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Treatment outcomes of dialectical behaviour therapy for adolescents presenting with characteristics of borderline personality disorder: A naturalistic study

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Abstract

This naturalistic study investigated treatment outcomes of Dutch dialectical behaviour therapy for adolescents (DDBT-A) in a sample of 93 adolescents (95.4% female, mean age = 16.20 years) presenting with borderline characteristics, treated at Levvel (a Dutch mental health institution). From baseline to posttreatment significant decreases were found on severity of the borderline symptoms, passive coping style, internalizing and externalizing behavioural problems, and a significant increase on self-worth. Overall, three different therapy formats (outpatient, part-time therapy, and day therapy) showed similar improvements at posttreatment. Concluding, DDBT-A seems promising in reducing borderline related symptoms for adolescents.

Keywords

Borderline personality disorder, dialectical behaviour therapy, adolescents

Over the past decades, identification and diagnosing of Borderline Personality Disorder (BPD) in adolescents has gained increasing attention (Laurenssen, Hutsebaut, Feenstra, Van Busschbauch, & Luyten, 2013; Winsper et al., 2016). Adolescents presenting with BPD show substantial impairments in personal and interpersonal functioning, characterized by a pattern of instability in personal

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relations, extreme and unstable emotions, poor self-image and impulsivity (American Psychiatric Association, 2013). Moreover, adolescents presenting with BPD show increased levels of suicidal behaviour and non-suicidal self-injury, behavioural problems, negative behavioural and cognitive coping styles (e.g., smoking/drinking to avoid problems or dysfunctional cognitions), and less self-worth compared to healthy controls (Bungert et al., 2015; Homan, Sim, Fargo, & Twohig, 2017; Knafo et al., 2015; Winsper, Hall, Strauss, & Wolke, 2017). This can, in turn lead to many negative developmental outcomes and difficulties in everyday life such as impairments in social- and academic functioning, problems with partner involvement and conflicts during adolescence and adulthood (Kaess, Brunner, & Chanen, 2014; Koster, De Maat, Schreur, & Van Aken, 2018).

Few studies have examined the prevalence of BPD in adolescents. The limited data available suggests that around 0.9–3.2% of adolescents present with BPD (Kaess et al., 2014; Sharp & Michonski, 2019). More precise, cumulative prevalence rates show that by the age of 14 years 0.9% of the youngsters meets the criteria for BPD, but this rises to 1.4% by the age of 16, and to 3.2% by the age of 22 years (Johnson, Cohen, Kasen, Skodol, & Oldham, 2008). Furthermore, a relatively high prevalence is found for adolescents in mental health settings, ranging from around 11% in outpatient settings (Sharp & Michonski, 2019) to 50% in inpatient settings (Kaess et al., 2014). Considering these prevalence rates one should take into account, that young people in crisis appear to meet criteria for BPD because of the behavioural component, while at outpatient follow-up this may dissipate and criteria may no longer be met. But even so, the prevalence rates mentioned above and maladaptive long-term outcomes indicate that effective treatment for adolescents is needed.

Over the past years, studies have shown that treatment of BPD for adults is feasible and can improve everyday functioning as well as decrease borderline related symptoms (Fonagy, Luyten, & Bateman, 2017; Schuppert, Emmelkamp, & Nauta, 2017). Moreover, it is found that when effective evidence-based treatments are offered, borderline traits can decrease and normalize throughout the course of development (Chanen, 2015; Choi-Kain, Albert, & Gunderson, 2016). Especially in adolescence this is crucial since when left untreated, problems may persist into adulthood. Unfortunately, for adolescents with BPD very little research has been conducted into the effectiveness of treatment outcomes.

