

Changes in adolescents with borderline personality features and caregivers after dialectical behaviour multifamily group therapy

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Abstract

Dialectical Behaviour Therapy (DBT) is an effective treatment for symptoms of Borderline Personality Disorder (BPD) and has been adapted to adolescent population (DBT-A). The objective of this pilot study was to determine if DBT-A skill group as a stand-alone treatment could improve rearing styles and emotion regulation in adolescents with BPD features and their parents. We designed a 12-week skills group intervention with 14 adolescents with BPD features and their caregivers. Participants (81.82% female) ranged in age from 14 to 17 ($M= 15.55$ $SD=.82$). We tested the results of the intervention using the non-parametric Wilcoxon test and calculated effect sizes. To understand individual changes, we reported clinical reliable change (CRC). Acceptability of the intervention was also evaluated. The intervention was effective for improving rearing styles (more affectionate and less criticism) in parents and adolescents. Changes in emotion regulation processes were mixed. Some of the changes were stable 6 months after intervention. Participants reported good levels of satisfaction with the intervention. A DBT-A multifamily group intervention could modify potential mechanisms related with the developing BPD as rearing styles. The duration of the intervention could not be enough to improve emotion regulation processes. Developing early interventions with adolescents with BPD features could modify mechanisms that prevent the establishment of BPD. *Keywords: parenting; emotional regulation; family.*

Resumen

Cambios en adolescentes con rasgos de trastorno límite de personalidad y cuidadores tras un grupo multifamiliar de terapia dialéctico conductual. La Terapia Dialéctico Conductual (TDC) es efectiva para el tratamiento de los síntomas del Trastorno Límite de Personalidad (TLP) y ha sido adaptada a población adolescente (TDC-A). El objetivo de este estudio piloto fue determinar si el grupo de habilidades de TDC-A como tratamiento independiente podría mejorar los estilos de crianza y la regulación emocional en adolescentes con características de TLP y sus padres. Diseñamos una intervención grupal de habilidades de 12 semanas de duración con 14 adolescentes con características de TLP y sus cuidadores. Los participantes (81.82% mujeres) tenían edades desde 14 a 17 años ($M= 15.55$ $SD= .82$). Evaluamos los resultados de la intervención mediante la prueba no paramétrica de Wilcoxon y el cálculo de los tamaños del efecto. Para conocer los cambios individuales, informamos el cambio clínico significativo (CCS). También se evaluó la aceptabilidad de la intervención. La intervención fue efectiva para mejorar los estilos de crianza (más afectivo y menos crítico) en padres y adolescentes. Los cambios en los procesos de regulación emocional fueron mixtos. Algunos de los cambios se mantuvieron estables 6 meses después de la intervención. Los participantes reportaron buenos niveles de satisfacción con la intervención. Una intervención multifamiliar grupal de TDC-A podría modificar los potenciales mecanismos relacionados con el desarrollo del TLP como son los estilos de crianza. La intervención podría no ser suficiente para mejorar los procesos de regulación emocional. Desarrollar una intervención temprana con adolescentes con rasgos de TLP podría modificar los mecanismos que previenen el establecimiento de TLP.

Palabras clave: crianza; regulación emocional; familia.

Dialectical Behavioral Therapy (DBT) has been recognized as an effective treatment for suicide ideation and other symptoms of Borderline Personality Disorder (BPD) (Chen et al., 2021; Cristea et al., 2017; Cuevas-Yust & López-Pérez, 2012; Panos et al., 2014). Its use

