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How mothers with severe emotion dysregulation use DBT skills in parenting contexts: observational coding of skills use in a DBT skills training group

Yoel Everett[1*], Olivia A. Frigoletto[1], Jacqueline R. O'Brien[2], Amy L. Byrd[3], Stephanie D. Stepp[3] and Maureen Zalewski[1]

Abstract

Background Dialectical Behavior Therapy's (DBT) well established effectiveness in reducing emotion dysregulation, and the growing recognition that parental emotion regulation is critical to effective parenting has led to increasing interest in the applicability of DBT skills to parenting. Efforts to integrate DBT and parenting interventions would benefit from an empirical examination of which DBT skills are most useful to parents with emotion dysregulation.

Methods This study used clinician-rated observational coding of skill use examples that were provided by mothers with severe emotion dysregulation ($n = 16$) who participated in a standard 48-week DBT Skills Training (DBT-ST) program in the context of a larger randomized controlled trial (NCT03060902). Mothers described their use of DBT skills during the homework review portion of DBT-ST sessions and video-recordings were then examined and coded to identify which DBT skills mothers most frequently described using in parenting situations (vs. non-parenting situations) and which skills were used to either increase positive parenting behaviors or to decrease negative parenting behaviors.

Results A total of 220 skill use examples were coded and approximately one-quarter described skill use in parenting situations. Mindfulness, Distress Tolerance, and Emotion Regulation skills were the most frequently described skills used in parenting situations, while Interpersonal Effectiveness skills were rarely coded. Mindfulness and Emotion Regulation skills were most often coded when mothers' parenting goal was to increase positive parenting, while Distress Tolerance skills were most often coded when mothers' parenting goal was to decrease negative parenting behaviors.

Conclusions Results provide an empirical basis which clinicians and treatment developers can use when selecting DBT skills to apply towards parenting challenges.

Keywords Parenting, Emotion dysregulation, Dialectical Behavior Therapy skills

*Correspondence:
Yoel Everett
yeverett@uoregon.edu
[1]Department of Psychology, University of Oregon, Eugene, OR, USA
[2]Department of Pediatrics, Oregon Health and Science University, Portland, OR, USA
[3]Department of Psychiatry, University of Pittsburgh, Pittsburgh, PA, USA

Background

Parenting is an inherently emotionally evocative experience, as parents are routinely tasked with managing and responding to their own emotions [16], while simultaneously responding to and facilitating their children's emotions and emotional expression [49]. Emotion regulation (ER), or the capacity to influence one's experience and expression of emotion [15], is critical to a parent's ability to engage in effective parenting [49]. Effective parenting behaviors can be broadly understood as behavioral parent management techniques – based in learning principles of reinforcement and punishment (e.g., using praise, positive attention, reward systems, consequences, and limit setting) as well as parental emotion socialization behaviors – such as emotion coaching (e.g., labeling, validating, accepting emotions). Notably, the use of effective parenting behaviors is linked to more positive child outcomes and lower levels of parenting stress [19]. However, parents who experience emotion dysregulation (ED) (e.g., using maladaptive or ineffective ER strategies, not using ER strategies in contexts when they could be useful) may concurrently experience unique challenges when responding to their children during emotionally intense interactions. Findings have shown that parents with elevated ED may have increased difficulty engaging in effective parenting behaviors [4, 35] and in turn, their children are at increased risk for emotional and behavioral problems, as well as mental health and ER difficulties [1, 16, 51].

Importantly, given that a parent's ability to learn and implement new parenting strategies often requires effective engagement in ER, parents with mental health challenges hallmarked by severe ED (e.g., borderline personality disorder [BPD]; Lieb et al., [24, 26] on average, have been shown to benefit less from parent training programs that have been developed to help improve parenting behaviors [31]. For example, parent training programs often teach parents to selectively ignore children's behaviors that they wish to decrease. Critically, to do so, a parent must first be able to inhibit their own emotional reactions to their children's behaviors. This understanding has sparked the development of several parent training interventions that aim to simultaneously target parental ER (e.g., Tuning into Kids; Havighurst et al., [18], however, these programs have rarely been tested with clinical populations of parents with severe ED [11]. In addition to parenting interventions that inadequately account for parental mental health challenges, most interventions geared towards adult mental health fail to address parenting difficulties, despite the fact that 66–75% of adults with a mental health disorder are parents [39]. Assessing for and targeting parenting challenges and the unique needs of parents in the context of adult mental health treatments could represent an opportunity to also address prospective downstream, intergenerational impacts (e.g., child internalizing/externalizing problems; [5].

Dialectical Behavior Therapy (DBT), which was originally developed for individuals with BPD, is now a leading treatment of severe ED among adults, that is broadly disseminated and applicable to a wide range of mental health disorders [8, 47]. Given DBT's well-established utility in reducing ED and mounting evidence highlighting parental ER as critical to effective parenting and child outcomes, there has been a growing interest in the application of DBT for parents with severe ED [59, 60]. Standard Adult DBT Skills Training (DBT-ST), a group-based component of the full DBT model, has shown effectiveness in treating ED on its own [29, 55], and may be a particularly good candidate for integration with parent training interventions, as they share in their behavioral theoretical approach and group-based, didactic format. Clinical approaches to integrating DBT-ST and parent training vary in the extent to which they focus on DBT vs. parenting skills. For example, some interventions provide DBT-ST to groups of parents [5], other programs integrate DBT-ST and parent training (DBT-ST + PT) [12, 46, 48], and some lean more heavily towards the provision of Parenting skills [21].