At present, in the Netherlands, dialectial behaviour therapy (DBT) is recognized as one of the treatments of first choice for adults with BPD (National Steering Group for the Development of Multidisciplinary Standards in the Mental Health Sector, 2008). The Dutch adolescent version (DDBT-A) is currently used in many child- and adolescent mental health centres in the Netherlands. Until now DDBT-A is only acknowledged as "well substantiated" by the Netherlands Youth Institute since little research has been done into its treatment outcomes. Nevertheless, a small pilot-study (N = 17, 12–18 years) into the DDBT-A has previously showed promising results in decreasing borderline related problems, especially non-suicidal self-injury, depression and self-worth (De Bruin, Koudstaal, & Muller, 2013a). Further, a quasi-experimental study into the international DBT-A by Rathus and Miller (2002) showed that American adolescents in the DBT-A group (n = 29) had significantly fewer psychiatric hospitalizations during treatment, and a significantly higher rate of treatment completion than the group of adolescents in the treatment as usual group (supportive-psychodynamic individual therapy plus weekly family therapy; n = 82). At post-treatment there were significant reductions in suicidal ideation, general psychiatric symptoms, and symptoms of borderline personality in the DBT-A group. Despite the DBT-A group having more severe pre-treatment symptomatology than the treatment as usual (TAU) group, during treatment there were no significant differences in the number of suicide attempts. In another pilot study (N = 12, German adolescents, aged 13–19 years) into an international version of DBT-A, a stable reduction up to 6 month follow-up after treatment was found in suicidal and non-suicidal self-

injurious behaviour (Fleischhaker et al., 2011). However, these results described above were preliminary since these previous studies did not include a randomized control group and sample sizes were relatively small.

A larger-scale randomized controlled trial (RCT) was performed in Norwegian adolescents, aged 12–18 years, including DBT- A ($N = 77$) and an active control group ($n = 38$), which consisted of 19 weeks of standard care. In these youngsters with repetitive self-harming behaviour, DBT-A was more effective in reducing self-harm, suicidal ideation, and depression than the active control group (Mehlum et al., 2014). In addition, a RCT demonstrated the efficacy of DBT for reducing suicide attempts, non-suicidal self-injury and self-harm in a sample of $N = 173$ American adolescents (aged 11–18 years) compared to individual and group supportive therapy (McCauley et al., 2018). In sum, previous study results suggest that DBT-A is a promising treatment for decreasing borderline and -related symptoms. However, a study into DBT-A outcomes using a larger naturalistic sample of Dutch adolescents was lacking. This formed the rationale for the present study.

The first aim of this naturalistic study was to investigate treatment outcomes of the Dutch DBT-A on borderline related symptoms (i.e., severity of the borderline problems, coping styles, self-worth, and emotional- and behavioural problems). The second aim was to examine possible differences in treatment outcomes for three therapy formats: outpatient therapy, day therapy, and part-time therapy.

Method

Participants

Adolescents between 13 and 21 years participated in DDBT-A at Levvel (previously *de Bascule*) in Amsterdam when meeting at least three BPD criteria based on DSM-IV for a minimum of 1 year (Noorloos, 2012). Further, a score of three or higher on the McLean Screening Instrument for Borderline Personality Disorder was an indication that an adolescent could participate in DDBT-A. A minimum of three symptoms on the DSM-IV or a score of three or higher on the McLean does not yield an official diagnosis of BPD, but did reflect substantial impairments in everyday functioning due to borderline symptoms. Participants were referred to Levvel internally, by a general practitioner or by other mental health institutions. If participants refused to take part in research, they were still allowed to participate in DDBT-A without any consequences for their treatment. Their data were not used in this study. During the phase of exploring the indication for DDBT-A treatment, the presence and previous treatments of comorbid axis I disorders were investigated (e.g., depression, conduct disorder, oppositional defiant disorder). If for a present axis 1 disorder no previous treatment had been offered according to guidelines and this could account for (at least) part of current symptoms leading to DDBT-A referral, it was advised to first treat axis 1 disorder(s) before considering DDBT-A's intensive and prolonged treatment trajectory. This naturalistic study took place in the busy daily clinical practice. Therefore, systematic data showing the amount of participants that were advised to treat the axis 1 disorder first is lacking. All adolescents had to speak Dutch and had to have an (estimated) IQ higher than 85. Information on IQ-scores was in most cases retrieved from the referring organisation or derived from the school level of the adolescents.

Outcome measures

Outcomes measures were assessed using instruments with adequate psychometric properties (reliability and validity). These measures were assessed by fully licensed psychologists with experience in the DBT field and with a certificate in psychodiagnostics required in the Netherlands.