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has been spread to new settings (Flynn et al., 2019; Groves et al., 2012) and disorders (Feldman et al., 2009; Fischer & Peterson, 2015; Lang et al., 2018; Salbach-Andrae, et al., 2008). Healthcare workers adapted DBT to suicidal adolescent population (DBT-A) (Miller, 1999; Miller et al., 2006; Rathus & Miller, 2002), including the same components as DBT: individual therapy, skills training group, inter-session phone coaching and consultation team. However, DBT-A includes some differences from the original DBT, such as shortening the duration from one year to 12 weeks, adding a fifth skills module (Walking the Middle Path) and including families in the skills group (Miller, 1999; Rathus & Miller, 2002). The biosocial theory of BPD (Linehan, 1993) states that emotion dysregulation is the core difficulty for people with BPD. This theory proposes that emotion dysregulation is the consequence of the interaction of two factors: a biological vulnerability creating more intense emotions and an “invalidating environment” that punishes, ignores, and reacts inconsistently to the emotional expressions of the child (Linehan, 1993). Investigators have proposed DBT-A as a preventive intervention and an opportunity to influence the invalidating environment (Miller et al., 2006). Miller et al. (2002) proposed that including families in interventions with adolescents with BPD features could influence in decreasing risk factors (e.g. high level of conflict) and improving protective factors (e.g. warmth) of BPD. DBT-A was adapted to community settings in the Spanish public health system (Mayoral et al., 2020). This adaptation included the same structure, modules and components of intervention than the original version. This group also implemented a skills group for parents-only, addressed to improve emotion regulation in parents and crisis management skills with their children (Mayoral et al., 2020). Recently, DBT-A has been adapted to general population of adolescents in the Spanish school system (Gasol et al., 2022) and the preliminary outcomes showed good levels of acceptability and a better regulation of emotions.

Several randomized controlled trials (McCauley et al., 2018; Mehlum et al., 2014) have demonstrated the effectiveness of DBT-A compared to standard care for reducing depressive symptoms, self-harm, and suicidal ideation in suicidal adolescents. A meta-analysis of DBT-A interventions with adolescents (Cook & Gorraiz, 2016) revealed that a 12 to 24 weeks intensive DBT intervention seems to be enough to reduce BPD features, depression symptoms, self-harm, suicidal ideation and emotion dysregulation. In addition, DBT-A has shown higher satisfaction and retention rates compared with other effective interventions in adolescents with BPD features, as Mentalization Based Therapy for Adolescents (MBT-A) (Jørgensen et al., 2021; Navarro-Haro et al., 2023). In Spanish adolescent population, a randomized controlled trial comparing DBT-A with treatment as usual plus group sessions (TAU+GS) (Santamarina-Perez et al., 2020) showed that DBT-A was superior in reducing self-harm and improving global functioning.

Skills training group is a key component of the DBT treatment. This modality is focused on teaching new strategies to manage emotions effectively. A systematic review (Valentine et al., 2015) found that a DBT skills group-only approach was effective and acceptable for use across a wide range of diagnoses and settings. Investigators have shown DBT skills group as a stand-alone treatment to be effective in adults diagnosed with depression (Blackford & Love, 2011; Feldman et al., 2009; Harley et al., 2008), BPD (Soler et al., 2009) and adolescents with oppositional defiant disorder (Nelson-Gray et al., 2006). In addition, skills training intervention has demonstrated to be effective in decreasing emotion dysregulation in adults with BPD (Neacsu et al., 2010).

There is a trend to include relatives in the treatment of adolescents with BPD features (Hoffman et al., 2005; Miller & Skerven, 2017) and these interventions are proposed as a preventive approach that pretends to modify the invalidating environment where the adolescents live. Participation of parents in DBT-A groups fosters their children to practice and apply the skills learned in critical situations in their real lives (Miller et al., 2006). Besides, some authors highlighted the role of parents ability to manage their own emotional responses as models of self-regulation strategies in their children (Cui et al., 2021). Emotional responses in parents shape their childrens managing with emotions (Buckholdt et al., 2014; Morelen et al., 2016). Holmqvist-Larsson et al. (2019) implemented skills groups of emotion regulation for adolescents with multiple diagnosis and their parents. After intervention, both adolescents and caregivers showed improvements in emotion regulation levels. Moreover, a recent study (Marco et al., 2023) supports the idea that DBT-A groups with caregivers only are effective to improve emotion regulation in adolescents, even they didn't participate in the intervention.

