (DTS; Simons & Gaher, 2005) is a 15-item measure with acceptable psychometric properties, assessing tolerance, appraisal, absorption and regulation in distressing situations. An examination of the items in the DTS reveals that it measures level of distress and readiness to tolerate the distress (e.g., “I’d do anything not to feel distressed or upset”) as opposed to assessing concrete distress tolerance skills use. Similarly, current measures of mindfulness (Baer, Smith, & Allen, 2004; Brown & Ryan, 2003) assess being mindful as opposed to using mindfulness skills in difficult situations. Although some appropriate measures for interpersonal effectiveness exist (e.g., Riggio, 1989), the lack of appropriate measures for use of mindfulness, distress tolerance, and emotion regulation skills makes it difficult to assess DBT skills use with any one instrument.

This absence of a DBT skills measure has rendered difficult the study of DBT skills use as an outcome or mediator. In the two studies that examined the frequency of DBT skills practice in clients with BPD, skills use was measured via daily self-monitoring records over the course of the treatment year. Lindenboim, Comtois, and Linehan (2007) and Stepp and colleagues (2008) used DBT diary cards on which clients were asked to indicate the skills that they practiced on any given day as the measure of frequency of skills used. Unfortunately, there are several problems with using the diary card as a sole measure of skills used in DBT. First, diary cards are intended to be clinical tools, rather than primary assessment measures. As such, they are reviewed in therapy each week and are used to determine the targets to be addressed in that session. Clients are asked to circle the days on which they practiced certain skills. However, the absence of a circle can mean that the client did not practice the skill that day or that the client failed to complete the card that day (regardless of whether she or he practiced the skill). Second, because the acquisition and generalization of skills is a high order target in DBT, clients generally are reinforced by the therapist for indicating that they used many skills in the previous week. It is, therefore, possible that the reported increase in use of skills may be influenced by social desirability. A third problem with using DBT diary cards as the skills use measure is that it is difficult to know whether someone unfamiliar with the names and acronyms of specific DBT skills (a common occurrence early in treatment) could accurately report skills used. In this case, an increase in reported skills use on the diary card may reflect increase in client proficiency at using the DBT language rather than an actual increase in skills. Finally, it is difficult to use such cards to assess whether these skills are also taught in other treatments, or to compare how such skills affect treatment outcomes differentially.

A more reliable and valid measure of DBT skills use is greatly needed. Ideally, such a measure would assess DBT skills use independent of the DBT language, would not be a required element of therapy, would not be reviewed by the therapist, and could be used in other treatments. Because many of the coping measures presented above have items reflecting use of DBT skills, it was decided that the best approach to creating a measure of DBT skills use was to adapt an already existing coping measure. We chose the RWCCCL because of its wide use in the literature and comprehensiveness of items. Thus, the DBT Ways of Coping Checklist (DBT-WCCCL) was developed to assess DBT skills use in difficult situations.

We conducted two studies to develop and provide preliminary evaluation of the DBT-WCCCL. The primary purpose of the first study was to adapt the RWCCCL for use as a DBT skills measure. This was accomplished by generating additional items reflecting DBT skills that followed the pattern of the RWCCCL items and by assessing the items' face validity using expert DBT clinicians' ratings. Content validity of the measure was also assessed in this study. The purpose of the second study was to refine the scale using principal component analyses and to examine the psychometric properties of the DBT-WCCCL. To this end, we assessed internal consistency, test-retest reliability, and criterion validity in a clinical sample of individuals with BPD.

STUDY 1

Method

Measure Development

The Revised Ways of Coping Checklist (RWCCCL; Vitaliano et al., 1985) was adapted to include items representative of DBT skills. The original instrument has a

total of 57 items that are rated on a scale of 0–3, indicating if the coping strategy was never used, rarely used, sometimes used, or regularly used in the past month, when confronted by a stressor. The RWCCL has good psychometric properties, with a mean Cronbach α of .81, a shared variance among scales of 23% and no moderation by age or level of education (Vitaliano et al., 1985).

Many of the items included in the original RWCCL resemble use of skills taught in DBT (e.g. “Told myself things could be worse” relates to the skill of “Comparison” in the Distress Tolerance module) and as a result, all 57 RWCCL items were kept in their original form. In 1993, in preparation for a study of DBT for substance dependence, an informal group of investigators, including Linehan as treatment developer, added 18 new skills items. The focus was on expanding item coverage of DBT skills, particularly distress tolerance skills (12 items). In addition, two items each were added to expand coverage of mindfulness, interpersonal effectiveness, and emotion regulation skills. One of the goals of the research presented here was to evaluate the resulting 75-item inventory for DBT content validity.

Procedure

To assess which items were accurate reflections of DBT skills, an online questionnaire was created containing the 75 items. DBT expert clinicians were recruited and asked to evaluate the face validity of each item. Experts indicated whether each item represented a skill from one of the following categories of skills: emotion regulation, mindfulness, crisis survival (part of distress tolerance), reality acceptance (part of distress tolerance), or interpersonal effectiveness. Experts also had the option to rate each item as “not a DBT skill.” The rating options were mutually exclusive; the same item could not be marked in more than one category. A final question in the online questionnaire asked experts to rate in percentages to what extent all the items represented each skills training category. For example, experts could select whether the 75 items covered 10%, 20% ... 100% of the reality acceptance category.