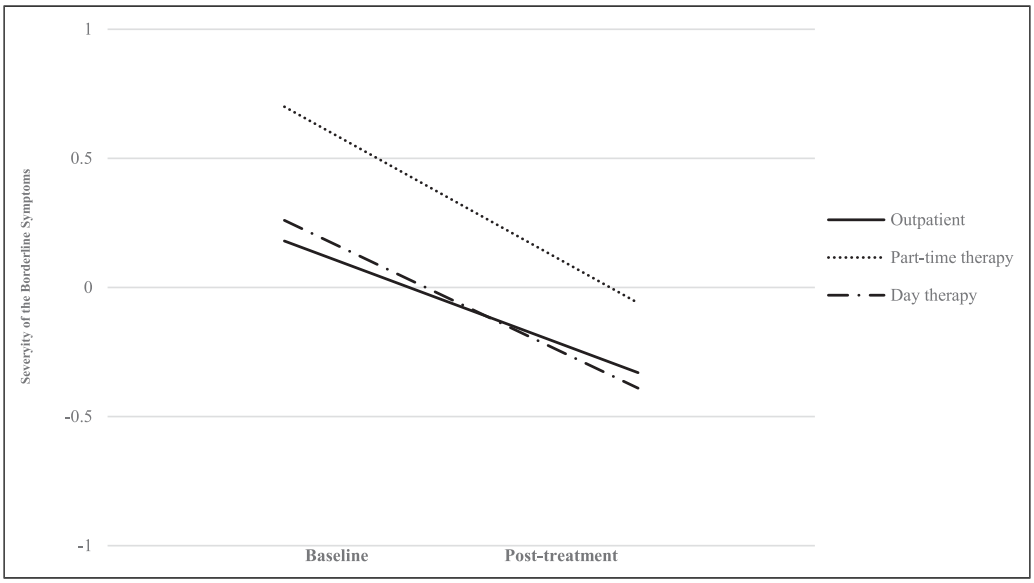

Figure 1. Estimated marginal means for severity of the borderline symptoms at baseline and post-treatment for patients in outpatient therapy, part-time therapy, and day therapy.

The procedure was to administer the questionnaires between 4 to 2 weeks before starting DDBT. Post-treatment, the procedure was to administer the questionnaires within 2 weeks after ending the therapy.

Severity of borderline symptoms was measured by the Dutch version of the Borderline Personality Disorder Severity Index adolescent version (BPDSI-IV-ado; Schuppert, Nauta, & Giesen-Bloo, 2007) covering the nine DSM-IV BPD scales. The BPDSI-ado was performed by a therapist of the DDBT-A team who also rated the answers of the patients.

Coping styles were assessed with the Utrecht Coping List (UCL; Schreurs, Van de Willige, Brosschot, Tellegen, & Graus, 1993). This study used three subscales: passive coping (e.g., isolating yourself or ruminating about the past), expression of emotions/anger and alleviation seeking behaviour (called palliative reacting in UCL, encompassing both functional behaviours like seeking distraction or relaxing, and more disfunctional ones like using alcohol or drugs).

Self-worth The subscale global self-worth (5 items) of the Dutch version of Self Perception Profile for Adolescents (SPPA; Treffers et al., 2002) was used to assess the adolescents self-worth.

Emotional- and behavioural problems were assessed using the Dutch version of the Youth Self Report (YSR; Verhulst & Van Der Ende, 2002). This study used the two broad dimensions: internalising and externalising.

Intervention

DDBT-A. DBT was originally developed by Linehan (1993a, 1993b) for chronic suicidal women with BPD and later adapted into DBT-A for suicidal adolescents presenting with borderline features by Miller and Rathus. Parallel to the development of DBT-A by Miller and Rathus, independently a Dutch version of DBT-A (*Surfen op Emoties)* was developed in collaboration with two academic centres for child- and adolescent psychiatry in the Netherlands (i.e., Levvel in Amsterdam and Curium

in Oegstgeest; De Bruin et al., 2013a; De Bruin, Koudstaal, & Muller, 2013b). This Dutch DBT-A was developed for adolescents (12–21 years old), consists of a 6 months program and aims to change maladaptive BPD behaviours and improve emotion-regulation, corresponding to the DBT aims. DBT consists of four standard treatment modalities (individual therapy, group skill therapy, consultation by phone, and consultation team meetings) to which DDBT-A had added a modality for working with the family and the broader network of the adolescent. The skills training is protocolled, the individual therapy and crisis consultation are principle-based and structured (Miller, Koerner & Ranter, 1998). The whole DDBT-A program takes between 16 to 24 weeks (for varying intensity of care).

At Levvel, all patients were expected to finish a minimum of 6 months therapy. If symptoms persisted, DDBT-A could be extended with an additional 3 or 6 months in consensus with both the client and the DDBT-A therapist.