Critically, the clinically optimal integration of DBT-ST and parent training interventions hinges on key decisions regarding the selection of which skills to incorporate. A Standard Adult DBT-ST schedule consists of two courses of a 24-week intervention (48 weeks total) covering four skill modules (i.e., Mindfulness, Distress Tolerance, Emotion Regulation, Interpersonal Effectiveness), and 29 different skills (See Table 1). Group-based parent training programs are often 6–20 weeks in duration [18, 50, 56, 62]. Thus, the integration of DBT-ST + PT poses the challenge of providing both sets of skills and maintaining treatment fidelity, while also reducing the dosage and duration of treatment required, to avoid overburdening parents. Targeted selection of which DBT skills to teach is key to addressing these challenges. Furthermore, while studies on integrated DBT-ST + PT typically provide reasonable theoretical rationales for the selected content and duration of their programs, the field currently lacks empirical evidence supporting the selection of DBT skills they incorporate.

Importantly, clients' DBT skill use is known to mediate reductions in ED [37, 38], and evidence from a group case study with mothers with severe ED suggests that nearly half the time, mothers receiving DBT-ST use the skills in parenting contexts [32]. Thus, integration efforts may balance treatment fidelity and client burden by optimizing a clients' skill use towards improvement of both mental health symptoms *and* parenting. Further understanding which DBT skills are most useful in parenting

Table 1 29 DBT skills in 4 modules

Mindfulness Skills:
1. Wise Mind
2. Observe
3. Describe
4. Participate
5. Nonjudgmentally
6. One-mindfully
7. Effectively
Distress Tolerance Skills:
8. STOP
9. Pros and Cons
10. TIPP (*T*emperature, *I*ntense Exercise, *P*aced Breathing, *P*aired Muscle Relaxation)
11. Distraction (Wise Mind ACCEPTS)
12. Self-soothe (5 senses)
13. IMPROVE the Moment
14. Radical Acceptance
15. Willingness, Half-smiling, Willing Hands
Emotion Regulation Skills:
16. Check the Facts
17. Opposite Action
18. Problem Solving
19. Accumulate Positive Emotions (Pleasant Events)
20. Accumulate Positive Emotions (Values)
21. Building Mastery
22. Cope Ahead
23. PLEASE Skills (Treat *P*hysica*l* Illness, *E*at, *A*void substances, *S*leep, *E*xercise)
Interpersonal Effectiveness Skills:
24. Clarifying Goals
25. DEAR MAN (*D*escribe, *E*xpress, *A*ssert, *R*einforce, *M*indfully, *A*ppear Confident, *N*egotiate)
26. GIVE (*G*entle, *I*nterested, *V*alidate, *E*asy Manner)
27. FAST (*F*air, No *A*pologies, *S*tick to Values, Be *T*ruthful)
28. Validation
29. Evaluating Options (Dime Game)

contexts is essential to these efforts. For example, some evidence suggests that Interpersonal Effectiveness skills are generally used less often than other skills [25]. If Interpersonal Effectiveness skills are less often used in parenting contexts relative to other skills, reducing the number of these skills covered could be a means to optimizing integrated versions of DBT-ST + PT interventions.

Additionally, DBT-ST + PT integration efforts would benefit from insights into *how* parents use skills towards achieving specific parenting goals, such as increasing positive parenting and decreasing negative parenting behaviors. Positive parenting behaviors may include being warm and responsive, providing positive reinforcement, setting limits, providing support and scaffolding, and autonomy granting. Such positive parenting practices are associated with more optimal child development [20, 45]. Negative parenting includes harsh, hostile, or withdrawn parenting behaviors, the use of physical control or punishment, and parental laxness or inconsistent limit setting. These negative parenting behaviors have been found to predict later problems in child development and behavior [22, 57].

As mothers with severe ED may be more prone to some of these negative parenting behaviors [13], gaining a nuanced understanding of the ways in which DBT skill use maps onto parenting goals would allow for a more tailored approach to the provision of skills for this population. For example, parenting interventions that incorporate mindfulness have been previously shown to improve parent-child relationships [6]. If DBT Mindfulness skills are often used by mothers with severe ED to enhance positive one-on-one time with their children, it may be beneficial to emphasize these skills with parents who are struggling to have positive interactions with their children. In contrast, Distress Tolerance skills are designed to help clients resist engaging in destructive behaviors and have been shown to be helpful in the context of interpersonal problems [34]. In the context of the parent-child relationship, if Distress Tolerance skills are used to support parents in their ability to resist urges to engage in harsh parenting behaviors, these skills in particular may be essential. In sum, a systematic evaluation of DBT skill use in parenting contexts is an important next step to informing the selection and delivery of DBT skills in future iterations of DBT-ST + PT interventions.