We implemented a pilot study to analyze the effect of a 12-week DBT skills group in adolescents with BPD features and their parents. The short duration of the intervention and the suppression of the other components of DBT (e.g. individual therapy, phone coaching, etc.) could be cost-effective and easier to implement in the Spanish national public health system. We applied the multifamily group intervention of DBT-A, in which adolescents and their parents attend to the group together. Studies of the effectiveness of DBT in adolescents are usually targeted to examine clinical symptoms as depression, self-harm and suicide attempts. Several authors have proposed that the ways that treatments operate are poorly understood and suggest the need to evaluate the influence of mechanisms of change of DBT in the clinical outcomes (Berk et al., 2020; Cook & Gorraiz, 2016; Mehlum et al., 2019). Our goal is to test whether this intervention can influence in the mechanisms that might be fostering BPD symptoms. The outcome variables proposed in this study are parenting styles and emotion regulation. These variables were chosen because of their relation with BPD according to the biosocial theory (Linehan, 1993; Lynch et al., 2006). In addition, emotion regulation has been identified as one of the mechanisms involved in improvements in symptoms after DBT-A (Asarnow et al., 2021; Dibaj et al., 2023; Gratz et al., 2015; Rudge et al., 2020). We evaluated the results of the interventions using three different indicators: pre-post group changes, effect size and Clinical Reliable Change (CRC).

Our objective was to determine whether a 12-week DBT multifamily group intervention (adolescents and parents) was effective at improving parenting styles and emotion dysregulation in adolescents with BPD features and their parents.

Hypothesis 1: Affectionate parenting style will be more common while Critical parenting style will be less common in adolescents with BPD features and their parents after intervention and at 6-month follow-up.

Hypothesis 2: Emotion dysregulation levels in adolescents with BPD features and their parents will be lower after intervention and 6-month follow-up.

Method

Procedure

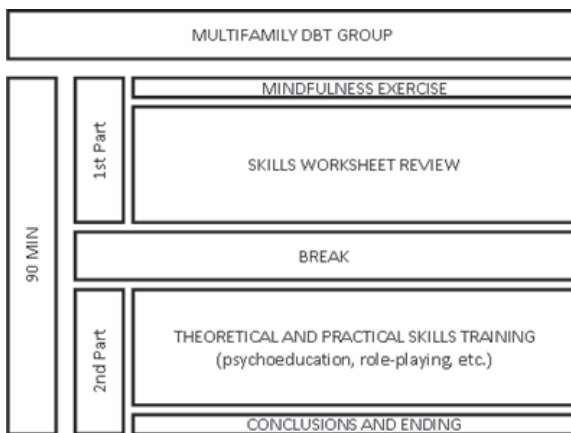
The intervention design was reviewed by Sant Joan de Déu Terres de Lleida Hospital (Lleida, Spain) ethical committee. Investigation

was carried out in accordance with the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (General Data Protection Regulation). We explained the purpose and methodology of the intervention and obtained the written informed consent of the participants and their parents before questionnaire completion.

We recruited participants from the mental health ambulatory services at Sant Joan de Déu Terres de Lleida Hospital. Participants were selected by clinical criterion of BPD symptoms and self-harm presentation. A clinical psychologist conducted an interview with participants and caregivers to get participation consent and socio-demographic data. After that, an interview with only children was made for clinical assessments. Adolescents and caregivers filled out questionnaires at home. Questionnaires were returned to the evaluator in a three-week period as a maximum. No monetary reimbursement was offered to participants.

We implemented a DBT skills multifamily group intervention in adolescents with BPD features and their parents. The aim of the intervention was to teach and practice the five skills modules proposed by Rathus & Miller (2015): Mindfulness, Distress Tolerance, Interpersonal Effectiveness, Emotion Regulation and Walking the Middle Path. Group therapy lasted 12 weekly sessions of 1.5-hour and was conducted by two trained clinical psychologists. Three groups were conducted and the size of each group was 4-5 families (8-10 individuals).

Figure 1. Structure of the multifamily group sessions.