Therapy format. DDBT-A was offered in three different treatment formats, depending on the client's functioning as reflected in severity of the problems and factors such as daily activities, school functioning, traumatic life-events, substance abuse. The three formats were:

- Outpatient therapy (i.e., the basic five modalities during a minimum of two session of an hour and a half every week). Participants were referred to outpatient therapy if they were still able to follow a regular school program.
- Part-time therapy (i.e., a program of three weekly afternoon sessions of 4 hours with the basic five modalities to which group therapy modules were added that supported or practiced the DDBT-A skills, like mindfulness or behavioural analyses in which personal therapy goals were discussed and worked through together with the adolescent in weekly reachable steps. The extra modules were provided in the group therapy sessions and were added due to the fact that these participants showed more impairments in their everyday functioning and need more support. Participants were referred to part-time therapy if they showed significant impairments in their everyday functioning (e.g., being able to partly follow their regular school program due to their symptoms).
- Day therapy (i.e., a program of 5 days a week in which the part-time program was supplemented with education at a school connected to Levvel). Participants were referred to day therapy if they showed major impairments in their everyday functioning due to their symptoms (e.g., not being able to follow a regular school program).

Further, in consultation with a child and adolescent psychiatrist or medical doctor the therapy could also be supplemented with medication if necessary. There is no data on medication use for the different therapy formats. The referral to one of the three therapy formats was executed by the clinician, in consensus with the adolescents and their parents.

Treatment quality. All therapists completed a basic training of a minimum of 4 days in (D)DBT-A, ensuring their knowledge of the therapy. The majority of the specialised DBT-A therapists underwent an intensive DBT-A training of 10 days. To ensure treatment quality (i.e., DDBT-A was provided conform the protocol), therapists were asked to discuss their sessions, and discuss potential problems with clients during weekly therapist consultation team meetings. In addition, the therapy of the participants was discussed in two-weekly *supervision* sessions with the broader team[1]. In these supervision sessions the therapists were asked to bring video- or audio material do discuss the therapy progress of DDBT-A and possible difficulties.

Covariates

Data were gathered in busy daily clinical practice. Therefore, only for few patients reliable complete demographic information (e.g., education level, ethnic background, and SES) was available. Since the sample consisted predominantly of females, gender could not be taken into account as a moderator in this naturalistic study. Exploratory analyses do show that the outcomes were similar when males were excluded from the sample. Further, the three groups differed significantly in age at baseline. Considering the above, age was taken into account as covariate in the analyses.

Procedure

Patients were recruited by Levvel from January 2009 till February 2017. This centre offered specialized (psychiatric) treatment to these adolescents and their families. Adolescents who were referred for DDBT-A were invited with their parent(s) for a first exploratory conversation in which information and practical issues regarding DDBT-A were discussed. When there was an indication for treatment and the client was capable and willing to commit to DDBT-A, a commitment phase started. In the commitment phase, patients and therapists composed therapeutic goals, discussed motivation and possible pitfalls (e.g., showing up late, lying). Moreover, suicidal behaviour and non-suicidal self-injury of the adolescent was analysed and an action plan was composed for acting more adequately in crisis situations. Simultaneously, a family psychotherapist performed a commitment interview with parents/caregivers regarding the treatment of their children and their motivation to change and support their children more effectively. On average, approximately five sessions were devoted to commitment building, prior to starting DDBT-A. Treatment was started after the DDBT-A therapist, adolescent and parents reached an agreement about the therapeutic goals and therapeutic method.

At the start of therapy, patients and their caregivers were asked to fill out a number of questionnaires and patients were asked to participate in a semi-structured interview regarding the severity of borderline symptoms, emotional- and behavioural problems, coping styles, and reflection on their competences (Noorloos, 2012). These assessments were always performed by a therapist of the DDBT-A treatment team and were also performed post-treatment.

In this study, written informed consent was obtained from participants and their parents/legal guardians (if children were younger than 16 years). The Medical Ethics Committee of the Amsterdam UMC was fully informed about this study (W18_181).

Data analysis

The data were analysed using the Statistical Package for the Social Sciences, version 23.0 (IBM Corp. Released, 2015). Multilevel modelling was used treating the repeated observations as nested within the patients. In the analyses, age of the patient was standardized and taken into account as a covariate. Moreover, treatment outcomes were standardized and parameter estimates (Betas) can therefore be interpreted as effect sizes (Cohen, 1988).