Several previous studies have examined DBT skill use amongst those engaged in DBT, with findings linking greater skill use to lower levels of treatment drop out, less frequent self-harm [2], lower suicidal ideation [44], lower levels of stress and anxiety [52], and fewer BPD symptoms (Neasciu et al., 2010; Stepp et al., [53]. Skill use measures in prior research have relied exclusively on subjective self-report, either in the form of daily diary cards, in which individuals mark skills they used throughout the week [2, 44] or in the form of the DBT Ways of Coping Checklist (DBT-WCCL), a 38-item self-report questionnaire measuring the frequency of DBT skill use (Neasciu et al., 2010). To our knowledge, a small case study ($n = 4$) by Martin and colleagues [32], which used a diary card measure of skill use, is the only extant study to assess DBT skill use in mothers, specifically in parenting and non-parenting contexts. No prior study of DBT-ST has measured skill use by coding video recordings of DBT group sessions, in which participants describe their weekly use of skills. Use of an observational coding approach to assess skill use would provide novel insight into which skills are most frequently used in parenting contexts and would allow for an understanding of which skills are most useful to increasing positive

parenting behaviors and/or decreasing negative parenting behaviors.

Furthermore, previously used measures of skill use do not account for the fact that clients may often use skills inaccurately. Common obstacles to accurate skill use include choosing the wrong situation in which to practice a skill, misunderstanding the skill, stopping skill use prematurely, or misinterpreting the outcome of skill use [54]. Previous research on skill use has not directly addressed parents' accuracy of DBT skill use, however, given the importance of ER to effective parenting [9] this context may be especially relevant. Parents are often pursuing two goals/outcomes: (1) managing their own emotions and behaviors, and (2) managing their child's emotions and behaviors. DBT skills are aimed at improving parents' responses. However, in parenting contexts, parents may misinterpret the outcome of their skill use and judge their effectiveness by the extent to which they reduce negative emotions and behaviors in their children, as opposed to their own. Coding of DBT skill use, completed by trained DBT clinicians capable of identifying inaccurate/ineffective skill use, may reconcile these inexactitudes and provide a more objective assessment versus the methods commonly utilized in previous studies.

The current study

The current study aimed to elucidate the extent to which mothers with severe ED who receive Standard Adult DBT-ST, implement DBT skills in their parenting. To do so, we conducted a quantitative examination of how DBT-ST recipients used skills in their parental role. In order to determine *whether* and *how* mothers with severe ED use the DBT skills they were taught to improve their parenting, video recorded DBT-ST sessions were observationally coded. Through examining maternal reported skill use during the homework review portion of DBT-ST group sessions, we first sought to identify *which* DBT skills mothers used in parenting vs. non-parenting contexts. Second, we sought to identify if skills used in parenting contexts were aimed at increasing positive parenting behaviors or decreasing negative parenting behaviors. In particular, our goal was to gain the knowledge needed to provide DBT researchers and clinicians who work with parents with an evidence-based understanding of how DBT skills may optimally address parenting goals, and to provide an empirical basis for future iterations of integrated DBT-ST + PT to select and include skills that support the greatest improvement in both parental ED and parenting quality.

Methods

Participants

The current study used video recordings of group therapy sessions conducted in the context of a multi-site, longitudinal, DBT-ST randomized control trial (RCT) (clinicaltrials.gov, NCT03060902, PIs: Zalewski and Stepp).[1] Mothers were recruited via university-based research recruitment programs, mental health and social service agencies, craigslist, and targeted multimedia and digital messaging programs. Mothers with severe ED and mothers without ED were both recruited for the RCT. Participants in the current study included a subset of mothers with severe ED who participated in DBT-ST group sessions between July 2018 and September 2019, at one of the two study sites ($n = 16$).

Eligibility was determined in two phases. First, phone screening interviews were completed to ensure all mothers were English-speaking, biological parents, and had at least 50% physical custody of the target child since birth. To assess for maternal ED, all mothers completed the 10-item McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD; Zanarini et al., [61], and scores ≥ 7 were required for mothers with severe ED and scores ≤ 2 were required for mothers without ED. Second, eligible mothers and their children were invited to complete a clinical intake. Maternal ED status was further determined at intake through psychiatric interviews including the Structured Clinical Interview for DSM-5 (SCID-5; First et al., [14] and the Structured Interview for DSM-IV Personality (SIDP-IV; [43]. Mothers with severe ED met at least 3 diagnostic criteria for BPD, with at least one of the three symptoms needing to be uncontrolled anger or affective instability. Further, mothers with severe ED were ineligible if they reported previous or current participation in DBT. At intake, mothers completed the Peabody Picture Vocabulary Test Fourth Edition (PPVT-IV; [10] and children completed the Expressive Vocabulary Test Second Edition (EVT-2; [58], to provide an estimated verbal IQ; all eligible participants demonstrated standard scores of at least 70. Finally, mothers reported that their child had no known developmental disabilities.