Participants

Fourteen adolescents with BPD features and their parents participated in this intervention. All participants were between 12 and 17 years old. Stable living with one of their parents was also a criterion for all of them. Participants with intellectual disability ($IQ < 70$) or difficulties in Spanish were excluded. Inclusion criteria were: meeting three criteria for BPD (e.g. impulsiveness and risky behaviour, emotional instability, feelings of emptiness, etc.), a history of suicide attempts or self-harm in the last 6 months and to be attending a mental health service. Three participants did not complete the intervention so we excluded them. The remaining participants (81.82% female) ranged in age from 14 to 17 ($M = 15.55$, $SD = .82$). Caregivers of the remaining participants were 10 mothers and one father. Ages of caregivers were between 28 and 52 years old ($M = 39.5$; $SD = 7.74$). Only one caregiver by participant participated in the intervention. The selection of the

caregiver was made taking into account: stable living with the child, availability to attend the intervention and a good relationship with the child. The caregiver attending to the group must be always the same for all the sessions.

Measures

BPD features in adolescents were evaluated using the Spanish version of the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II) (First et al., 1997) module for BPD. This interview is valid in measuring Personality Disorders in adolescents (Salbach-Andrae, Bürger et al., 2008) and no adaptations were made. Axis I diagnoses were assessed in adolescents using the Spanish version of the Kiddie Schedule for Affective Disorders and Schizophrenia Present and Lifetime Version (K-SADS-PL) (Kaufman et al., 1997; Ulloa et al., 2006). A trained clinical psychologist administered the clinical interviews.

Parenting styles were measured by the Affect Scale (Fuentes et al., 1999). The Affect Scale is a self-report measure composed by 20 items and rated by a Likert Scale, from 1 (never) to 5 (always) composed by two subscales: the affect-communication scale and the criticism-rejection scale. This scale has two versions, one for parents and another for children. Measures were assessed in adolescents and caregivers. The affection-communication scale measures the level of warmth and communication of parents in their relationship with the children; the criticism-rejection scale assesses the level of hostility and criticism of parents in their relationship with the children. The validation studies (Bersabé et al., 2001) of the subscales showed Cronbach's α levels of between .60 and .90.

To assess *emotion dysregulation*, we used the Spanish version of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004; Hervás & Jódar, 2008). In the Spanish version, the questionnaire is composed by 28 items rated in a Likert scale, from 1 (almost never) to 5 (almost always). It evaluates the ability to manage emotions with 5 subscales: Nonacceptance of emotional responses, difficulty engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, and lack of emotional clarity. The questionnaire was completed by parents and adolescents. Lower levels in the subscales indicate improvements in the skills. The Spanish validation of the test (Hervás & Jódar, 2008) showed a Cronbach's α from .73 to .93 and yielded five subscales (i.e., all subscales except limited access to emotion regulation strategies). The scale has been also validated in a Spanish adolescent sample, with Cronbach's α from .60 to .88 (Gómez-Simón et al., 2014).

We assessed *acceptability of the intervention* using the Client Satisfaction Questionnaire (CSQ-8) (Roberts et al., 1984). This is a self-reported measure which consisted of eight items rated from 1 to 4. Results could be calculated by the total score or the mean of the 8 items. The Cronbach's α of the Spanish validation was .90. We invited participants to complete this questionnaire anonymously to encourage honest responses. Acceptability was evaluated in both parents and adolescents.

Statistical Analyses

Analyses were conducted using SPSS statistics 24 software package for Windows (IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.). We calculated differences after intervention using non-parametric measures (Wilcoxon test). To assess the magnitude of possible differences we estimated an effect size indicator using η^2 (Pallant, 2007; cited in Martínez-Arias,

Table 1. Means and standard deviations of outcomes variables at each time of the assessment.

