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Mentalization-based treatment in groups for adolescents with borderline personality disorder: a randomized controlled trial

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Background: Borderline personality disorder (BPD) typically onsets in adolescence and predicts later functional disability in adulthood. Highly structured evidence-based psychotherapeutic programs, including mentalization-based treatment (MBT), are first choice treatment. The efficacy of MBT for BPD has mainly been tested with adults, and no RCT has examined the effectiveness of MBT in groups (MBT-G) for adolescent BPD. **Method:** A total of 112 adolescents (111 females) with BPD (106) or BPD symptoms ≥4 DSM-5 criteria (5) referred to child and adolescent psychiatric outpatient clinics were randomized to a 1-year MBT-G, consisting of three introductory, psychoeducative sessions, 37 weekly group sessions, five individual case formulation sessions, and six group sessions for caregivers, or treatment as usual (TAU) with at least 12 monthly individual sessions. The primary outcome was the score on the borderline personality features scale for children (BPFS-C); secondary outcomes included self-harm, depression, externalizing and internalizing symptoms (all self-report), caregiver reports, social functioning, and borderline symptoms rated by blinded clinicians. Outcome assessments were made at baseline, after 10, 20, and 30 weeks, and at end of treatment (EOT). The ClinicalTrials.gov identifier is NCT02068326. **Results:** At EOT, the primary outcome was 71.3 (*SD* = 15.0) in the MBT-G group and 71.3 (*SD* = 15.2) in the TAU group (adjusted mean difference 0.4 BPFS-C units in favor of MBT-G, 95% confidence interval −6.3 to 7.1, p = .91). No significant group differences were found in the secondary outcomes. 29% in both groups remitted. 29% of the MBT group completed less than half of the sessions compared with 7% of the control group. **Conclusions:** There is no indication for superiority of either therapy method. The low remission rate points to the importance of continued research into early intervention. Specifically, retention problems need to be addressed. **Keywords:** Mentalization-based treatment; adolescence; borderline personality disorder; group psychotherapy; mentalizing.

Background

Borderline personality disorder (BPD) is a severe mental disorder defined by symptoms such as marked affective instability, behavioral impulsivity, elevated aggression, difficulties in interpersonal relationships, and self-harm (APA, 2013). BPD is associated with considerably psychiatric comorbidity and persistent functional disability reflected in incomplete education, high unemployment, an excessive caregiver burden, and elevated social costs (Chanen et al., 2017). The prevalence of BPD in adolescents is similar to that found in adult populations: 1–3% in the general population, between 11–22% in outpatients, and up to 33–49% in inpatient settings (Sharp & Wall, 2018). BPD typically onsets in adolescence, and genetic, neurobiological, and psychosocial factors are thought to be central to its etiology (Gunderson, Herpertz, Skodol, Torgersen, & Zanarini, 2018; Thomsen, Ruocco, Carcone, Mathiesen, & Simonsen, 2017; Winsper et al., 2016). The reliability and validity of the BPD diagnosis in adolescence resemble that of adults, and BPD symptoms in childhood or adolescence are predictive of later functional disability (Grant et al., 2008; Sharp, 2017; Winsper et al., 2015).

The DSM-5 (APA, 2013) and national treatment guidelines in both the U.K. and Australia (Sharp & Wall, 2018) legitimize diagnosing BPD prior to age 18, and the efficacy of several psychotherapeutic programs targeting borderline features in adolescents has been tested. Thus, cognitive analytic therapy (CAT) (Chanen et al., 2008), emotion regulation training (ERT) (Schuppert et al., 2012), dialectical behavior therapy for adolescents (DBT-A) (Mehlum et al., 2014, 2016) and individual mentalization-based treatment for adolescents (MBT-A) (Rossouw & Fonagy, 2012) have been compared to control interventions, that is, good clinical care, treatment as usual or enhanced usual care. DBT-A outperformed the control intervention, while ERT and CAT were comparable to TAU in effectiveness, although patients receiving CAT displayed faster

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symptom reduction compared with patients in the control group. For adults, corresponding specialist BPD treatments have been compared head to head, including structured TAU, and proved equally effective, leading to the conclusion that highly structured evidence-based psychotherapeutic programs are first choice treatment for BPD (Stoffers-Winterling et al., 2012).