Participants

Sixty experts in teaching DBT skills were identified by the first and last author. These experts were selected because of extensive experience teaching DBT skills or training therapists in the skills. The experts included all DBT trainers from a DBT training company, Behavioral Tech, LLC. In addition, graduate students with extensive DBT training as well as DBT supervisors at the University of Washington were included in the expert pool. Participants were asked to complete the online task (which was anonymous) only if they were comfortable with their expert status in skills training. Each expert was sent an e-mail containing a description of the study’s aim and the task, a de-identified, unique ID with which they could log into the online questionnaire, and a link to the online questionnaire. This system ensured that each expert rated the items only once. Of the 60 experts who were contacted to classify items, 29 responded and provided valid data. No identifiable or demographic information was collected with the online questionnaire and thus, further descriptives of the expert group could not be reported.

Results

Measure Development

To exclude items for which there was low agreement across experts, frequencies were calculated to determine the percent agreement as to whether an item was identified as

a DBT skill. Frequency analyses indicated that percent agreement for each item ranged from 48.30% to 100%, with an average agreement across items of 87.73% (free marginal kappa for all observations was .64; Randolph, 2005). Using a cutoff of 70% agreement, 42 items were classified as DBT skills (average across items agreement of 94.18%) and were included in the DBT Ways of Coping Checklist (DBT-WCCL). All 18 items generated by the last author and 24 from the original RWCCCL scale were included in the DBT-WCCL. Items with less than 70% agreement were considered unreliable and excluded from the scale (Table 1).

Twenty-one items were classified as not being DBT skills (average across items agreement of 90.33%) and were also included in the DBT-WCCL as distracters. These items were all indicative of maladaptive strategies such as "I blamed myself" or "Refused to believe that it had happened" and were not used in the final scale score calculations. Thus, the DBT-WCCL includes both the DBT skills use items and distracter items (free marginal kappa for all observations on included items was .76; Randolph, 2005). Percent agreement for the items included in the final version of the scale can be found in Table 2.

Skills Subscales

To assess more specifically in which of the five categories each DBT skills use item fell (i.e., emotion regulation, mindfulness, crisis survival, reality acceptance, interpersonal effectiveness), frequencies were examined on the expert classification for each of the 42 items identified as DBT skills. Agreement for specific category ranged from 41.40% to 100%, with an average agreement across items of 78.30%. Using the highest within-category agreement, skills items were further classified as following: nine as emotion regulation skills (average agreement of 62.46%), seven as interpersonal effectiveness skills (average agreement of 77.86%), five as mindfulness skills (average agreement of 71.04%), 19 as crisis survival skills, and two as reality acceptance skills. Because few items were classified as reality acceptance, we combined crisis survival items and reality acceptance items into distress tolerance items (average agreement of 84.73%, total of 21 items).

Table 1

Items Excluded from the DBT-Ways of Coping Checklist due to Poor Rater Agreement

Item	Agreement
Asked for advice and followed it	69.0%
Accepted sympathy and understanding of others	62.1%
Slept more than usual	62.1%
Spoken to clergy member about it	51.7%
Realized I brought problem on myself	58.6%
Tried to forget the whole thing	69.0%
Received professional help & follow advice	65.5%
Changed or grown in a good way	65.5%
Fantasized/wished about how things would turn out	55.2%
Thought about fantastic/unreal things	48.3%
Came out better than went in	55.2%
Relied on faith	65.5%

Table 2
The Dialectical Behavioral Therapy Ways of Coping Checklist Items with Factor Loading (Study 2) and Rater Agreement (Study 1)

Item	Factor 1 (DSS ⁱ)	Factor 2 (DCS-1 ⁱⁱ)	Factor 3 (DCS-2 ⁱⁱⁱ)	% Agreement
Focused on the good aspects of my life and gave less attention to negative thoughts or feelings	0.79	-0.17	-0.02	93.1
Told myself how much I had already accomplished	0.75	-0.33	-0.12	89.7
Tried to get centered before taking any action	0.73	-0.11	-0.11	100
Made sure I respond in a way so that I could still respect myself afterwards	0.73	-0.20	0.02	100
Focused on the good things in my life	0.72	-0.23	-0.17	96.6
Accepted my strong feelings, but did not let them interfere with other things too much	0.68	-0.14	-0.04	100
Increased the number of pleasant things in my life so that I had a more positive outlook	0.67	-0.16	0.04	100
Made a plan of action and followed it	0.66	-0.24	-0.04	93.1
Made sure to take care of my body and stay healthy so that I was less emotionally sensitive	0.64	-0.27	-0.01	100
Found something beautiful to look at to make me feel better	0.64	-0.01	0.03	100
Stepped back and tried to see things as they really are	0.63	-0.08	-0.07	100
Concentrated on something good that could come out of the whole thing	0.62	-0.22	0.00	96.6
Came up with a couple of different solutions to my problem	0.62	-0.28	0.03	89.7
Pampered myself with something that felt good to touch (e.g., a bubble bath or a hug)	0.62	0.01	0.14	100
Talked to someone about how I've been feeling	0.59	-0.10	-0.04	72.4
Focused my energy on helping others	0.58	-0.05	0.07	100
Just took things one step at a time	0.57	-0.07	-0.12	96.6
Changed something about myself so that I could deal with the situation better	0.57	0.07	-0.09	79.3
Did something to feel a totally different emotion (like gone to a funny movie)	0.56	0.08	0.03	100
Tried not to act too hastily or follow my own hunch	0.55	0.02	0.11	86.2
Talked to someone to find out about the situation	0.55	-0.02	0.23	72.4
Been aware of what has to be done, so I've been doubling my efforts and trying harder to make things work	0.55	-0.12	-0.04	79.3
Occupied my mind with something else	0.52	0.22	-0.08	100
Made sure I'm responding in a way that doesn't alienate others	0.52	0.10	-0.10	96.6
Talked to someone who could do something concrete about the problem	0.52	-0.08	0.23	86.2
Told myself things could be worse	0.52	0.07	0.26	96.6
Tried to distract myself by getting active	0.52	-0.09	-0.16	100
Counted my blessings	0.51	-0.07	0.00	96.6