	T1		T2		T3	
	Mean	SD	Mean	SD	Mean	SD
<i>Adolescents Measures</i>						
Affection	31.09	4.21	34.60	12.09	36	12.75
Criticism	29.18	7.95	29.30	6.52	25.29	11.07
Nonacceptance	25.18	6.15	22.80	10.56	22.43	8.22
Difficulty in goal	15.55	3.45	16.90	3.11	17	3.46
Lack of awareness	11.45	2.38	13.20	4.10	11.43	4.72
Lack of clarity	13.18	2.71	11.60	3.69	10.29	4.23
Lack of impulse control	36.27	6.26	34.60	9.47	32.71	7.59
<i>Caregivers Measures</i>						
Affection	31.36	2.01	42.64	5.07	41.14	7.24
Criticism	30.64	2.98	23.18	2.96	27.57	2.64
Nonacceptance	16.45	3.33	17	7.50	14.86	4.88
Difficulty in goal	8.27	3.23	9.20	2.53	10.14	1.86
Lack of awareness	11.91	2.34	13.45	3.83	14.71	4.15
Lack of clarity	9.45	3.01	8.64	1.21	10.14	2.85
Lack of Impulse control	18.82	5.46	18.27	5.93	19	4.32

Note: SD= Standard Deviation; Affection= Affect Scale (parenting styles); Criticism= Criticism Scale (parenting styles); Nonacceptance: nonacceptance subscale of DERS; Difficulty in goal= difficulty engaging in goal-directed behavior subscale of DERS; Lack of awareness= lack of emotional awareness subscale of DERS; Lack of clarity= lack of emotional clarity subscale of DERS; Lack of impulse control= impulse control difficulties subscale of DERS.

2015). To determine CRC after intervention (Jacobson & Truax, 1991) we calculated clinical significance using the Excel tool proposed by Zahra (2014).

Results

Means and standard deviations at each assessment were calculated and are shown in Table 1.

Group results of intervention

To assess possible changes after the intervention we conducted Wilcoxon tests and calculated effect size. Results are shown in Table 2.

We found improvements in Affection and Criticism parenting subscales in adolescents and caregivers. In caregivers, these changes were present at posttreatment, meanwhile in adolescents changes appeared 6 months after treatment. In DERS measures, adolescents showed improvements in Nonacceptance, but these changes did not remain at 6 months follow-up. Adolescents improved measures in Lack of clarity and Lack of impulse control 6 months after treatment. However, Lack of awareness and Difficulty in Goal measures in adolescents were worse after intervention. Almost all the DERS measures in caregivers showed deterioration. Only Nonacceptance improved at 6 months follow-up.

Clinical Reliable Change

Clinical Reliable Change (CRC) data is shown in percentages of improvement after intervention and 6 months follow-up. Results are

Table 2. Pre-post, pre-follow up and post-follow up comparisons for each variable. In bold when effect size $\eta^2 \geq .3$.

	T1-T2			T1-T3			T2-T3		
	z	p	η^2	z	p	η^2	z	p	η^2
<i>Adolescent measures</i>									
Affection	-1.17	.24	.26	-1.35	.18	.36	-.25	.80	.07
Criticism	-.15	8.88	.03	-.32	.75	.08	-1.44	.15	.38
Nonacceptance	-.97	.33	.22	-1.48	.14	.40	-.11	.92	.03
Difficulty in goal	-1.68	.02	.38	-1.19	.24	.32	-1.09	.28	.29
Lack of awareness	-1.38	.17	.29	-.31	.75	.08	-.51	.61	.14
Lack of clarity	-.92	.36	.21	-1.28	.2	.34	-.60	.55	.16
Lack of impulse control	-.51	.61	.11	-1.59	.11	.43	-.59	.55	.16
<i>Caregiver measures</i>									
Affection	-2.81	.005*	.60	-2.2	.28	.59	-1.51	.89	.40
Criticism	-2.93	.003*	.63	-1.05	.29	.28	-2.38	.02	.63
Nonacceptance	-.05	.96	.01	-1.58	.11	.42	-.54	.59	.41
Difficulty in goal	-1.24	.22	.28	-1.59	.11	.43	0	1	0
Lack of awareness	-1.07	.28	.23	-1.36	.17	.36	0	1	0
Lack of clarity	-1.27	.2	.27	-1.08	.28	.29	-1.13	.25	.30
Lack of impulse control	-.54	.59	.11	-1.16	.25	.31	-.14	.89	.04

Note: Affection= Affect Scale (parenting styles); Criticism= Criticism Scale (parenting styles); Nonacceptance: nonacceptance subscale of DERS; Difficulty in goal= difficulty engaging in goal-directed behavior subscale of DERS; Lack of awareness= lack of emotional awareness subscale of DERS; Lack of clarity= lack of emotional clarity subscale of DERS; Lack of impulse control= impulse control difficulties subscale of DERS; * $p < .05$; ** $p < .01$;

shown in Table 3.