The present study focuses on MBT, which in the original version was designed to treat BPD in adults with a combination of group psychotherapy and individual sessions with the latter delivered mainly with the goal of preventing dropout from group therapy (Bateman & Fonagy, 2004). The concept 'mentalization' is defined as a developmentally acquired capacity to understand and interpret one's own and others' behavior as an expression of mental states such as feelings, thoughts, fantasies, beliefs, and desires (Fonagy, Gergely, Jurist, & Target, 2002). MBT is rooted in psychodynamic and attachment theory and neurobiology. According to the theory underlying MBT, the core pathology underpinning BPD is a vulnerability to shift to nonmentalizing modes in states of emotional arousal, and MBT offers therapeutic interventions to help the patient regain adequate mentalizing and facilitate proper affect regulation (Bateman & Fonagy, 2004). Two recent reviews concluded that although more high-quality studies are needed, the current evidence indicates that MBT is a potentially effective treatment for BPD in adults (Malda-Castillo, Browne, & Perez-Algorta, 2018; Vogt & Norman, 2018). With respect to early intervention, mentalization-based approaches have been conducted for both adolescents with and without BPD features (Laurenssen et al., 2014; Rossouw & Fonagy, 2012). In an uncontrolled study with 14 patients with BPD features, Laurenssen et al. (2014) delivered an inpatient MBT program comprising four weekly group sessions and weekly individual psychotherapy. Significant reductions in general psycholopathology, personality dysfunctioning, and an enhanced quality of life were reported. In an RCT, Rossouw and Fonagy (2012) compared individual MBT for self-harm and depression to TAU in an adolescent sample of which 73% also met full BPD criteria. Results showed that MBT was more effective than TAU in treating self-harm, depression, and borderline features.

Beyond the need for further replication of MBT-A, there also remains the question of the efficacy of less costly (lower dosage) approaches to treatment. In this regard, the group format has potential advantages over individual treatment in treating adolescent BPD. In adolescence, the interdependence between peers increases (Nickerson & Nagle, 2005), and a hallmark of BPD is interpersonal difficulties (APA, 2013). The group setting offers an opportunity to explore and work with these in vivo (Karterud, 2012). In a meta-analysis, Burlingame et al. (2016) found similar outcomes for group versus individual therapy for mood and anxiety disorders. In an uncontrolled pilot study with no precalculated sample size (Bo et al., 2017), we tested the feasibility of a MBT-group program in 25 adolescents with BPD symptoms and found significant reductions in self-reported borderline symptoms, depression, self-harm, and general psychopathology in the 23 completers. Based on these findings, we designed the present RCT to test the efficacy of group-based MBT for BPD. As part of an early intervention strategy, adolescents with only four BPD symptoms were included (Thompson et al., 2018).

Methods

Study design

The study is a randomized two-armed, parallel group, assessor-blinded outcome superiority trial, comparing a group-based MBT program with TAU (Beck et al., 2016). This trial is registered with ClinicalTrials.gov Identifier: NCT02068326. Participants were randomly allocated in a 1:1 ratio to receive either treatment at four child and adolescent psychiatric outpatient clinics and stratified according to clinic affiliation and self-reported borderline severity (high (≥ 86) versus low BPFS-C score). Randomization was completed on an online platform hosted by an external data management service using a stratified block randomization procedure with a varying block size kept unknown to the investigators. Enrollment and assignment of participants were done by the trial coordinator or a research assistant.

Participants

Participants were 112 patients (mean age 15.8 years, *SD* 1.1 years) recruited from September 2015 to February 2017. Patients who were prescreened positive for eligibility were invited to an information session about the patients' and their caregivers' participation in the trial (Figure 1), and informed consent was obtained verbally from the adolescents and in written form by their caregivers. They were screened according to the following inclusion criteria: meeting a minimum of four DSM-5 BPD criteria, having a total score above clinical cutoff (>67) on The Borderline Personality Features Scale for Children (BPFS-C) (Chang, Sharp, & Ha, 2011), and age from 14 to 17 years. Exclusion criteria were as follows: comorbid diagnosis of pervasive developmental disorder, learning disability (IQ < 75), anorexia, current psychosis, diagnosis of schizophrenia or schizotypal personality disorder, antisocial personality disorder, any other mental disorder other than BPD considered the primary diagnosis, current (past 2 months) substance dependence (but not substance abuse), and current psychiatric inpatient treatment. Patients participated in diagnostic interviews, and if eligible for participation, patients completed questionnaire-based outcome measures at baseline followed by randomization.

Treatment groups

In both treatment arms, all therapists worked within the Department of Child and Adolescent Psychiatry, Region Zealand, Denmark, where the study was conducted. Pharmacological treatment in both groups followed a protocol