Intervention: DBT-ST

The DBT-ST intervention followed the approach utilized in Linehan and colleagues seminal components study [29], which consisted of the DBT skills intervention group, case management, phone coaching, and

[1] RCT participants included 178 mothers (M_{age}=33.02 years, SD_{age}=5.01 years; 28% racial/ethnic minoritized status) and their preschool-aged children (M_{age}=41.52 months; SD_{age}=4.04 months; 52% female; 37% racial/ethnic minoritized status), who were enrolled between October 2017 and April 2021. Following clinical intake, eligible mothers with severe ED ($N = 93$) were randomized to receive either DBT-ST ($n = 46$) or Family Services as Usual ($n = 47$).For the purposes of the present study, we focused on a subset of the full sample, including eligible mothers who participated in DBT-ST group sessions at one of the two study sites (i.e., a university clinic in the Pacific Northwest). Session attendance at this site varied ($n = 28$; $M = 20.79$ sessions; $SD = 17.46$ sessions).

consultation team for group therapists. Mothers participated in the weekly, 2.5-hour group intervention for one year. DBT-ST groups followed the standardized *DBT Skills Training Manual: Second Edition* [27], and used the DBT Skills Training Handouts and Worksheets from the Second Edition [28]. During the year-long period, mothers completed the standard delivery of DBT-ST, which consists of 24 weeks of group sessions, repeated twice. This includes each of the four DBT modules: mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness (i.e., 48 possible skills training sessions). The group was open with rolling admissions, such that new mothers could join the group during the Mindfulness module and the first two sessions of any of the other three modules. The format of each 2.5-hour session consisted of a mindfulness exercise, homework review, introduction of a new skill, and homework assignment. Mothers were asked to complete weekly homework which consisted of practicing skills and completing a worksheet. During the homework review portion of the session (approximately 50–60 min), DBT-ST therapists asked each of the participating mothers to share their experiences using the skills over the course of the prior week. Because the goals of the RCT involved testing whether Standard Adult DBT-ST impacts parenting, group leaders did not exclusively focus on parenting topics in their examples or in teaching although the leader was not prohibited from the topic either (again, following a standard DBT skills delivery). This meant that mothers could choose to discuss parenting in their own examples of skill use or as an area where they hoped to implement skills but were not explicitly told to do so. DBT-ST group sessions were randomly selected and coded for adherence using the DBT Adherence Scale [17], and all scored sessions were deemed adherent.

Data analyses

Video sampling strategy

A single cycle through the DBT skills takes 24 weeks to complete. This cycle is typically repeated for a total of 48 weeks [28], pg. 110–111) which in total includes 12 skill sessions on Mindfulness, 12 skill sessions on Distress Tolerance, 14 sessions on Emotion Regulation, and 10 sessions on Interpersonal Effectiveness. To sufficiently code for each skill, and to best reflect skill use in a Standard Adult DBT-ST group, homework review portions of each of the 48 sessions were coded. In total, 40 h of video recordings were observed and coded, representing an average of 50 min per group therapy session.

Coding procedure & scheme

Video recorded homework review portions of each session were observed and coded. Reliability coding was completed by the first author and 20% of the recordings (10 videos in total) were double coded by the third author - a PhD level clinical psychologist with expertise in DBT and parenting research. Coding was completed using an online Qualtrics form with coding instructions, which was developed specifically for this study. The coding scheme was developed and pilot-tested on two video recorded sessions, with iterative adjustments made to the instructions in the online Qualtrics form. Table 2 summarizes the variables that were coded, the possible codes, the analyses conducted on each variable, and provides an illustrative example or instruction for each code. Overall inter-rater reliability for the coding scheme was good (*Cohen's kappa* = 0.817).

Results

For this study, 48 sessions of Standard Adult DBT-ST, involving a total of 16 mothers with severe ED, were coded. Two mothers attended some sessions, but did not provide examples of skill use. Fourteen mothers did provide examples of skill use, with the number of skills each mother described ranging from 1 to 51 skills over the course of the 48 sessions ($M = 15.71$). In total, 220 examples of skill use were coded. Figure 1 presents the distribution of DBT skill use examples across all 48 weeks of treatment. Skill accuracy was high overall, with 209 out of 220 examples (95%) being coded as accurate. Mothers described 60 instances of DBT skills use in parenting contexts and 54 of these instances were coded as accurate skill use (90%). These 54 examples of skill use in parenting contexts represented 26% of all accurate skill use. In 60% ($n = 126$) of examples coded as accurate DBT skill use, mothers described using the skills in a non-parenting context. In 14% ($n = 29$) of the cases, it was unclear whether mothers were in a parenting or non-parenting context when using the skills. As our aim was to describe which skills mothers report using in parenting contexts, the following results focus only on the 54 examples of accurate DBT skill use in a parenting context. Table 3 describes the frequency with which mothers were coded as having used the various DBT skills in parenting contexts.

DBT skill use in parenting contexts

Mindfulness skills were the most frequently used set of skills in parenting contexts. In total, Mindfulness skills made up 41% of skill use in parenting contexts ($n = 22$). Within this set of skills, the most frequently noted DBT skills were: Participate, One-Mindfully, and Effectively. Together, these three skills made up 24% of all skills used in parenting contexts. Distress Tolerance skills were the second most frequently used set of skills in parenting contexts. Mothers described 17 instances of using Distress Tolerance skills in their parenting, representing 31.5% of skill use in parenting contexts. Within this set

Table 2 Coding scheme and analyses used for Standard DBT Skills group with mothers of preschoolers