The most remarkable CRC in adolescents was in Affectionate parenting style (63.64%). In caregivers' measures, CRC in parenting styles (Affectionate 90.91%; Critical 63.64%) was the most remarkable. Percentage of CRC in DERS subscales was low in adolescents and caregivers. The only variable that did not show the CRC in adolescents or caregivers was the Difficulties in engaging goal-directed behavior subscale of DERS.

Acceptability

Levels of satisfaction of the intervention were measured with the mean of the 8 items in the CSQ-8, on a scale from 1 to 4. Adolescents reported levels of satisfaction between 3 and 4 ($Mean = 3.72$; $SD = .29$), while caregivers reported scores between 3.13 and 4 ($Mean = 3.71$; $SD = .30$).

Discussion

The purpose of the intervention was to determine if a 12-session multifamily DBT-A skills group would improve parenting styles and emotion regulation levels in adolescents with BPD features and their parents. The treatment seemed to modify partially the processes tested. Parenting styles experienced an improvement in adolescents and parents; results in emotion regulation were mixed.

Adolescents

Adolescents experienced an improvement in parenting styles at 6 months follow-up. Their perception of their parent's communica-

Table 3. CRC at post treatment.

Adolescents														
Measures	Reliability	CRC	Participant											Total %
			1	2	3	4	5	6	7	8	9	10	11	
Affection	.9	T1-T2	12.75*	2.66*	-6.91	4.25*	1.06	1.59	9.03*	-9.56	3.72*	2.66*	3.19*	63.64%
		T1-T3	13.28*	6.38*	-10.1	.53	1.59	0	1.59	-1.59	1.06	5.84*	2.13*	36.36%
Criticism	.83	T1-T2	-1.08	-2.84*	5.39	-2.8*	1.29	.43	-2.8*	3.67	-.65	-1.73	1.51	27.27%
		T1-T3	-4.31*	-4.31*	6.69	-.22	.65	.86	-.43	-.22	0	-4.1*	.43	27.27%
Nonacceptance	.72	T1-T2	-.87	-.87	.65	-1.52	1.3	.87	2.83	-1.74	-.65	-2.39*	-.65	9.1%
		T1-T3	0	0	.65	-.87	-1.96	1.09	-.44	-.65	-1.74	-.87	-.44	0%
Difficulty in goal	.69	T1-T2	.74	.37	0	.74	0	.37	1.1	2.58	1.84	.37	.74	0%
		T1-T3	-.37	1.84	0	.74	.37	1.1	-.37	.74	2.21	.37	-.37	0%
Lack of awareness	.49	T1-T2	2.91	1.25	2.91	1.66	-.42	-.42	1.25	-.42	-.42	-2.5*	.83	9.1%
		T1-T3	1.66	-.42	-3.74*	.42	-.83	-.42	-.83	-.42	-1.25	0	3.33	9.1%
Lack of clarity	.71	T1-T2	-.49	-1.45	-1.94	-2.42*	1.94	-.97	3.39	.49	-1.94	-.97	-.97	9.1%
		T1-T3	-1.45	-2.42*	-3.88*	-1.45	2.42	-.97	3.39	-.49	-1.45	-1.45	-.97	18.18%
Lack of impulse control	.46	T1-T2	-.46	-1.08	-.31	.77	.31	-.31	2.15	.62	-.46	-1.69	-1.23	0%
		T1-T3	-1.23	.46	0	.46	-1.23	-.62	.46	.15	-.31	-1.23	-.31	0%
Caregivers														
Affection	.78	T1-T2	11.25*	6.75*	0	6*	12*	10.5*	12*	6.75*	11.25*	9.75*	6.75*	90.91%
		T1-T3	11.25*	6.75*	-4.5	1.5	11.25*	1.5	0	-0.75	9.75*	10.5*	6*	54.55%
Criticism	.66	T1-T2	-1.62	-.81	-.81	-3.26*	-4.07*	-3.66*	-5.7*	-2.85*	-5.7*	-4.48*	-.41	63.64%
		T1-T3	1.22	-.41	0	-.41	-1.22	-.81	-.81	1.22	-3.26*	-3.66*	.81	18.18%
Nonacceptance	.72	T1-T2	0	-2.01*	-1.2	4.82	-2.01*	4.01	4.01	-.4	-2.01*	.8	-4.01*	36.36%
		T1-T3	.4	-2.01*	0	.4	-1.61	1.2	-.4	.8	-2.41*	-2.41*	.4	27.27%
Difficulty in goal	.69	T1-T2	0	1.57	-1.18	-.79	1.97	-.79	1.57	-.79	1.18	-.79	1.57	0%
		T1-T3	.34	1.57	0	-.79	1.18	-1.18	.79	0	1.18	-1.18	1.57	0%
Lack of awareness	.49	T1-T2	.85	1.69	0	1.69	3.39	-2.96*	-1.69	1.27	3.81	-.85	0	9.1%
		T1-T3	-.42	1.69	-.42	-.42	3.39	-.42	-.85	.42	3.81	-.42	1.27	0%
Lack of clarity	.71	T1-T2	-.87	0	-1.75	.87	-.87	0	.44	.44	-.44	-1.75	0	0%
		T1-T3	-.87	0	-1.75	0	-1.31	.44	0	.44	0	.87	.44	0%
Lack of impulse control	.46	T1-T2	0	0	-1.94	1.06	-.18	1.41	-.18	-.35	-.18	1.41	-2.12*	9.1%
		T1-T3	-.35	0	-1.06	.35	.35	.71	-.18	-.71	-.18	.18	-1.94	0%