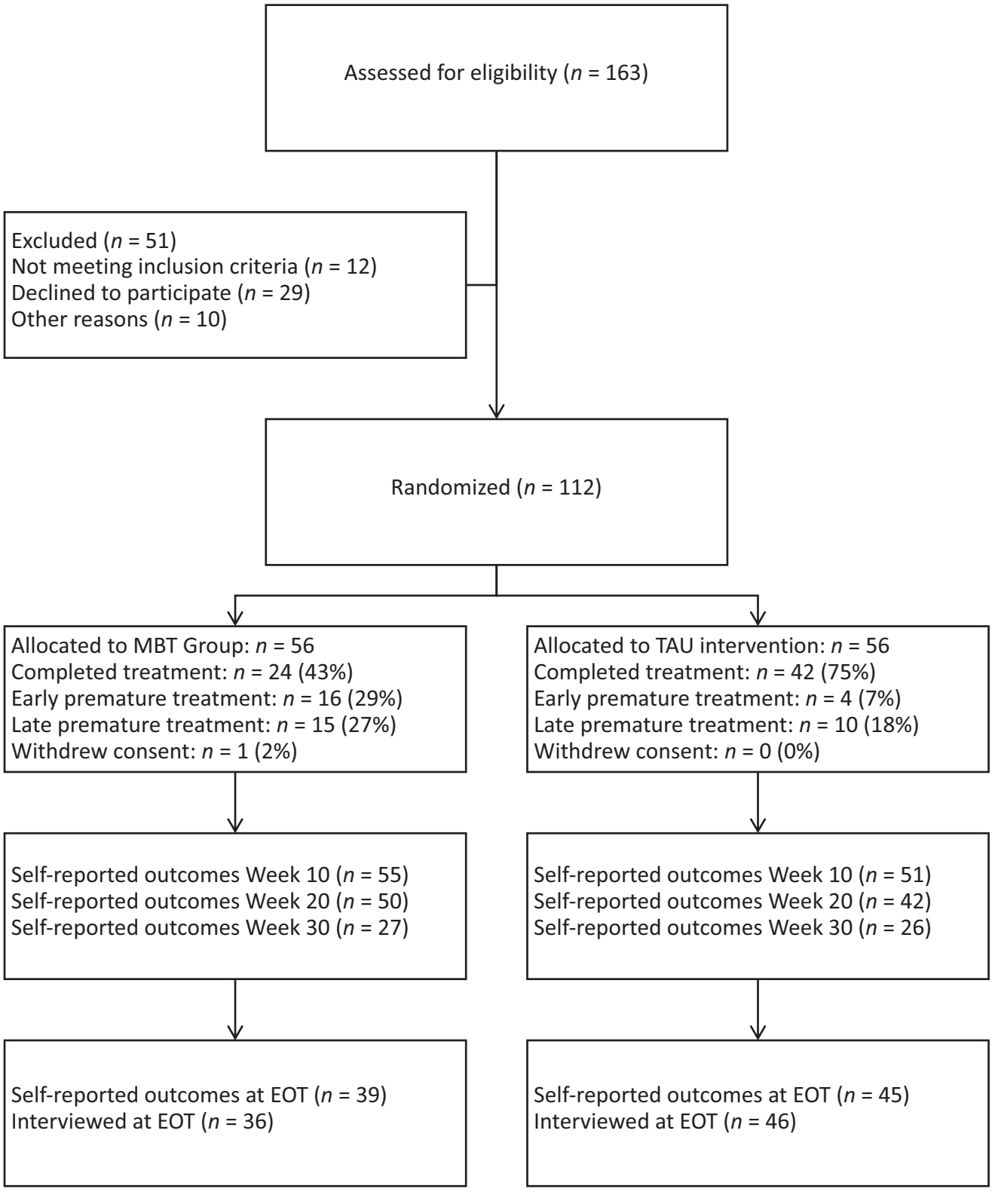

Figure 1 Consort flow diagram of the M-GAB study

(available on request) based on national (and international) recommendations for treating mental disorders in adolescents and BPD.

MBT is specifically developed to treat BPD and has a high degree of structure and a clear treatment goal of improving patients' mentalizing (Bateman & Fonagy, 2004). The intervention was delivered as a 1-year psychotherapy program with three components: MBT-Introduction (MBT-I), MBT-Group (MBT-G) and MBT-Parents (MBT-P) (90 min sessions). MBT-G followed the manual by Karterud (2012); MBT-I and MBT-P followed the manual by Karterud and Bateman (2011). MBT-G consisted of 37 weekly sessions (90 min) of mentalization-based psychotherapy in groups with a maximum of eight patients. Groups were slow-open, that is, new patients entered the group when places became available. To support MBT-G, five individual case formulation sessions

were delivered by the group therapists with the purpose of developing a clear mutual understanding of the patient's main difficulties and psychotherapeutic focus points. Three sessions were delivered before the initiation of MBT-G, a fourth after 8–10 group sessions, and a fifth after the 25th group session. MBT-I is a structured introductory psychoeducation program for patients covering the concepts of BPD, attachment, and mentalizing (Karterud & Bateman, 2011). Based on experiences from the pilot study (Bo et al., 2017), the MBT-I module was shortened to three sessions to ease the flow of patients into the slow-open MBT-Groups and minimize the risk of treatment disengagement that an educative and 'school-like' setting may represent to an adolescent population. MBT-P was a slow-open six-session psychoeducation program for the caregivers running parallel to MBT-I and MBT-G. We extended the MBT-P module and included parent training in mentalizing difficult events with their adolescents. MBT was delivered by trained and supervised clinical psychologists and psychiatrists. Before the trial onset, all therapists completed a 2-day introduction to MBT theory and basic principles and a 5-day training program by Professor Sigmund Karterud, Oslo University Hospital, Norway, who authored the manuals in collaboration with Anthony Bateman, St Ann's Hospital, London (Karterud, 2012; Karterud & Bateman, 2011). At all times during the trial period, the five groups had at least one trained therapist, while cotherapists leaving the group were replaced by therapists undertaking MBT training. MBT supervisors provided monthly supervision. All MBT-G sessions were videotaped and 10% randomly selected for ratings on the MBT-G adherence and competence scale (Folmo et al., 2017).