Variable	Codes	Analyses	Example
Participant ID	• 01 • 02 • 03 •… • 16	The range of mothers who provided examples will be calculated to provide context on how many different mothers generated the examples on which results are based.	• Mom01
Context	• Parenting • Non-parenting • N/A	Proportion of parenting context examples out of the total # of examples (parenting + non-parenting).	• Mom used the skill in an interaction with her child (*parenting*) • Mom used the skill alone or in an interaction with another adult (*non-parenting*) • Mom described having a Self-soothing object with her at all times and it was unclear who was present when Mom used the Self-soothe skill, or she described using it in the presence of her child, but in a way which was unrelated to any interaction with her child (*N/A*)
DBT Module	• Mindfulness • Distress Tolerance • Emotion Regulation • Interpersonal Effectiveness	Proportion of examples of a module out of the total parenting context examples.	• Mom used a skill from the Mindfulness module (*Mindfulness*) • Mom used a skill from the Distress Tolerance module (*Distress Tolerance*)
DBT Skill	• Wise Mind • Observe •… • Evaluating Options • N/A (See Table 1*for complete list of skills*)	Proportion of examples of a specific DBT Skill out of the total parenting context examples.	• Mom described using the Participate skill in an effort to "throw herself" into an activity (*Participate*) • Mom described playing loud music in order to distract herself during a stressful situation (*Distraction*)
Parenting Goal	• Increase positive parenting • Decrease negative parenting • N/A	Proportion of examples of a module (or skill) out of the total examples of parenting goal (i.e. to increase positive parenting or decrease negative parenting)	• Mom described using the skill in order to play with her child and be more present and engaged during the interaction (*increase positive parenting*) • Mom described having the urge to yell at her child prior to using the Distraction skill (*decrease negative parenting*) • It was unclear whether there was a parenting goal and what it was, or this was not a parenting context and thus this was not assessed (*N/A*)
Skill Effectiveness	• Effective • Ineffective • N/A	Proportion of examples of a module (or skill) being described as effective towards parenting goal, out of the total examples of parenting goal.	• Mom indicated that the skill helped her feel more calm, regulate herself, be less reactive, resist engaging in a negative or destructive behavior, or helped her communicate better (*effective*) • Mom indicated that despite using the skill, she did not feel it helped her in any way (*ineffective*) • It was unclear whether or not skill use was helpful, or there was no parenting goal and thus this was not assessed (*N/A*)
Skill Accuracy	• Accurate • Inaccurate • N/A	Only examples of accurate skill use were used towards all other analyses. Proportion of examples of accurate skill use in parenting context, out of total parenting context examples.	• There is no clear indication that Mom engaged in inaccurate skill use (e.g., choosing the wrong situation for a specific skill, misunderstanding the skill, under- or overapplication of the skill, stopping the skill prematurely, and/or misunderstanding the outcome of skill use) (*accurate*) • Mom describes walking slowly and leisurely as an example of using the Intense Exercise TIPP skill which is aimed at increasing heart rate (*inaccurate*) • Mom's describes attempting skill use but her description was too ambiguous to code for accuracy of skill use (*N/A*)