Table 2
Continued

Item	Factor 1 (DSS ⁱ)	Factor 2 (DCS-1 ⁱⁱ)	Factor 3 (DCS-2 ⁱⁱⁱ)	% Agreement
Changed something so things would turn out right	0.50	0.08	0.25	72.4
Accepted the next best thing to what I wanted	0.47	0.15	0.38	93.1
Stood my ground and fought for what I wanted	0.45	-0.02	0.38	93.1
Treated myself to something really tasty	0.45	0.28	0.14	100
Soothed myself by surrounding myself with a nice fragrance of some kind	0.44	-0.08	0.19	100
Tried not to burn my bridges behind me, but leave things open somewhat	0.44	0.09	-0.11	86.2
Thought how much better off I was than others	0.43	0.05	0.27	100
Compared myself to others who are less fortunate	0.43	0.11	0.25	100
Bargained or compromised to get something positive from the situation	0.41	-0.04	0.27	100
Listened to or played music that I found relaxing	0.40	0.07	0.17	100
Wished that I could change the way that I felt	-0.11	0.77	0.28	75.9
Wished the situation would go away or somehow be finished	-0.01	0.77	0.30	100
Blamed myself	-0.15	0.73	0.28	100
Kept others from knowing how bad things were	0.01	0.72	0.15	96.6
Felt bad that I couldn't avoid the problem	-0.10	0.70	0.19	82.8
Avoided people	-0.16	0.69	0.28	82.8
Criticized or lectured myself	-0.10	0.69	0.19	100
Wished that I could change what had happened	-0.09	0.67	0.37	93.1
Avoided my problem	-0.19	0.66	0.36	72.4
Wished I were a stronger person—more optimistic and forceful	-0.02	0.61	0.17	100
Tried to make myself feel better by eating, drinking, smoking, taking medications, etc	-0.10	0.61	0.35	86.2
Refused to believe that it had happened	-0.01	0.58	0.39	96.6
Kept feelings to myself	-0.08	0.53	0.08	72.4
Gone on as if nothing had happened	0.03	0.52	0.34	79.3
Hoped a miracle would happen	0.12	0.43	0.31	89.7
Blamed others	-0.09	0.31	0.79	100
Found out what other person was responsible	0.15	0.26	0.77	75.9
Got mad at the people or things that caused the problem	-0.08	0.41	0.71	100
Figured out who to blame	-0.03	0.36	0.70	96.6
Thought that others were unfair to me	-0.04	0.49	0.70	96.6
Took it out on others	-0.02	0.33	0.67	100

Note: This is the final version of the scale. In the actual scale, order of the items is randomized. Bolded items were newly generated; items not bolded pertain to the original RWCCCL scale.

ⁱDSS – DBT Skills Subscale.

ⁱⁱDCS-1 – Dysfunctional Coping Subscale, general dysfunctional coping factor.

ⁱⁱⁱDCS-2 – Dysfunctional Coping Subscale, blaming others factor.

Content Validity

To assess content validity, we asked the experts to rate on a 0–100 scale the extent to which the items covered the content of the DBT skills modules. Comprehensiveness of the DBT-WCCL items was rated as low for reality acceptance ($M = 37.24\%$, $SD = 22.18$) and mindfulness ($M = 38.28\%$, $SD = 22.69$), moderate for emotion regulation ($M = 43.10\%$, $SD = 19.29$) and interpersonal effectiveness ($M = 43.45\%$, $SD = 23.34$), and high for crisis survival ($M = 75.52\%$, $SD = 18.05$) items.

STUDY 2

In this study, preliminary psychometric properties of the DBT-WCCL were assessed. Using BPD participants enrolled in treatment studies, principal component and internal consistency analyses were conducted to adjust the structure of the measure. Consequently, test-retest reliability was assessed using participant data from treatment conditions where no DBT skills training occurred, over a 4-month period. Because these participants did not receive skills training, it was expected that use of skills would not change dramatically over time.

Criterion validity was assessed on a sample of BPD participants undergoing a treatment dismantling study. We expected to see no difference between treatment conditions before treatment started on the DBT-WCCL. We hypothesized that four months into treatment, participants who received skills training as part of their treatment package would use significantly more skills, as measured by the DBT-WCCL, than participants who did not. Support for this hypothesis would suggest that the DBT-WCCL could discriminate participants who are exposed to DBT skills from participants who are not.

Method

Participants

There were five cohorts of participants ($n = 332$). Participants in Cohort 1 ($n = 63$) were drawn from a randomized control trial (RCT) examining treatments for recurrently suicidal BPD women (Linehan et al., 2006). Participants in Cohorts 2 ($n = 22$) and 3 ($n = 23$) were drawn from two RCTs evaluating treatment for drug dependent BPD women (Linehan et al., 1999, 2002). Cohort 4 participants were 99 suicidal BPD women partaking in an ongoing dismantling treatment study. Finally, 125 men and women participating in an ongoing multi-site treatment study (University of Washington and Duke University) for drug dependent BPD individuals constituted Cohort 5.