TAU was standardized to at least 12 individual supportive sessions, one per month, but was allowed to vary in additional contact across clinics and therapists and according to the needs of the patient. TAU comprised psychoeducation, counseling, and, if needed, ad hoc crisis management and sessions with caregiver participation. Therapists were nurses, psychologists, social workers, or psychiatrists carefully selected to ensure they were not trained in or practicing MBT. TAU was not manualized, not videotaped for adherence ratings, and supervision was provided as part of the clinic's regular standard supervision.

Measures

Baseline assessments

Comorbid psychiatric disorders were assessed with the Mini-International Neuropsychiatric Interview for children and adolescents (MINI-KID 6.0) (Sheehan et al., 2010). The Childhood Interview for DSM-IV Borderline Personality Disorder (CI-BPD) (Zanarini, 2003) was used for assessment of BPD criteria. Because no other child/adolescent focused interview-based measures exist for the assessment of other personality disorders, the Structured Clinical Interview for DSM-IV-Axis II (SCID-II) (First, Gibbon, & Spitzer, 1997) was used for assessment for additional personality disorders. Sociodemographic information was collected using an interview designed for this study.

Outcomes

The primary outcome was the total score of the Borderline Personality Features Scale for Children (BPFS-C), a 24-item dimensional measure rated on a 5-point Likert scale (range 24-120) (Crick, Close, & Woods, 2005). Secondary outcomes were as follows:

Patients. Depression was measured with the 20-item Beck's Depression Inventory for Youth (BDI-Y) (Beck, Beck, Jolly, & Steer, 2012; Thastum, Ravn, Sommer, & Trillingsgaard, 2009). Self-harm was measured using the 18-item self-harm scale from the Risk-Taking and Self-Harm Inventory for Adolescents (RTSHIA) (Vrouva, Fonagy, Fearon, & Rossouw, 2010). Externalizing and internalizing symptoms were measured by the Youth Self-Report (YSR, 112 items) (Achenbach, 1991a). For interview-based assessment of borderline personality disorder symptoms within the past 2 weeks, the Zanarini Rating Scale for Borderline Personality Disorder (ZAN-BPD) (Zanarini & Frankenburg, 2001) was used. Social functioning was assessed with the Children's Global Assessment Scale (CGAS) based on information from the clinician administered interviews and medical records from the preceding 30-day period (Shaffer et al., 1983). A number of patients' hospital admissions and visits to the emergency room were based on medical accounts.

Caregivers. The corresponding versions of the primary outcome and the YSR, the Borderline Personality Features Scale—Parent (24 items, (Sharp, Mosko, Chang, & Ha, 2011), and the Child Behavior Checklist (CBCL, 112 items) (Achenbach, 1991b) were used to measure caregivers' outcome evaluation.

The primary outcome, all self-report, and caregiver-based outcomes were measured at baseline, Week 10, 20, and 30, and at EOT. The ZAN-BPD and CGAS were measured at baseline and EOT. All measures were translated and back-translated following standard procedures. For further details on assessment instruments and outcome measures including psychometric properties, please see Beck et al. (2016). Deterioration was defined as an increased score on the primary outcome at EOT as well as cases of suicide.

Raters and integrity of ratings

Diagnostic assessments at baseline were performed by the first author (CI-BPD, SCID-II, and sociodemographic information) and three clinical psychological research assistants (MINI-KID and ZAN-BPD) before randomization in order to keep assessors blind to treatment allocation. Assessment during the treatment phase was limited to self-report measures; hence, no blinding was possible, but all information given to the participants before completing self-report measures was standardized. At EOT, two independent clinicians (i.e., not trained in MBT and not involved in intake procedures or the treatment) conducted interview-based outcomes (CGAS and ZAN-BPD). We minimized the bias caused by

knowledge of treatment allocation by implementing the following strategies: (a) outcome assessors were blind to treatment allocation and all information from baseline interviews, (b) the nonblinded project coordinator made all of the practical arrangements for follow-up interviews and collected treatment history data, (c) outcome assessors did not communicate with therapists, (d) patients were asked not to reveal their treatment allocation during outcome assessment, and (e) the study statistician was blinded during write-up of the analysis plan. When asked after completion of interviews, which treatment they thought each patient received, assessors' responses were correct for 58.5% of the patients (Cohen's kappa = 0.18), indicating that blinding was successful. All interviews were audio-taped, and interrater reliability (IRR) was assessed for 10 randomly selected cases per interview: For the SCID-II, IRR was moderate (ICC = .67). For the remaining interviews, interrater reliabilities were found to be excellent (MINI-KID: kappa = .87, CI-BPD: ICC = .99, CGAS: ICC = .98, ZAN-BPD at intake: ICC = .94, ZAN-BPD at post-treatment: ICC = .95). For the self-report measures, internal consistency in this sample was in the good to excellent range with Cronbach's alphas as follows: BPFS-C: 0.85, BPFS-P: 0.90, BDI-Y: 0.91, RTSHIA: 0.87, YSR (externalizing): 0.85, YSR (internalizing): 0.86, CBCL (externalizing): 0.85, and CBCL (internalizing): 0.90.