Differences between groups and changes during treatment (from baseline to post-treatment) were tested and patients in outpatient therapy were treated as a reference group to which the other patients were compared. Direct effects and two-way interactions of assessment moment, and therapy format were studied, whilst controlling for age of the participants. Analyses of the treatment outcomes were on an intention-to-treat basis.

Results

The target sample consisted of 153 Dutch adolescents (95.4% female) between 13 and 21 years old ($M = 16.20$, $SD = 1.28$). Mean age of patients in outpatient therapy was 16.27 years, 16.50 years in part-time therapy, and 15.52 years in day therapy. Patients in day therapy were significantly younger than patients in part-time therapy. Table 1 shows descriptive statistics and results. Of the 153 patients eligible for DDBT-A, 13 patients dropped out in the commitment phase and 26 patients did not fill out the questionnaires after the commitment phase due to unknown reasons. A group of 21 patients decided to extend their DDBT-A therapy based on the severity and persistence of their symptoms. Since extended DDBT-A therapy was not the scope of this study, the data of this group of patients were not included in the analyses. Since we had a relatively low completion rate at the 6 month follow up (<30%), we decided to not include the data in the analyses. This led to a final sample of 93 patients that filled out at least one questionnaire at baseline. Not all patients completed questionnaires at the different moments. The results of the multilevel analyses are given in Table 2.

Severity of borderline symptoms

A significant main effect was found for time, indicating a significant decrease in severity of borderline symptoms from baseline to post-treatment ($\beta = -0.52$, $p < .001$; Figure 1), whilst controlling for age. At the start of therapy, patients in part-time therapy reported significantly more borderline related symptoms compared to outpatient therapy ($\beta = 0.49$, $p = .04$). No interaction effects were found.

Exploratory analyses regarding the subscales of the BDSPI-ado show that a significant decrease was found for all therapy formats from pre-to post-treatment for (interpersonal) problems, identity disturbance, impulsivity, (para)suicidal behaviour, affective instability, emptiness, and anger outbursts. Only on the subscales abandonment and dissociation no significant differences were found post-treatment. No interaction effects were found

Coping styles

Passive coping style. A significant main effect was found for time, indicating a significant decrease in passive coping from baseline to post-treatment ($\beta = -0.52$, $p < .001$) for DDBT-A, whilst controlling for age. No interaction effects were found.

Expression of emotions/anger. No significant main effect over time was found. A significant interaction effect was found for post-treatment and part-time therapy ($\beta = -0.63$ $p = .03$) indicating that patients in part-time therapy reported significantly less expressions of emotion/anger post-treatment compared to patients in outpatient therapy.

Alleviation seeking behaviour. No significant main effect over time was found for DDBT-A. No interaction effects between therapy format and time were found for alleviation seeking behaviour.

Self-worth

A significant main effect was found for time, indicating a significant increase in self-worth from baseline to post-treatment ($\beta = 0.62$, $p = <.001$) for DDBT-A, whilst controlling for age. No interaction effects were found.

Table 1. Descriptive statistics of all dependent variables and the covariate.

Variable	Final sample *N* = 93 (%)	*M* (*SD*)	Range	
			Minimum	Maximum
Age	93	16.21 (1.28)	13.00	21.00
Gender				
Male	4 (4.3%)			
Female	89 (95.7%)			
Form of therapy				
Outpatient therapy	53 (57%)			
Part-time therapy	18 (19.4%)			
Day therapy	22 (23.6%)			
Severity of borderline symptoms				
Baseline	89	28.48 (11.96)	4.29	53.85
Post-treatment	64	19.79 (12.41)	0.13	55.59
Passive coping				
Baseline	93	19.18 (4.28)	9.00	27.00
Post-treatment	66	16.09 (4.77)	8.00	25.00
Expressions of emotions/anger				
Baseline	93	7.63 (2.25)	3.00	12.00
Post-treatment	66	6.72 (1.87)	3.00	11.00
Alleviation seeking behaviour				
Baseline	93	20.08 (3.84)	10.00	31.00
Post-treatment	66	21.18 (5.42)	13.00	49.00
Self-worth				
Baseline	90	8.46 (4.02)	5.00	19.00
Post-treatment	69	10.60 (4.54)	5.00	20.00
Internalizing behavioural problems				
Baseline	97	93.51 (13.25)	27.00	100.00
Post-treatment	65	84.98 (22.32)	1.00	100.00
Externalizing behavioural problems				
Baseline	97	81.94 (21.76)	10.00	100.00
Post-treatment	65	67.83 (24.36)	6.00	99.00

Note. *M* = Mean; *SD* = Standard Deviation. Since not all patients completed the questionnaires, number of participants can vary for the different questionnaires.