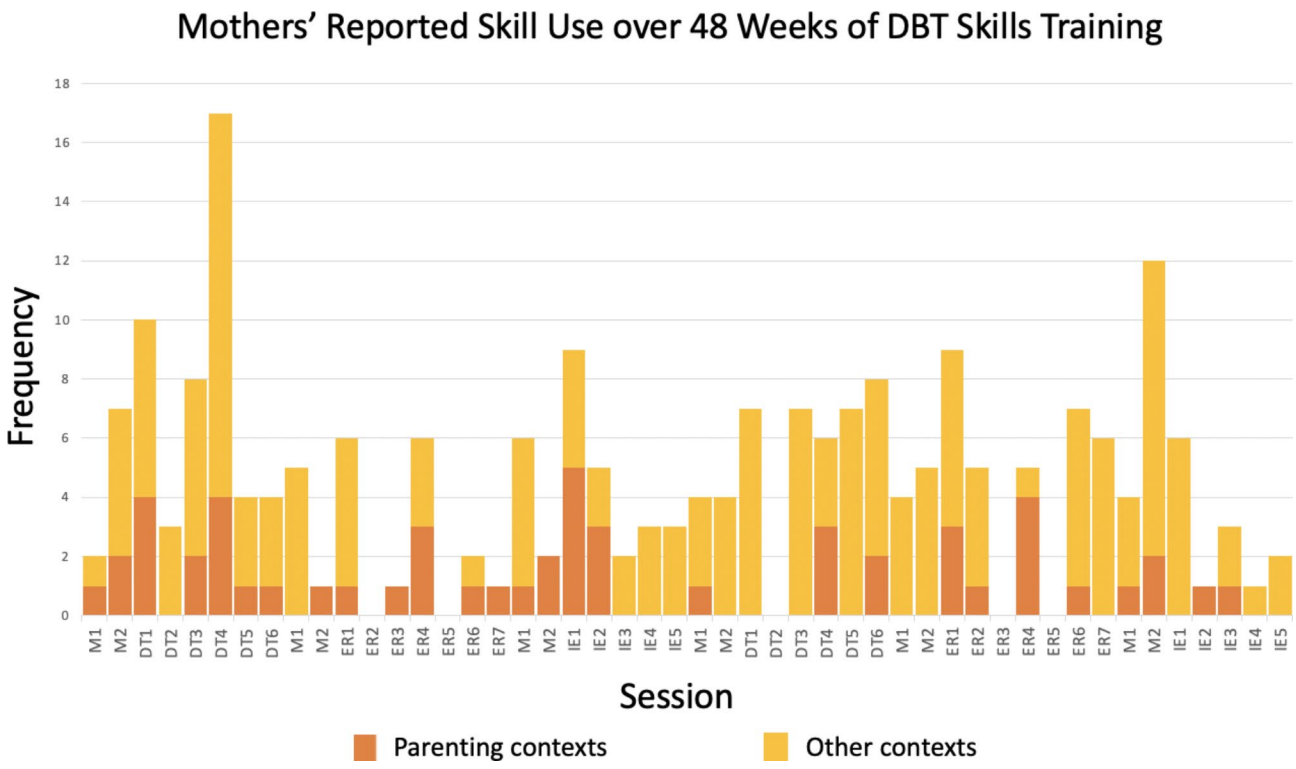

Fig. 1 Distribution of DBT skill use over 48 weeks. M = Mindfulness, DT = Distress Tolerance, ER = Emotion Regulation, IE = Interpersonal Effectiveness

of skills, the most frequently noted were: Radical Acceptance, Distraction, and Willingness. Together these three skills made up 24% of all skills used in parenting contexts. Mothers described using Emotion Regulation skills in 22% ($n = 12$) of all parenting context examples. The Emotion Regulation skills most frequently coded were Pleasant Events, Check the Facts, and Opposite Action, which together represented 20% of all skills used in a parenting context. Finally, Interpersonal Effectiveness skills were the least frequently described in parenting contexts, with mothers describing use of these skills in only 3 out of 54 parenting context examples (5.5%). In two of the three instances, mothers described using the Clarifying Goals skill in a parenting context.

DBT skill use and parenting goals

In the 54 instances of DBT skill use in parenting contexts that mothers described, their parenting goals were evenly split between using a skill to increase positive parenting ($n = 23$; 42.5%) and using a skill to decrease negative parenting ($n = 23$; 42.5%). In eight instances (14.8%), mothers' parenting goals were unclear and could not be coded as either of those two options. In 96% ($n = 44$) of the instances in which they had a clear parenting goal, mothers were coded as indicating that DBT skills were effective at achieving their goal.

Increasing positive parenting

When a mother's goal was to increase positive parenting behavior, they were coded as relying most frequently on Mindfulness skills. This was the case in 14 of 23 examples (61%). Specifically, the Mindfulness skills most often referenced were: Participate ($n = 4$), One-Mindfully ($n = 4$) and Effectively ($n = 2$). Mothers described using Emotion Regulation skills in an effort to increase positive parenting in seven instances (30%), relying primarily on the use of Pleasant Events ($n = 4$) to do so. Distress Tolerance was used only twice to increase positive parenting, and mothers were never coded as using Interpersonal Effectiveness skills to increase positive parenting. Each of the DBT skills that mothers described using to increase positive parenting were coded as effective in doing so.

Decreasing negative parenting

Distress Tolerance skills were most frequently coded as the skills mothers used to decrease negative parenting behaviors. This was the case in 48% ($n = 11$) of examples in which decreasing negative parenting was the goal of skill use. Specifically, mothers were coded as most often using Radical Acceptance ($n = 4$), Distraction ($n = 2$), Willingness ($n = 2$), and the TIPP skills ($n = 2$). Mindfulness ($n = 5$; 22%) and Emotion Regulation Skills ($n = 4$; 17.3%) were each utilized, though less often employed to decrease negative parenting behaviors. Within the Mindfulness module, the Effectively skill was described as

Table 3 Frequency of DBT skill use in parenting contexts

DBT Skill	Frequency (%)
Mindfulness skills	**22 (41%)**
One-mindfully	5
Effectively	4
Participate	4
General Mindfulness	4
Observe	2
Wise Mind	1
Describe	1
Nonjudgmentally	1
Distress Tolerance Skills	**17 (31.5%)**
Radical Acceptance	6
Distraction (Wise Mind ACCEPTS)	4
Willingness, Half-smiling, Willing Hands	3
TIPP (*T*emperature, *I*ntense Exercise, *P*aced Breathing, *P*aired Muscle Relaxation)	2
Self-soothe (5 senses)	1
General Distress Tolerance	1
STOP	0
Pros and Cons	0
IMPROVE the Moment	0
Emotion Regulation Skills	**12 (22%)**
Accumulate Positive Emotions (Pleasant Events)	5
Check the Facts	3
Opposite Action	3
Building Mastery	1
Problem Solving	0
Accumulate Positive Emotions (Values)	0
Cope Ahead	0
PLEASE Skills (Treat *P*hysica*l* Illness, *E*at, *A*void substances, *S*leep, *E*xercise)	0
Interpersonal Effectiveness Skills	**3 (5.5%)**
Clarifying Goals	2
Evaluating Options (Dime Game)	1
DEAR MAN (*D*escribe, *E*xpress, *A*ssert, *R*einforce, *M*indfully, *A*ppear Confident, *N*egotiate)	0
GIVE (*G*entle, *I*nterested, *V*alidate, *E*asy Manner)	0
FAST (*F*air, No *A*pologies, *S*tick to Values, Be *T*ruthful)	0
Validation	0
Total	**54 (100%)**

being useful in two instances. Within the Emotion Regulation module, two instances of Opposite Action were described as helpful in decreasing negative parenting. Distress Tolerance and Emotion Regulation skills were coded as effective in decreasing negative parenting in each instance in which they were used. Mindfulness skills were coded as effective at decreasing negative parenting in 80% of cases. Interpersonal Effectiveness skills were employed in three instances to decrease negative parenting and were coded as effective in 66% of those cases ($n = 2$): once by using the Clarifying Goals skill and in another instance by using the Evaluating Options/Dime Game skill.