Statistical analysis

The primary outcome was the total score of the BPFS-C at EOT, which was treated as a continuous, normally distributed variable. For sample size calculation, we used the setting for clinical relevance from the study protocol (E. Beck et al., 2016). An effect of 12 points on the BPFS-C scale (range 24–120, each item ranging from 1 to 5) corresponds to three items out of 24 changing from worst to best (e.g., 'I am a fairly happy person', 'I am careless with things that are important to me', 'People who have been close to me have neglected me'). Based on prior research (Bo et al., 2017; Rossouw & Fonagy, 2012), we considered such a difference clinically relevant. Assuming a standard deviation of 15.4 (Rossouw & Fonagy, 2012), an intraclass correlation of 0.03, and a dropout rate of 20%, a total of 112 patients need to be included for 90% power in a *t*-test comparing the two intervention groups at alpha = 5% two-sided (for details, see E. Beck et al., 2016). The main research question was whether the outcome differs between the intervention groups, and this hypothesis was tested at the 5% two-sided significance level using a multilevel two-group comparison (MBT group therapy vs. TAU individual therapy), with *Therapy* as the main effect, baseline BPFS-C as a continuous covariate, and *Therapy Group* (MBT) and *Therapist* (TAU) as random intercepts, following suggestions on partially nested designs (Flight et al., 2016). Baseline severity was used as a covariate in the statistical analysis (CHMP, 2015). Site was used as a stratification variable but because the random factor Therapist was nested in Site, we decided not to include Site as a covariate to avoid numerical problems in model fitting. In a sensitivity analysis, we took out the random effect Therapist and included Site instead.

The primary test for efficacy was based on the intention-to-treat sample, with all randomized patients entering the analysis set. Missing data were handled as follows: For patients that died by suicide (none occurred), worst case imputation was planned. In some responses to the questionnaires, patients corrected their initial response; in those cases where the intended response alternative was obvious, we used the manual correction. Missing responses in individual questionnaire items were filled in by mean imputation. If entire scales were missing (e.g., because of patient dropout), multiple imputation was used (Hayes, 2009) with the available measurements at baseline; Week 10, Week 20, and Week 30; and EOT, as well as the covariates of the primary statistical analysis and therapy arm. To avoid overfitting, the imputation model only included the repeated measurements of the primary outcome variable, and the random therapist effects were assumed to be equal in the two treatment arms. Missing data were not imputed for secondary endpoints.

The treatment effect is expressed as the covariate-adjusted difference in group averages, along with the two-sided 95% confidence interval. Similar analyses were performed for the secondary endpoints, except for the number of hospitalizations which were analyzed using multilevel Poisson regression.

Results

Sociodemographic data and baseline assessments of the study participants are summarized in Table 1, and Figure 1 shows the participant flow from screening to EOT. A total of 163 patients were screened, of whom 134 agreed to participate in the study. The main reasons for potentially eligible individuals not participating were declining to participate (29 patients) or not meeting study criteria (12 patients). The main reason for not meeting the inclusion criteria was having a BPFS-C score below cutoff. Hundred and twelve were randomized to either individual TAU ($n = 56$) or group MBT ($n = 56$). One patient from the MBT group withdrew consent to participate. Group mean levels for borderline symptoms were 1 *SD* above the clinical cutoff. Internalizing symptoms were in the clinical range, and externalizing symptoms were in the 'borderline clinical range'. Depression was in the extremely elevated range (Table 1). The group mean level for social functioning was in the range of 'major impairment in functioning' (Table 1). The frequency

Table 1 Baseline characteristics of the trial participants, *N* (%) unless stated otherwise