Note: Affection= Affect Scale (parenting styles); Criticism= Criticism Scale (parenting styles); Nonacceptance: nonacceptance subscale of DERS; Difficulty in goal= difficulty engaging in goal-directed behavior subscale of DERS; Lack of awareness= lack of emotional awareness subscale of DERS; Lack of clarity= lack of emotional clarity subscale of DERS; Lack of impulse control= impulse control difficulties subscale of DERS. *= Clinical Reliable Change in the variable.

tion style was warmer and less hostile 6 months after intervention. It could mean that the parent's parenting style experienced a real change that could be perceived by the adolescents, or that the adolescent's interpretation of their parent's style had changed. A perception of a warmer and less critical family environment could influence the emotional status of adolescents and prevent the establishment of a chronic emotion dysregulation (Linehan, 1993).

Improvements in emotion regulation could be a potential mediator of results of DBT (Kramer et al., 2020; Rudge et al., 2020). Adolescents showed better levels of emotional clarity, acceptance and impulse control after intervention. They could understand, accept and react to their emotions more skillfully. However, two emotional regulation processes deteriorated after intervention: difficulty in goal directed behavior and emotional awareness. Adolescents were less skillful in identifying their emotions and they interfered more in the daily life after the treatment. These results did not agree with other studies as Neasciu et al. (2010), who found that a skills training intervention was effective for decreasing emotion dysregulation. A possible explanation is that adolescents turned more critical about their emotional awareness and control after treatment. However, it could also be that the short length of the intervention could not be enough to promote changes in these processes.

Caregivers

Caregivers experienced changes in both affectionate and critical parenting styles. After intervention, they perceived their parenting as warmer, closer, more validating and less hostile and punitive. Improvements at follow-up were maintained only in affectionate parenting style. Participation of family members in skills training helped to improve parenting styles that can influence in potentially invalidating environments and promote the generalization of skills in their natural environment (Klein & Miller, 2011; Koerner, 2013).