All participants were 18 to 60 years of age and met criteria for BPD on both the International Personality Disorders Examination (IPDE; Loranger, 1995) and Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II; First, Spitzer, Gibbons, Williams, & Benjamin, 1996). Participants were excluded from all studies if they had bipolar disorder, or a primary psychotic disorder, epilepsy or other severe seizure disorder requiring antiseizure medications, other additional problems requiring immediate attention, or court referral. All participants gave informed consent prior to their participation in the studies. All procedures were approved by both the University of Washington and the Duke University IRB boards.

Participants were randomly assigned to a treatment condition. Individuals in Cohorts 1, 2, 3, and 5 were randomized to either a standard DBT condition (S-DBT)

or one of four control treatment conditions: community treatment by experts (CTBE; Cohort 1), which offered expert community-based nonbehavioral treatment by therapists nominated as experts in treating difficult clients (see Linehan et al., 2006 for a more detailed description); treatment as usual (TAU; Cohort 2), which offered community substance abuse treatment (see Linehan et al., 1999); comprehensive validation therapy in conjunction with a 12 step program (CVTS; Cohort 3), which offered treatment emphasizing validation and reciprocal communication (see Linehan et al., 2002); and drug counseling (DC; Cohort 5). Cohort 4 participants were randomized into standard DBT (S-DBT), in which the comprehensive treatment package was administered, or individual DBT only (DBT-I), in which skills training (both the teaching and the coaching) was fully excluded from the treatment, or DBT skills only (DBT-S), in which individual DBT was excluded, and participants had a case manager and attended skills training group.

Procedure

The DBT-WCCL, as defined in Study 1, was embedded in a larger questionnaire and was given to all five cohorts. Participants were assessed before treatment started, and every 4 months during the 1-year treatment by assessors blind to the treatment condition. Instructions for the measure differed slightly between cohorts. Before completing the instrument, participants in Cohorts 1, 2, and 3 were asked to write down a specific stressor that was associated with dysfunctional behavior (self-injury or drug use). Cohorts 4 and 5 were not asked to write down a stressor. All participants were asked to rate how they coped in the past month with either the particular stressor they wrote down or with stressful events in general. They were asked to rate each item on a scale of zero to three to indicate if the coping strategy was never used or not applicable, rarely used, sometimes used, or regularly used.

Results

Participant Characteristics

A total of 332 BPD participants were included in the analyses. Of the 108 instructed to write down a specific stressor, 54 were in S-DBT (32 in Cohort 1, 11 in Cohort 2, and 11 in Cohort 3) and 54 were in one of the three control conditions described above (CTBE = 31, TAU = 11, CVTS = 12). The other 224 participants were given the second set of instructions (no specific stressor). Ninety five of them were assigned to S-DBT (33 in Cohort 4, 62 in Cohort 5) and 129 in one of three control conditions (DC = 63, DBT-I = 33, DBT-S = 33).

Of the 332 total participants, 266 (80.1%) were women and 66 (19.9%) were men. Mean age was 31.18 years ($SD = 8.39$; range = 18–57). Participants self-identified as follows: Caucasian (84.9%), African-American (6.3%), Asian-American (3.3%), and “other” (5.5%). The majority of participants had less than a college degree (83.3%), earned less than \$15,000 per year (71.7%), and reported being single, divorced or separated (88.2%).

Missing Data

At pretreatment, three participants had missing data because of administrative error. At four months, data from 64 participants were missing because of the following reasons: drop-out/participant could not be reached ($n = 58$), death ($n = 2$), and

administrative error ($n = 4$). At the end of the 1 year of treatment, 96 participants were missing data: 84 dropped out/could not be reached, in four cases an administrative error occurred, four refused to fill in the questionnaire and four had passed away. In addition, 17 participants left at least one item blank in their end of treatment assessment and were excluded from principal component and internal consistency analyses.

Principal Component Analysis

Because individuals with BPD were expected to come to treatment to reduce a skills deficit, it was unlikely that our sample of participants used the full range of DBT skills when treatment started. Therefore, evaluating the structure of the scale using pretreatment data may have not captured the use of important DBT skills. Thus, the DBT-WCCL factor structure was assessed using the end of treatment data from all the five cohorts of participants ($n = 219$).

Responses to all 63 items (42 DBT skill items, 21 distracters) were subjected to an exploratory principal components analysis using a promax oblique rotation to allow for correlations among factors. A kappa of 3 was used in the promax rotation as recommended by Tatarzyn, Wood, and Gorsuch (1999). Given Floyd and Widaman's suggestion that the scree test is a more accurate method for retaining factors than the Kaiser-Guttman criterion of eigen values > 1.00 , it was used in the present study (Floyd & Widaman, 1995). The scree test suggested retaining three factors and as a result analyses were conducted to examine the three-factor solutions. Factor loadings of 0.40 and higher were considered meaningful for item selection for the three factors.