	TAU individual *n* = 56	Group MBT *n* = 55
Female	55 (98%)	55 (100%)
Age years, mean (*SD*)	15.9 (1.0)	15.7 (1.1)
Foster parents	5 (9%)	10 (18%)
Attends school	48 (86%)	47 (85%)
Parents: alcohol/substance abuse	18 (32%)	22 (40%)
CI-BPD criteria		
0 to 3 (no BPD)	0 (0%)	0 (0%)
4 (subthreshold BPD)	2 (4%)	2 (4%)
5 or more (BPD)	54 (96%)	53 (96%)
SCID-II		
Paranoid	23 (41%)	20 (36%)
Schizoid	0 (0%)	0 (0%)
Schizotypal	0 (0%)	0 (0%)
Histrionic	0 (0%)	0 (0%)
Narcissistic	1 (2%)	0 (0%)
Obsessive-compulsive	12 (21%)	8 (15%)
Avoidant	14 (25%)	18 (33%)
Dependent	7 (12%)	3 (5%)
MINI-KID		
Major depressive episode	32 (57%)	29 (53%)
Panic disorder	14 (25%)	8 (15%)
Generalized anxiety disorder	14 (25%)	11 (20%)
Attention deficit hyperactivity disorder	14 (25%)	15 (27%)
Post-traumatic stress disorder	7 (12%)	4 (7%)
Alcohol problems	24 (43%)	18 (33%)
Substance problems	13 (23%)	11 (20%)
Mean no. MINI-KID diagnoses	4.5	4.3
Outcome variables assessed at baseline, Mean (*SD*)		
Borderline Personality Features (BPFS-C)	79.0 (12.9)	80.7 (11.0)
Borderline Personality Features, Parent's report (BPFS-P)	77.9 (14.8)	78.3 (12.7)
Depression (BDI-Y[a])	76.2 (11.6)	75.9 (9.3)
Self-harm behavior (RTSHIA)	40.2 (10.6)	40.3 (10.8)
Externalizing symptoms (YSR[a])	72.3 (11.8)	72.5 (11.1)
Internalizing symptoms (YSR[a])	76.6 (13.8)	75.4 (10.8)
Externalizing symptoms, Parent's report (CBCL[a])	75.3 (18.0)	78.2 (18.5)
Internalizing symptoms, Parent's report (CBCL[a])	81.7 (16.8)	82.5 (15.0)
BPD symptoms, Total score (ZAN-BPD)	13.3 (7.8)	12.8 (7.5)
BPD Affect symptoms (ZAN-BPD)	5.8 (3.2)	5.7 (2.8)
BPD Cognition symptoms (ZAN-BPD)	2.2 (2.0)	2.3 (2.2)
BPD Impulsivity symptoms (ZAN-BPD)	2.6 (2.2)	2.6 (2.2)
BPD Relationships symptoms (ZAN-BPD)	2.7 (2.0)	2.3 (2.1)
Social functioning (CGAS)	35.2 (11.1)	35.7 (9.1)

MINI-KID, the Mini-International Neuropsychiatric Interview for children and adolescents (6.0); CI-BPD, The Childhood Interview for DSM-IV Borderline Personality Disorder; SCID-II, the Structured Clinical Interview for DSM-IV-Axis IIBPFS-C, Borderline Personality Features Scale for Children; BPFS-P, Borderline Personality Features Scale for Children – Parents version; BDI-Y, Beck's Depression Inventory for Youth; RTSHIA, Risk-Taking and Self-Harm Inventory for adolescents; YSR = the Youth Self-Report; CBCL, the Child Behavior Checklist; ZAN-BPD, the Zanarini Rating Scale for Borderline Personality Disorder; CGAS, Children's Global Assessment Scale.

[a]*T* scores (mean = 50, *SD* = 10) with norms based on sample of Danish adolescents (Beck et al., 2012; Henriksen, Nielsen, & Bilenberg, 2012).

of comorbid paranoid personality disorder seems relatively high, but is consistent with previous larger scale-studies in adults (Johansen, Karterud, Pedersen, Gude, & Falkum, 2004; Zimmerman, Rothschild, & Chelminski, 2005)(Karterud, 2013; Zimmerman et al., 2005).

Treatment completion

The patient flow is shown in Figure 1.

In the TAU group, 42 (75%) patients completed treatment, whereas in the MBT group, 24 patients (44%) completed treatment. In the MBT arm, 15 patients (27%) terminated prematurely in the last half of the treatment program (late premature termination) and 16 patients (29%) in the first half (early premature termination). In the TAU arm, ten patients (18%) terminated late in the treatment and four patients (7 %) terminated early. In five cases, all in the MBT arm, the treatment termination was related to patients moving out of the region or enrolling in a boarding school. Four of these cases were early premature termination, and one was late. Four patients in the MBT arm and one patient in the TAU arm were diagnosed with schizophrenia during the course of the treatment. Seven patients in the

TAU arm and 18 patients in the MBT arm experienced a therapist replacement. However, for all MBT patients, only one of the therapists was replaced while the cotherapist and other group members remained. In the period from the first MBT-G session was delivered and until the last enrolled patient was randomized, for each of the five groups the average number of present patients was: 4.6, 4.3, 2.6, 2.6, and 3. The average enrolled patients were 6.5, 5.8, 4.4, 4.5, and 4.1. In the MBT arm, the average number of attended group sessions was 17.7 (*SD* 11.3, range 0-25). In the TAU arm group, the average number of attended individual sessions was 10.1 (*SD* 4.7, range 2–24).

Therapist adherence to MBT

Therapist fidelity to MBT was measured on the basis of video-recorded therapy sessions, using the Adherence and Competence Scale for Mentalization-based Group Therapy (Folmo et al., 2017; Karterud et al., 2013). One rater at the Quality Lab for Psychotherapy, University Hospital Ullevaal, Norway (www.mbt-lab.no), measured the global (overall) ratings for adherence and quality (competence). These two items display excellent reliability with one rater (D-study: 0.83; Folmo et al., 2017). On a 1–7 scale, 'good enough' adherence and competence was defined as Level 4. In the present study, the mean overall adherence score was 5.47 (*SD* = 0.80; range: 3–6) and mean overall quality rating (competence) was 5.53 (*SD* = 1.10; range: 2–7).