Emotion regulation in caregivers experienced deterioration after treatment. These unexpected results are against previous literature, which demonstrate that the inclusion of parents in skills groups might improve their own emotion regulation skills (Berk et al., 2020; Woodberry & Popenoe, 2008). Research with families of BPD adults showed similar benefits (Ekdahl et al., 2014; Hoffman et al., 1999; Rajalin et al., 2009). A possible explanation of the results is that caregivers become more aware about their regulation difficulties and evaluated their responses more critically. However, it is possible that the intervention did not last enough to improve emotion regulation skills in parents. In our study, parents only improved in their ability to accept emotional responses. After intervention, parents could be more compassionate

with their emotions; even they perceived a worse ability to cope with them. Zalewski et al. (2018) proposed a relation between emotion regulation and parenting. They expected that a better regulation of emotions in parents would improve their parenting skills. However, our results didn't confirm this idea. Parents in our study improve their parenting styles even they deteriorate their emotion regulation skills. These results encourage researchers to investigate other mechanisms that may be involved in parenting apart from emotion regulation.

Treatment acceptability

Caregivers and adolescents showed considerable levels of satisfaction with the intervention. Levels of acceptance reported by participants were remarkable and treatment retention was high. DBT-A skills group as a stand-alone intervention was accepted between participants as it occurs in a wide range of diagnoses and settings (Hollenbaugh & Lenz, 2018; Valentine et al., 2015). These results are in line with other studies that also found that DBT-A was well-accepted in adolescents and caregivers, based on patient satisfaction and treatment completion (Groves et al., 2012; Tørmoen et al., 2016). Other studies have demonstrated the long-term duration of short DBT interventions in adolescents (Fleischhaker et al., 2011; Mehlum et al., 2016; Mehlum et al., 2019) and it could improve treatment adherence. Participation of family members could be useful to reinforce treatment compliance (MacPherson et al., 2013).

Limitations

This was a pilot intervention and its conclusions must be taken carefully. The total sample of the intervention could be insufficient to extend conclusions to the adolescent population with BPD features. The reduced sample size could also interfere in the significance of the group results of the intervention. Gender of sample was majority female, as in most of studies with adolescents with BPD (McCauley et al., 2018; Mehlum et al., 2014; Santamarina-Perez et al., 2020).

Another limitation was the lack of a control group. Results of the intervention could not be compared with treatment as usual, and confounding variables could be influencing the results. It means that we cannot conclude specific effectiveness of DBT as other non-controlled factors could be responsible for the changes found. In fact, we cannot guarantee that participation in the DBT skills group is the cause of the improvements experienced by the participants.

Clinical implications and future directions

This study evaluates the effectiveness and acceptability of a DBT multifamily group intervention in a Spanish sample including caregivers of adolescents with BPD features. The study results partially support the utility of DBT skills multifamily group for improving mechanisms related to BPD features in adolescents as a stand-alone intervention. Recent research has proposed the interest in understanding the mediational processes of DBT outcomes and has highlighted the role of emotion regulation (Kramer et al., 2020; Rudge et al., 2020). An intensive intervention of 12-week DBT skills group seems to be enough to modify parenting styles related to BPD features in adolescents. DBT skills group is an attractive option to clinicians because it could be pragmatic in community settings, cost-effective and accepted by participants. The relevance of this early intervention based on DBT skills group is that it can have long-term consequences on some processes that could help to prevent the establishment of BPD.

Future research should replicate the study in a larger sample to gather more valid outcome data. Measures of clinical symptoms such as self-harm or BPD features could clarify if changes in these mechanisms are related to improvements in symptoms. Future studies might compare DBT skills group with a control group to understand the specific influence of DBT in improvements after treatment. Longitudinal studies might determine if short DBT skills group interventions in adolescence prevent the development of BPD in adulthood. Future research should study the transactional effects between emotion regulation in parents and adolescents, testing the relationships between emotion regulation and parenting, and if improvements in emotion regulation in parents could influence in emotion regulation skills in adolescents.

Disclosure statement

The authors declare that they have no competing interests.

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