Discussion

With a growing clinical interest in targeting both adult mental health and parenting factors within a single intervention, there are increasing efforts to integrate DBT skills and Parenting interventions [60]. This raises important questions about *how* best to integrate these two sets of skills, and more specifically – *which* DBT skills might be selected to include in future iterations, to optimize client skill use towards improvement of both their own mental health symptoms and their parenting behavior. The current study sought to evaluate which skills mothers with severe ED, participating in a Standard Adult DBT-ST group, report using in parenting contexts with their children. Furthermore, this study examined if the skills used in parenting contexts were aimed at increasing positive parenting behaviors or decreasing negative parenting behaviors.

A key finding was that mothers provided skill use examples for parenting situations less often relative to DBT skill use for other purposes. Specifically, mothers' examples of skill use focused on parenting in approximately 25% of examples provided during homework review. This rate of DBT skill use in parenting contexts is much lower than the rates identified in a previous case study of mothers enrolled in DBT-ST which used weekly diary cards to assess skill use in parenting and non-parenting contexts. In that study, mothers reportedly used skills for parenting 45% of the time [32].

Such varied application of DBT skills to parenting vs. non-parenting contexts may be due to the difference in measures used to assess skill use in each of the studies. The use of diary cards to evaluate skill use requires participants to identify skills from a list and mark all those used during the previous week, providing a comprehensive review of skill use. In contrast, in-session homework review relies on participants recalling skill use from memory without a list, which may result in fewer examples being reported but described in greater depth. Additionally, in comparison to Martin and colleagues' [32] study which assessed skill use in parenting vs. non-parenting contexts using diary cards, participating mothers in the current study may have chosen to disclose fewer parenting examples in-session due to parental feelings of guilt or shame [23], preferring instead to share more non-parenting examples. Beyond explanations related to the difference in measures of skill use, results may also suggest that DBT + Parenting integrations that more actively prompt group members to use skills in their parenting (e.g., by asking about skill use in parenting situations) may facilitate the generalization of DBT

skill use to parenting contexts. A future study could code if in a Standard Adult DBT-ST group, skills trainers' use of parenting examples impacts group members' skills use in parenting contexts. And research on integrated DBT-ST + PT interventions could examine rates of DBT skill use in parenting contexts to formally test if rates significantly differ from those found in a Standard Adult DBT-ST group.

Mothers provided many more examples of DBT skill use when they were not interacting directly with their child in a parenting context. However, despite this study's focus on the potential utility of DBT skill use in parenting contexts, it is important to acknowledge the probable indirect benefit of parents' skill use in non-parenting contexts, to children's mental health. Results from meta-analyses show that treatment of parent mental health symptoms has potential downstream effects on children's mental health outcomes [7, 11]. More specifically with regard to ER, DBT-ST driven improvements in parental ER are associated with steeper growth in children's ER [5], and skill use when simply in the presence of children can serve to model ER in a way that benefits child emotional and behavioral development [36].

When mothers discussed using DBT skills in parenting contexts, they described using the skills to both increase positive parenting behaviors and decrease negative parenting behaviors. However, different modules emerged as relevant to each respective goal. Mindfulness and Emotion Regulation skills appeared to be particularly helpful in increasing positive parenting. Mindfulness skills such as Participate and One-Mindfully, which encourage clients to more fully engage in the present moment and focus their attention on a single activity, appeared to be especially useful when interacting with children. This aligns well with parenting research on the developmental importance of parent-child joint attention [3]. Moreover, from a clinical perspective, this is also consistent with the large body of intervention research on mindful parenting programs, which demonstrates their effectiveness in improving both parenting stress and child behavior [6, 42]. The more frequent use of the Emotion Regulation Skill "Pleasant Events" in parenting contexts suggests that this skill might be used to enhance parent-child relationships while simultaneously serving its original purpose of reducing adults' vulnerability to negative emotions. Thus, this Emotion Regulation skill may be particularly well suited to targeting both a parent's mental health symptoms and their parenting quality.

Mothers seeking to decrease negative parenting behaviors often described using Distress Tolerance skills in pursuit of their goal. This is to be expected, given the known link between parenting stress and engagement in negative parenting behaviors [30], as Distress Tolerance Skills aim to help individuals either resist destructive urges in stressful situations or encourage the practice of greater acceptance and tolerance for distress. Mothers in the current study were coded as using the Distress Tolerance Skills "Distraction" – which aims to prevent destructive behaviors in highly intense emotional situations, as well as "Radical Acceptance" and "Willingness" – which are acceptance-based skills aimed at increasing ones' ability to tolerate stressful and distressing emotions. Parenting can often be an emotionally evocative experience (Hajal et al., 2020) and thus it was unsurprising to find that mothers used Distress Tolerance skills more frequently to manage negative emotions during interactions with their children.