Primary outcome: borderline features

At EOT, the primary endpoint was available for 45 patients in the TAU group (11 missing) and 39 patients of the MBT group (16 missing), including data from patients who did not complete treatment. The average BPFS-C score was 71.3 (*SD* = 15.2, range 40–101) in the TAU group and 71.3 (*SD* = 15.0, range 43–103) in the MBT group. Deterioration, defined as higher BPFS-C at EOT than at baseline, was observed in 13 patients in the TAU group (23%) and 12 patients in the MBT group. In the MBT group, we observed remission, that is, a BPFS-C score at EOT lower than clinical cutoff (>67), in 16 patients (29%) and no remission in 23 patients (42%); data were missing for 16 patients (29%). In the TAU group, we observed remission in 16 patients (29%) and no remission in 29 patients (52%); data were missing for 11 patients (20%). The covariate-adjusted group difference, accounting for the multilevel structure of the data, and with missing data imputed by the baseline, Week 10, Week 20, and Week 30 measurements amounts to 0.4 BPFS-C units in favor of MBT-G (95% confidence interval −6.3 to 7.1, $p = .91$). Even the upper bound of this 95% confidence interval is below the minimal clinical relevant difference of 12 units (Beck et al., 2016). Based on this result, there is no indication for superiority of either therapy method. The BPFS–C pre- and post-treatment difference score is 7.4 for the TAU group and 9.5 for the MBT group. Although the change scores differ significantly from zero, they are both lower than the minimal relevant clinical difference. The post-treatment scores also remained above clinical cutoff.

A sensitivity analysis with a per-protocol subset of the data, excluding all patients who did not complete treatment ($N = 66$), revealed no significant group differences (−3.0 BPFS-C units, 95% confidence interval −11.2 to 5.1, $p = .47$) with a group mean on BPFS-C at EOT in the MBT arm of 75.4 (*SD* 15.5) and 70.2 in the TAU arm (*SD* 15.6). Two other sensitivity analyses did not reveal any substantial group differences either: 1) one excluding the four patients meeting only four BPD criteria and 2) one excluding three patients, whom, based on recordings of the MINI-KID interview, could be retrospectively diagnosed with schizophrenia at baseline by two blinded and independent psychiatrists and therefore should not have been included in the study. No adverse effects were reported.

Secondary outcomes

The secondary outcomes are summarized in Table 2, along with the covariate- and therapist-adjusted estimate of the treatment effect. Consistent with the results for the primary endpoint, no statistically significant group differences were observed, except for a higher rate of days of hospitalizations and for emergency room visits in the MBT group. This difference is related to two patients in the MBT arm who were diagnosed with schizophrenia and who accounted for 78% of the total number of days of hospitalization in both treatment arms and 25% of the emergency room visits. Regarding medication at EOT, more patients in the MBT group were prescribed antidepressants compared with the TAU group (odds ratio: 0.27, 95% CI: 0.08 to 0.90). Consistent with the findings on the BPFS-C at EOT, group mean levels for depression (BDI-Y) were in the 'moderately elevated' range and social functioning was in the range for 'moderate impairment in functioning'. Group mean levels for internalizing and externalizing symptoms were below 'the borderline clinical range', that is, below the 93rd percentile. Group mean levels for self-harm measured with ZAN-BPD (Impulsivity) mirrored these outcome findings with a modest pre–post change. In contrast, self-harm measured by the RTSHIA displayed almost no pre–post change, which may be partially related to a limited ability to detect change of the RTSHIA (Vrouva et al., 2010).

Discussion

The findings of this study indicate that group-based MBT is nonsuperior to standard clinical care in the

Table 2 Secondary endpoints at EOT. Group means (*SD*) for the two therapies (available cases), and covariate-adjusted group difference incl. 95% confidence interval