Items with loadings below 0.40 on all factors were excluded from further analyses. In addition, variables that appeared to have theoretically inconsistent loadings (i.e., DBT skills use item loading together with a majority of distracter items) were excluded. On the basis of these criteria, four items were deleted following the first principal components analysis: "prayed about it," "tried to get intense feeling in body to distract mind," "engaged in sexual activity," and "daydreamed/imagined at better time/place." After excluding these four items, the principal components analysis was recomputed on the remaining 59 items to ensure that all had factor loadings of 0.40 or higher. Upon extraction, the three factors explained 41.11% of the total variance of the measured variables.

Thirty-eight skills from the original 42 DBT skills items had their highest loading on the first factor ($\lambda = 12.90$, variance explained = 21.86%, mean loading = 0.57), and included 16 of the newly generated items and 22 from the original RWCCCL items. Factors 2 ($\lambda = 8.59$, variance explained = 14.56%, mean loading = 0.65) and 3 ($\lambda = 2.77$, variance explained = 4.69%, mean loading = 0.72) loaded all the non-DBT items and included only original RWCCCL items.

Upon closer inspection of the three factors, it became apparent that items on factor 3 had high loadings on factor 2 (average loading = 0.36, range = 0.26 to 0.49) and that factor 2 items also had high loadings on factor 3 (average loading = 0.27, range = 0.08 to 0.39). In contrast, loadings for factor 2 and 3 items on factor 1 were small (average loading = -0.06 and -0.02 respectively) and loadings for factor 1 items on factors 2 and 3 were also small (average loading = -0.05 and 0.06 respectively). Because both factor 2 and factor 3 contained non-DBT skills items, a two-factor principal component analysis was also conducted. Factor 1 remained the

same as before. Factor 2 loaded all the non-DBT items ($\lambda = 8.59$, variance explained = 14.56%, mean loading = .61).

Internal Consistency

Using 12 month data only, internal consistency analyses were evaluated to assess reliability of the three extracted factors. Analyses were conducted separately for each cohort, except cohorts 2 and 3, which were combined because of small sample sizes (Table 3). Factor 1 was found to have excellent internal consistency, ranging from $\alpha = 0.92$ to $\alpha = 0.96$. Factors 2 and 3 had good to excellent internal consistency, ranging from $\alpha = 0.87$ to $\alpha = 0.92$ and $\alpha = 0.84$ to $\alpha = 0.88$, respectively. For all factors, Cronbach α did not change when one item from the scale was systematically deleted. Therefore, no item was deleted from any factor.

The non-DBT factors had good internal consistency. Therefore, we included items loading on these factors in the DBT-WCCL as a subscale measuring dysfunctional coping. Items from factor 1 became a DBT Skills Subscale (DSS) and items from factors 2 and 3 became a Dysfunctional Coping Subscale (DCS). The first dysfunctional coping factor loaded items referring to dysfunctional behavior in general. The second dysfunctional coping factor loaded items referring more specifically to blaming others. Because the goal was the generation of a DBT skills use scale, we combined items from both factors 2 and 3 as a measure of dysfunctional coping to contrast skills use from unskillful behavior. As a result, all future analyses were done using a combined DCS subscale. Table 2 shows the final structure of the 59-item measure, including the loading coefficients on each factor.

Given that the principal component analysis yielded only one DBT skills use factor, a subscale corresponding to each DBT skills module could not be created. Therefore, all DSS items were used to compute average skills use, which was used in all subsequent analyses.

Population and Instruction Differences

Table 4 shows means and standard deviations for each subscale at the beginning of treatment for each condition and for each cohort. The sample contained data from two similar but potentially different populations. One hundred and seventy participants had been recruited into the RCTs for comorbid drug dependence (Cohorts 2, 3, and 5) and 162 had been recruited for severe suicidality (Cohorts 1 and 4). To determine whether there were differences between population subgroups, two independent samples *t* tests

Table 3

Cronbach α Internal Consistency for Each DBT-WCCL Factor per Cohort

	Factor 1 DBT skills use	Factor 2 General dysfunctional coping	Factor 3 Blaming others	Factors 2 & 3 Dysfunctional coping
Cohort 1	0.93	0.87	0.86	0.87
Cohorts 2 & 3	0.96	0.88	0.87	0.90
Cohort 4	0.92	0.92	0.88	0.93
Cohort 5	0.95	0.89	0.84	0.92

Note. Cohorts 2 (Linehan et al., 1999), 3 (Linehan, 2002), and 5 (ongoing RCT) include participants with borderline personality disorder (BPD) and comorbid drug dependence; Cohorts 1 (Linehan et al., 2006) and 4 (ongoing RCT) include highly suicidal BPD participants.

Table 4
Means and Standard Deviations at Pretreatment for Each Cohort, Treatment Condition, and Dialectical Behavioral Therapy Ways of Coping Checklist Subscale

		Drug dependent BPD participants						Suicidal BPD participants				
		Cohort 2 ⁱ		Cohort 3 ⁱⁱ		Cohort 5 ⁱⁱⁱ		Cohort 1 ^{iv}		Cohort 4 ⁱⁱⁱ		
		S-DBT	TAU	S-DBT	CVTS	DBT	DC	S-DBT	CTBE	S-DBT	DBT-I	DBT-S
DSS*	M	1.48	1.50	1.69	1.65	1.67	1.69	1.33	1.49	1.47	1.41	1.44
	SD	0.42	0.37	0.59	0.48	0.45	0.40	0.46	0.48	0.50	0.49	0.52
DCS**	M	1.94	2.05	2.18	2.20	2.11	2.07	2.03	2.05	2.07	2.13	2.09
	SD	0.37	0.49	0.37	0.34	0.37	0.41	0.34	0.35	0.54	0.26	0.42
	n	11	10	11	12	62	63	32	30	33	33	32

Note. BPD, borderline personality disorder, S-DBT, standard dialectical behavior therapy, TAU, treatment as usual, CVTS, comprehensive validation+12 steps, DC, drug counseling, CTBE, community treatment by psychodynamic experts, DBT-I, dialectical behavior individual therapy only+activities group, DBT-S, dialectical behavior therapy skills training only+case management.