Emotional- and behavioural problems

Internalizing problems. A significant main effect was found for time, indicating a significant decrease from baseline to post-treatment ($\beta = -0.19$, $p = .01$) for DDBT-A, whilst controlling for age. No interaction effects were found.

Externalizing problems. A significant main effect was found for time, indicating a significant decrease from baseline to post-treatment ($\beta = -0.55, p < .001$) for DDBT-A, whilst controlling for age. No interaction effects were found.

Table 2. Parameter estimates for the final model including measurements at baseline and post-treatment; treatment form (outpatient vs. part-time therapy vs. day therapy); age; and two-way interactions for all variables.

	BPDSI			PASS			EXPR			ASB		
	β	*SE*	*P*	*β*	*SE*	*P*	*β*	*SE*	*p*	*β*	*SE*	*p*
Main effects												
Post-treatment (vs. baseline)	−0.52	0.14	**< .001****	−0.60	0.15	**< .001****	−0.29	0.15	.056	0.21	0.19	.26
Part-time therapy (vs. outpatient)	0.49	0.23	**.04***	0.21	0.24	.38	−0.002	0.24	.99	0.09	0.25	.74
Day therapy (vs. outpatient)	0.15	0.27	.58	−0.17	0.26	.52	−0.21	0.27	.44	−0.42	0.28	.14
Age	0.13	.09	.13	0.14	0.09	.12	0.07	0.09	.46	0.03	0.09	.74
Interaction effects												
Post-treatment x part-time therapy	−0.22	0.28	.43	0.07	0.31	.82	−0.63	0.32	**.05***	0.04	0.39	.92
Post-treatment x day therapy	−0.11	0.28	.69	−0.14	0.33	.67	0.18	0.33	.62	0.07	0.42	.87

	SW			INT			EXT		
	β	*SE*	P	*β*	*SE*	*p*	*β*	*SE*	*p*
Main effects									
Post-treatment (vs. baseline)	0.62	0.13	**< .001****	−0.19	0.07	**.005***	−0.55	0.13	**<.001****
Part-time therapy (vs. outpatient)	−0.16	0.24	.51	0.11	0.29	.69	−0.03	0.23	.87
Day therapy (vs. outpatient)	−0.25	0.27	.35	0.64	0.35	.07	−0.15	0.27	.59
Age	−0.16	0.09	.09	−0.09	0.12	.43	0.03	0.08	.78
Interaction effects									
Post-treatment x part-time therapy	−0.53	0.28	.06	0.08	0.13	.56	0.17	0.27	.53
Post-treatment x day therapy	−0.19	0.28	.49	−0.02	0.14	.87	0.29	0.29	.32

Note. BPDSI = severity of borderline symptoms; PASS = passive coping style; EXPR = expressions of emotions/anger; ASB = alleviation seeking behaviour; SW = self-worth; INT = internalizing behavioural problems; EXT = externalizing behavioural problems; β = standardized regression coefficient; SE = standard error; *p* = *p*-value; *$p < .05$; **$p < .001$.

Discussion

The first aim of this naturalistic study was to investigate outcomes of DDBT-A in a sample of 93 Dutch adolescents. Important to note is that our study's results should be interpreted with caution, since no control condition was used and no sufficient information was available on wider demographic characteristics. Overall, consistent with our hypothesis, significant decreases were found for almost all outcome measures from pre-to post-treatment, whilst controlling for age of the participants. From pre-to post-treatment, a significant decrease was found in the primary outcome (severity of borderline symptoms), more specifically for the subscales interpersonal problems, identity disturbance, impulsivity, (para)suicidal behaviour, affective instability, emptiness, and anger-outburst. Likewise, significant pre-to post-decreases were found for the secondary outcomes