Finally, mothers in the current study did not use Interpersonal Effectiveness skills as frequently in parenting contexts as they did the skills from other DBT modules. Such lower rates of Interpersonal Effectiveness skill use are consistent with findings from the broader literature on DBT skill use [25], and it is also important to note that the Interpersonal Effectiveness module is shorter (10 sessions) than the other three modules in a Standard 48-week Adult DBT-ST group (12–14 sessions each). However, there are additional possible explanations for the relative paucity of Interpersonal Effectiveness skill use in parenting contexts. Interpersonal Effectiveness skills aim to enhance effective communication and assertiveness and may be more readily applicable to interactions with adults or adolescents, than to the current study's sample of mothers and their preschool-aged children. Specifically, the Interpersonal Effectiveness skills, as taught in a Standard Adult DBT-ST group, are unlikely as relevant to the communication styles and strategies best suited to this age group of children. Efforts to integrate DBT-ST and parent training for parents of preschoolers may need to adapt how these skills are taught to enhance their applicability to common parenting goals during the preschool period (e.g., providing positive reinforcement; setting limits). If more targeted selection of skills is needed to reduce client burden when integrating DBT-ST and parent training, treatment developers and clinicians working with this population might consider reducing time devoted to Interpersonal Effectiveness skills, or alternatively, could focus efforts on the applicability of these skills to communication between co-parents or other important caregivers [33].

While prior research on DBT skill use points to its key role in reducing ED, studies have rarely examined skill use in parent populations specifically and have relied exclusively on subjective self-report measures of skill use either in the form of questionnaires or diary cards (e.g., Neacsiu et al., [37, 53]. A key strength of the current study is its use of an innovative, clinician-rated skill use measure in a parent population of mothers with severe ED. The observational coding of group members'

descriptions of their weekly use of DBT skills provides a more objective measure than previous research by limiting self-report bias. Further, this approach allows greater insight into which skills were most frequently used in parenting contexts and non-parenting contexts, which skills were most useful to increase positive parenting behaviors or decrease negative parenting behaviors, and the general accuracy of group members' skill use. Such observational coding of DBT skill use could be applied more broadly to Standard Adult DBT-ST to supplement current subjective measures of skill use. As this approach to assessing DBT skill use is still novel, additional efforts to develop and test the current coding scheme are needed prior to its continued use.

Two limitations of the current study may have implications for the generalizability of our results to other DBT-ST groups. Firstly, our results are based on a small sample of mothers who provided DBT skill use examples. Some mothers, either because they participated in more sessions or because they frequently volunteered to share skill use examples in sessions, provided more of the examples and thus had a disproportionate influence on the results. Even so, this study attempted to mitigate possible effects of this with our sampling strategy – coding a full, rolling course of 48-weeks of DBT-ST that covered modules/skills multiple times and included all mothers participating in group over the course of 1 year. Additionally, all group members shared the experience of being a mother of a preschool-aged child. While the intervention itself did not have a parenting focus, it is unclear to what extent this shared characteristic increased the salience of parenting topics within sessions. It is possible that in a more heterogenous DBT-ST group of parents and non-parents or parents of children of different ages, fewer parenting examples might be raised during homework review. Future studies could examine observed skill use in multiple, heterogenous groups with different co-leaders, to enhance the generalizability of results.

Finally, one notable limitation of our study concerns our coding of parenting goals, which for the purposes of this initial examination of DBT skill use in parenting contexts, focused on the binary constructs of positive and negative parenting. While these broad categories of parenting behavior are commonly used in parenting research [40], it should be acknowledged that parenting is more nuanced and multi-dimensional [41] than our current coding scheme allowed us to evaluate. Future research may expand upon the current coding scheme to include more specific aspects of parenting, such as emotion socialization behaviors (e.g. labeling emotions, validating emotions) or parent management (e.g. limit setting, providing positive reinforcement). In fact, given the intention to use findings on DBT skill use to inform the integration of DBT-ST + PT, future efforts may similarly code video-recorded sessions of parent training to examine which parent training skills parents report as being particularly helpful. This could further inform the integration of DBT and Parenting interventions.

Conclusions

The current study sought to identify key DBT skills that mothers with severe ED report using to improve their own parenting, with the goal of using this information to further develop an integrated DBT-ST + PT intervention. Based on findings of this study, DBT-ST clinicians who work with parents and clinical researchers engaged in the development of DBT-ST + PT integrations, may consider highlighting the usefulness of Mindfulness and Emotion Regulation skills to facilitating and increasing positive parenting behaviors, and the usefulness of Distress Tolerance skills to decreasing engagement in negative parenting behaviors. As integrating DBT-ST + PT may overburden clients with too lengthy an intervention, it may be necessary to pare down such a program by selecting DBT skills that both improve a parent's mental health and simultaneously facilitate a parent's ability to reach their parenting goals and improve parenting behaviors. The current study provides an initial empirical basis on which to make that selection of skills.

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Author contributions

Y.E., J.R.O and M.Z. contributed to study design, implementation and writing of the manuscript. O.A.F. contributed to writing of the manuscript. A.L.B. contributed to study design, adherence ratings for the intervention, and provided feedback on the manuscript. S.D.S contributed to study design, implementation and provided feedback on the manuscript.

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Data availability

The parent RCT study has shared data via the NIMH NDA (https://nda.nih.gov/edit_collection.html?id=2637). For additional information regarding coded data from the current substudy, contact the corresponding author.

Declarations

Ethics approval and consent to participate

This study was approved by the University of Oregon Institutional Review Board. Informed Consent was obtained from all participants prior to study participation.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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