ⁱLinehan et al., 1999; ⁱⁱLinehan et al., 2002; ⁱⁱⁱOngoing RCT; ^{iv}Linehan et al., 2006; *DSS, Dialectical Behavior Therapy Skills Subscale; **DCS, Dysfunctional Coping Subscale.

were conducted to compare these groups at baseline on both subscales. BPD drug dependent individuals ($M = 1.65$, $SD = 0.43$) reported using significantly more DBT skills than highly suicidal BPD individuals ($M = 1.43$, $SD = .49$), $t(327) = 4.46$, $p < .001$. There was no significant difference in dysfunctional coping ($t(327) = 0.40$, $p = 0.69$) between BPD drug dependent individuals ($M = 2.09$, $SD = 0.39$) and highly suicidal BPD individuals ($M = 2.08$, $SD = 0.39$). Because BPD drug dependent participants reported greater level of DBT skills, the following results are presented for all participants together and then separately for BPD drug dependent and BPD suicidal individuals.

To assess whether the two sets of instructions yielded different results, we conducted two independent samples t tests using the pretreatment data only. Comparing the set of instructions including the stressor ($M = 1.48$, $SD = .48$) with the instructions not asking for a specific stressor ($M = 1.57$, $SD = 0.47$), no significant differences were found in the DSS score ($t(327) = -1.63$, $p = 0.11$). Similarly, no significant difference was found ($t(327) = -0.70$, $p = .48$) in the DCS score when the instructions requesting stressor ($M = 2.06$, $SD = 0.36$) were replaced with instructions not requiring a stressor ($M = 2.09$, $SD = 0.40$). Therefore, results are not reported by type of instruction.

Test-Retest Reliability Analysis

To determine test-retest reliability, only participants in control conditions in which no formal skills training occurred (TAU, CVTS, DC, TBE, DBT-I) were selected. For the 116 participants in no-skills control conditions, an intraclass correlation coefficient was computed for pretreatment ($M = 1.57$, $SD = 0.45$) and 4-month ($M = 1.72$, $SD = 0.50$) DSS scores. Test-retest reliability analyses indicated that the DSS had good temporal stability ($\rho_I = 0.71$, $p < 0.001$). Test-retest reliability for BPD drug dependent and for highly suicidal BPD individuals were $\rho_I = 0.66$, $p < 0.001$ and

$\rho_1 = 0.73, p < 0.001$ respectively. Test-retest calculations were not appropriate for the dysfunctional coping score because treatments with no skills training may or may not have focused on changing maladaptive responses to situations. Therefore, test-retest reliability for the DCS was not assessed.

Criterion Validity Analyses

For criterion validity, data from Cohort 4 participants were used. All 99 participants in Cohort 4 were randomly assigned to standard DBT (S-DBT), DBT without skills training (DBT-I), and DBT skills training only (DBT-S). We expected no differences between conditions at pretreatment in the DSS. We expected to see differences at 4 months in skills use as measured by the DSS, with participants in the S-DBT and DBT-S conditions reporting significantly more skills use than individuals in the DBT-I condition. It was also hypothesized that participants in all treatment conditions would demonstrate a decrease in dysfunctional coping, as measured by the DCS, as a result of the 4 months of behavioral treatment. Furthermore, we hypothesized that dysfunctional coping would be lower in conditions where skills training occurred (since a competing behavior was taught to the individual) than in the condition where skills training did not occur.

Figure 1 shows the change in the average DSS score in the three conditions between the two time points, for all participants who had valid data at both time points. A univariate analysis of variance was computed between conditions at each time point. Because of high dropout rates from pretreatment to four months, we covaried the pretreatment score for each participant for the 4-month analysis.

As predicted, there were no significant differences found between the DSS score in each condition at pretreatment [$F(2, 95) = 0.11, p = 0.89, n = 98$]. However, at 4 months, a significant difference in DSS scores was found between conditions [$F(2, 70) = 4.31, p < 0.05, n = 74$] when controlling for pretreatment skills use level. A simple contrast analysis indicated that S-DBT ($M = 1.93, SD = 0.47$) and DBT-S ($M = 10.99, SD = 0.50$) were significantly different than DBT-I ($M = 1.65, SD = 0.52$),