passive coping, internalizing and externalizing problems, and a significant increase was found in self-worth. No significant changes were found for alleviation seeking behaviour or expressions of emotions/anger. Our findings could be explained by the fact that alleviation seeking behaviour is a complex coping style, comprising both harming behaviours (e.g., smoking or drinking to deal with problems) as well as more adapted behaviours (e.g., relaxing to deal with problems). These behaviours combined may overall have resulted in no significant changes. Regarding expression of emotions/anger, results were almost significant ($p = 0.056$). This could indicate that these adolescents need more training to ensure the positive effects on their expression of emotions as well. In our opinion, booster sessions focussing on generalization could be recommended to help the adolescents further incorporate their learned skills in everyday life. Further, the subscale consisted of only three items, had the lowest internal consistency, and was a self-report scale. It could be that these adolescents found it harder to reflect on their own emotions, and were not able to express themselves fully in three items with regards to their expression of emotions. Future studies should include a broader view (e.g., more items, parental views) on the expression of emotion to investigate DDBT-A's outcomes further.

A second aim of this study was to examine the possible differences in outcomes between the three therapy formats that differed in intensity. At *baseline* it was found that patients in part-time therapy reported significantly more borderline symptoms compared to patients in outpatient therapy or day therapy. This difference disappeared post-treatment. The groups did not differ significantly on the secondary outcome measures. At *post-treatment* it was found that patients in part-time therapy reported significantly less expressions of emotions/anger than patients in outpatient therapy. Thus, for most borderline and -related symptoms a similar decrease was found, irrespective of therapy format.

The current study has several strengths: the relatively large sample size, delivery of the therapy in a natural clinical setting, and use of multiple outcomes. There are also limitations to this study. Firstly, we did not have enough reliable data on the broader treatment package (e.g., medication use, schooling, additional therapies), apart from the DDBT-A. Possibly, youth with more severe problems received next to DDBT-A, a broader treatment package. Their gains may therefore be partly attributable to extra interventions and they may have made less gains to DDBT-A per se, than the outpatient group. Since we could not control for possible additional therapeutic interventions, we cannot firmly conclude that DDBT-A accounted for the treatment improvement in any condition and results should be interpreted with considerable caution. Secondly, despite the relatively large sample size, the sample was still too small to ensure sufficient power (Snijders, 2005). Thirdly, this was a single-centre study, limiting generalizability of outcomes. Fourthly, since only few parental data were available, the outcomes were based on clients answers and therapists' ratings thereof. Possibly, adding parental views would have yielded different outcomes as to changes in borderline and -related symptoms. Fifthly, the ratings were conducted by therapists that were not blinded to the treatment conditions. This could have induced a reporting bias. Finally, our sample consisted predominantly of females, limiting our ability to study gender differences In spite of these limitations, the present findings are encouraging for the use of DDBT-A in the Netherlands and confirm previous positive outcomes (De Bruin et al., 2013a; Fleischhaker et al., 2011; McCauley et al., 2018; Mehlum et al., 2014).

Based on the above, recommendations for future research can be made. Future studies should use large-scale, sufficiently powered RCT trials to investigate effects of DDBT-A. These studies are necessary to confirm our findings that DDBT-A is effective in reducing symptoms, improve coping styles and self-worth and -most important-enhancing quality of life of our clients and their families. Moreover, future studies should incorporate long-term follow-up data to investigate whether the

positive treatment outcomes persist, in order to gain insight whether DDBT-A helps the adolescents and their families in their long-term functioning. Further, future studies should investigate other moderators for DDBT-A treatment success (e.g., gender, comorbidity (traumatic) life-events, comorbidity such as PTSD, substance use) to help determine for whom this treatment works best. It should also be investigated which active modules of DDBT-A are effective ingredients in reducing the borderline and -related symptoms. Future studies should investigate whether prolonged therapy or booster sessions would sustain treatment outcomes for patients. Also, in future research a research assistant blinded to treatment conditions should perform the ratings of interviews.

In conclusion, this is the first study providing evidence for treatment outcomes of DDBT-A (*Surfen op Emoties)* in the Netherlands for adolescents presenting with borderline and -related symptoms. Results should be interpreted with great caution, also considering possible differences on other features as social instability and trauma. Nevertheless, the results of this study give hope for the adolescents and families that present with borderline and -related symptoms and show that DDBT-A can offer these adolescents and their families the opportunity 'to build a life worth living'.

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Declaration of conflicting interests

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Notes

1. The third and fourth author received supervision of the head of DBT Netherlands for a longer period of time.

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