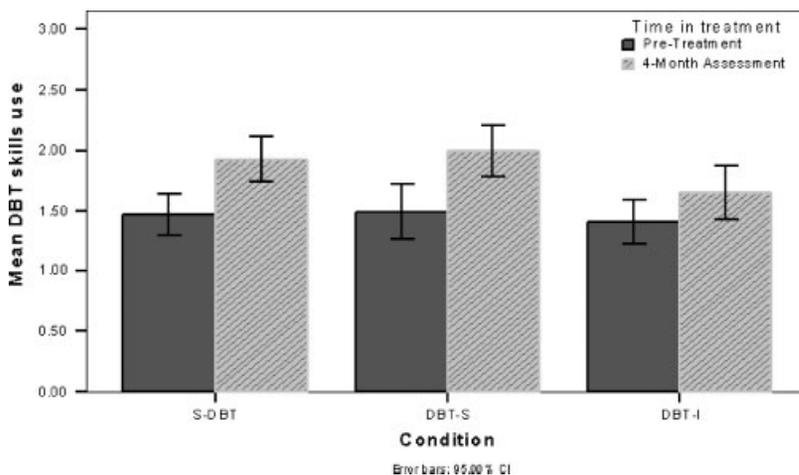


Figure 1. Difference in use of DBT skills from pretreatment to 4 months for participants with valid data at both time points ($n = 74$). Notes. DBT, Standard Dialectical Behavior Therapy; DBT-S, Dialectical Behavior Therapy Skills Training only+Case Management; DBT-I, Dialectical Behavior Individual Therapy only+Activities group.

$\Delta = 0.29$, $SE = 0.12$, $p < 0.05$ and $\Delta = 0.31$, $SE = 0.12$, $p < 0.05$ respectively. No significant difference was found between DBT-S and S-DBT ($\Delta = 0.02$, $SE = 0.12$, $p = 0.85$).

A paired sample t test indicated that there was significant improvement in dysfunctional coping from pretreatment ($M = 2.10$, $SD = 0.45$) to 4 months ($M = 1.71$, $SD = 0.50$) across all participants with valid data at both time points, $t(73) = 6.34$, $p < 0.001$. An independent samples t -test indicated that there was also a trend for a significant difference between the improvement in dysfunctional coping from pretreatment to 4 months for participants who had access to skills training (S-DBT+DBT-S; average $\Delta = -0.47$, $SD = 0.57$) and participants who did not (average $\Delta = -0.22$, $SD = 0.41$), $t(72) = -1.93$, $p = 0.06$.

Discussion

In this study we developed and validated a new instrument, the DBT-Ways of Coping Checklist (DBT-WCCL), designed to assess use of skills taught in DBT. Using the Revised Ways of Coping Checklist (Vitaliano et al., 1985) as our base measure, we modified it through the addition of items reflecting DBT skills use. Results from a series of reliability and validity analyses suggest that the DBT-WCCL has good to excellent psychometric properties. It appears that the DBT-WCCL successfully captures DBT skills use as well as use of dysfunctional coping in difficult situations.

Twenty two of the original measure's items were reliably classified by DBT experts as representing at least one DBT skill set and 21 items were reliably classified as not representing a DBT skill set. The 18 items added to expand content validity were all reliably classified as DBT skills. A subsequent principal component analysis on the resulting 63 items validated the expert classification of 22 of the 24 RWCCCL items and of 16 of the 18 novel items. Four items were dropped from the scale following the factor analyses, leaving a 59-item scale. The final three-factor solution explained 41% of the variance in the items, which is comparable to other measures found in the literature (e.g., Baer, Smith, & Allen, 2004).

The first factor captured all the items representing DBT skills use and created the DBT skills subscale (DSS, 38 items). The other two factors, one measuring dysfunctional coping in general and one measuring blaming others, captured use of dysfunctional coping. Because the focus of our study was the creation of a DBT skills use scale, we combined the items from these two factors into the dysfunctional coping subscale (DCS, 21 items), which was meant to contrast and further validate the DBT skills subscale. Although we recommend using a single DCS subscale, we have also included the information needed for researchers to consider using two independent dysfunctional coping subscales.

The DCS was a byproduct of our effort to construct a DBT skills measure. The clear separation between the skills use and dysfunctional coping highlighted that the DBT-WCCL is not just an activity measure. That is, the scale does not appear to simply assess a tendency of patients to become activated and indiscriminately try all types of coping efforts, whether they are effective or not. In a study of coping strategies used by psychiatric patients and nonpatients coping with work, health, and financial stressors (medical students, air traffic controllers), Vitaliano and colleagues (1990) found that psychiatric patients had higher raw problem-focused coping scores than medical students and air traffic controllers. In addition, medical students and air traffic controllers with high anxiety and depression had higher raw

problem-focused coping scores than their counter-parts with low anxiety and depression. However, when the number of active/positive efforts versus avoidant/negative efforts were corrected for total number of efforts, psychiatric patients and distressed nonpatients used less problem-focused strategies and more avoidant strategies than did nonpsychiatric patients and nondistressed persons. Therefore, distressed participants may have a tendency to become generally more activated and use more ineffective strategies. Thus, with BPD participants it is important to have a scale that does not simply measure activation. The DBT-WCCL appears to be useful for discriminating between functional and dysfunctional use of skills.

Psychometric analyses focused on the DBT skills subscale (DSS) and were reported independently for the dysfunctional coping subscale (DCS) when appropriate. Reliability of the DSS was supported by both internal consistency and test-retest analyses. Internal consistency was excellent and indicated that the items had substantial correlations both with each other and with the total score. Furthermore, the internal consistency finding was constant when assessed in four cohorts of participants, strengthening the reliability of the DBT-WCCL. In treatment conditions where no skills training occurred, test-retest reliability also provided strong evidence that the DSS is stable over time. Reliability analyses indicated that the DCS had good internal consistency. Our current data set was not fitted for test-retest reliability analyses for the DCS because we did not expect dysfunctional coping to remain constant with treatment and the rigorous design of the parent studies did not allow retest that was not contaminated by treatment.

The reliability of both subscales is comparable to the reliability reported for other measures. The DSS internal consistency was higher than the internal consistency of the original RWCCCL, whose subscales ranged from 0.76–0.88 (Vitaliano et al., 1985). Internal consistency for both the DSS and the DCS was higher or comparable to that of the Ways of Coping Questionnaire ($\alpha = 0.61$ – 0.79 ; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986), the Coping Self Efficacy Scale ($\alpha = 0.80$ – 0.91 ; Chesney et al., 2006) or the Coping Inventory for Stressful Situations ($\alpha = 0.82$ – 0.90 ; Cosway, Endler, Sadler, & Deary, 2000). Furthermore, the DSS test-retest coefficient over a 4-month interval was comparable to the Coping Self Efficacy Scale ($r = 0.40$ – 0.80 ; Chesney et al., 2006), to the COPE ($r = 0.42$ – 0.89 ; Carver, Scheier, & Weintraub, 1989), or to the Difficulties in Emotion Regulation Scale ($\rho = 0.69$ – 0.89 ; Gratz & Roemer, 2004).

There was also strong evidence for criterion validity of the DSS. To assess whether the DSS accurately measured DBT skills use, data from a dismantling RCT was used. This RCT design was particularly well-suited to validating the scale because it had a carefully controlled condition in which skills training did not occur. The DSS successfully discriminated conditions in which skills training occurred from the condition in which no skills training occurred after four months of treatment. This finding provides support that the DSS is likely to measure increase in self-reported skills use resulting from skills training. In terms of content validity, expert raters indicated that items with a greater diversity of content might be needed to fully capture some areas of DBT skills (e.g., reality acceptance). Nevertheless, the content validity of the measure was average to high, as measured by expert ratings on comprehensiveness.

With regard to the validity of the DCS, rates of dysfunctional coping significantly decreased during 4 months of behavioral treatment. This finding supports the criterion validity of the DCS because behavioral treatments target use of dysfunctional coping in crises (Linehan, 1993a). Furthermore, there was partial evidence that participants who were taught behavioral skills had a greater decrease in

dysfunctional coping when compared to participants who did not have access to skills training. More research is needed, however, to tease apart the effects of skills training on dysfunctional coping.

Because it was constructed to exclude skillful avoidance, an important DBT skill, the DCS can refine the current understanding of the relationship between BPD and maladaptive coping. For example, Bijttebier and Vertommen (1999) found that individuals with BPD tended to use avoidant coping more and to seek social support less than non-BPD counterparts. Nevertheless, the authors did not examine whether the avoidant coping was used as a maladaptive (e.g. "Avoided my problem") or as an adaptive coping strategy (e.g. "Focused all my energy on helping others"). Clarifying this issue using the DBT-WCCL could have important treatment implications. Both functional and dysfunctional coping are relevant clinical information in treatments for BPD (e.g., Kleindienst et al., 2008; Kolla, Eisenberg, & Links, 2008; Linehan, 1993a) as well as other disorders and, therefore, it is crucial to differentiate between the two. A measure where dysfunctional coping is distinguished from functional skills use can provide important insights into the relationship between changes in dysfunctional coping and treatment outcome.

An additional interesting finding was that BPD individuals with primarily a drug dependence problem reported more skills use than highly suicidal BPD individuals before treatment started, suggesting that different subgroups may benefit from different level of skills training. However, because of the small mean differences between the two groups, it is too early to determine whether different groups should be provided different levels of skills training. More research is needed in this area.

There are several limitations in these studies that are important to note and require further research to address. Psychometrically viable subscales corresponding to each DBT skills training module could not be created. The criterion validity findings suggested that the DBT-WCCL has adequate content validity for a general DBT skills use measure. Nevertheless, the principal component analysis highlighted that there is not sufficient content validity to capture differences between types of DBT skills (e.g., distress tolerance skills versus mindfulness skills). Although the total item variance explained in the principal component analyses was adequate, we believe future studies can improve this by including more items for each DBT skills module, reassessing principal components on a larger number of participants, and testing the structure of the scales using an a priori confirmatory analysis.

An additional limitation is the lack of non-clinical norms. Because DBT skills were designed for a BPD population, this measure was constructed to assess the effect of DBT skills training on BPD samples. Assessing the psychometric properties of the DBT-WCCL on a BPD sample was a crucial first step. Nevertheless, future studies should establish norms in nonclinical samples to assess whether BPD individuals not only change significantly after treatment, but whether their skill profiles become more similar to nonclinical samples.

Furthermore, the construct measured here may be limited. Use of skills does not provide information about the quality of the execution or the effectiveness of the use. In a review of coping measures using qualitative data, it was found that efficacy of coping methods and external resources were crucial factors in the process of coping that were overlooked in existing coping measures (Oackland & Ostell, 1996). Although the DBT-WCCL is not a coping measure, similar factors may be involved in the skills use process and, thus, future scales should include such measurements.

Overall, both subscales of the DBT-WCCL yielded good psychometric results. Although there is need for replication, it is likely that this measure can help address several important research questions about skills use and about DBT skills training. Areas of future research include an assessment of how clients progress in skills acquisition and generalization, how skills training in DBT can be improved, and the relevance of skills use for successful treatment outcome. The DBT-WCCL is expected to be a useful research tool for answering important questions about mechanisms of change in treatment. It can also be an important clinical tool for highlighting the strengths possessed by a client when dealing with difficult situations and for providing information about dysfunctional coping patterns that can be targeted in treatment.

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