	TAU	MBT	TAU – MBT (95% CI)	*p* value
Borderline Personality Features, Parent's report (BPFS-P)	68.7 (16.8)	69.1 (12.4)	0.1 (−7.0 to 7.3)	.98
Depression (BDI-Y[a])	64.3 (16.1)	65.6 (14.8)	−0.7 (−6.5 to 5.1)	.80
Self-harm behavior (RTSHIA)	39.0 (13.4)	40.8 (11.2)	−1.4 (−7.1 to 4.3)	.61
Externalizing symptoms (YSR[a])	56.1 (9.4)	54.8 (7.9)	0.5 (−4.0 to 5.1)	.81
Internalizing symptoms (YSR[a])	45.9 (7.0)	48.5 (9.6)	−2.2 (−6.8 to 2.4)	.33
Externalizing symptoms, Parent's report (CBCL[a])	56.5 (11.0)	53.9 (10.5)	3.6 (−3.0 to 10.1)	.27
Internalizing symptoms, Parent's report (CBCL[a])	50.1 (9.1)	47.4 (7.7)	2.6 (−1.6 to 6.7)	.22
BPD symptoms, Total score (ZAN-BPD)	8.0 (7.3)	8.8 (6.5)	−0.6 (−4.0 to 2.8)	.71
BPD Affect symptoms (ZAN-BPD)	3.9 (3.2)	4.1 (3.1)	−0.0 (−1.6 to 1.5)	.97
BPD Cognition symptoms (ZAN-BPD)	1.0 (1.6)	1.2 (1.7)	−0.1 (−0.9 to 0.6)	.75
BPD Impulsivity symptoms (ZAN-BPD)	1.8 (2.1)	1.9 (2.1)	−0.1 (−1.1 to 0.9)	.81
BPD Relationships symptoms (ZAN-BPD)	1.3 (1.9)	1.7 (1.5)	−0.4 (−1.2 to 0.5)	.40
Social functioning (CGAS)	46.7 (12.6)	46.1 (13.4)	0.5 (−5.8 to 6.7)	.87
Hospital admissions	1.0 (3.9)	9.3 (42.0)	RR[b] = 33 (1.6 to >100)	.023
Emergency room visits	0.2 (0.5)	0.5 (1.5)	RR = 2.50 (1.02 to 6.25)	.046

BPFS-P, Borderline Personality Features Scale for Children – Parents version; BDI-Y, Beck's Depression Inventory for Youth; RTSHIA, Risk-Taking and Self-Harm Inventory for adolescents; YSR, the Youth Self-Report; CBCL, the Child Behavior Checklist; ZAN-BPD, the Zanarini Rating Scale for Borderline Personality Disorder; CGAS, Children's Global Assessment Scale.
[a]*T* scores.
[b]RR = risk ratio MBT/TAU.

treatment of adolescents with BPD. Group means for primary and secondary outcomes did not differ for the two treatment groups, and the highest level in the 95% confidence interval of the mean difference was below the minimal clinical relevant difference. Compared with the TAU group, more patients in the MBT group terminated treatment prematurely and they terminated earlier. In both treatment arms, the pre–post treatment improvement was, although statistical significant, considered clinical insignificant.

Here, we would like to discuss three possible explanations. First, mentalization-based interventions may be less effective in a group format for adolescents who, in addition to BPD, also experience puberty related restraints on their affect regulation capacities (Larsen & Luna, 2018). In Rossouw and Fonagy's RCT of a 1-year program of weekly individual MBT (Rossouw & Fonagy, 2012), baseline mean scores on the BPFS-C were similar to our sample (personal communication, Peter Fonagy) and 50% of the MBT patients also terminated prematurely in the first half of the program. However, in their study, the MBT patients' improvement on the BPFS-C was clinically significant. In group-based MBT, patients are encouraged to identify and discuss real-life interpersonal situations during which they experienced difficulties with mentalizing (Karterud, 2012). Possibly, narrative accounts of such situations may function as stimuli that create states of affective dysregulation and nonmentalizing in other group members, or in a subgroup of these patients. In contrast to individual MBT, in group-based MBT therapists are not able to, or meant to, be continuously available to all group members for moment-to-moment coregulation of affect, and episodes of nonsupported affective dysregulation may occur. During these episodes, patients may not be able to benefit from therapists' interventions targeted at the group level. Thus, group-based MBT may not be suitable for those adolescents who experience a high level of psychopathology and a low level of social functioning. For these adolescents, group MBT plus individual- and family-based MBT may be more effective. Following the cross-diagnostic clinical staging model for BPD and mood disorders proposed by Chanen, Berk, and Thompson (2016), future research could investigate whether the group format may be better indicated as an early first-stage intervention for adolescents with lower levels of symptomatic severity. Griffiths et al. (2019) found group-based MBT-I to be feasible and acceptable to a cross-diagnostic group of adolescents who self-harm.

Second, while premature termination is a well-known problem in psychotherapy for both patients with BPD (Barnicot, Katsakou, Marougka, & Priebe, 2011) and for adolescents (de Haan, Boon, & de Jong, 2013), the markedly higher rate of premature termination in the MBT group compared with the TAU group in our study calls for further reflection. In group psychotherapy, premature termination not only affects the patient and therapist, but also has an adverse effect on the remaining group members, potentially creating a 'wave effect' leading to premature termination of other patients (Yalom & Leszcz, 2005). This mechanism may be particularly prominent in groups of patients with BPD who are typically characterized by 'frantic efforts to avoid real or imagined abandonment' (APA, 2013), and in adolescents who are highly sensitive to peer influences (Nickerson & Nagle, 2005). This effect may have been further escalated by the relatively slow recruitment to some of the MBT groups and the resulting small number of group members.

Third, TAU was implemented in accordance with well-established practices at the treatment centers. In contrast, the MBT-G program was implemented relatively shortly before the trial onset and was therefore more susceptible to barriers to implementation of MBT, which were identified in a recent study as present at both organizational and team levels (Bales, Verheul, & Hutsebaut, 2017).

The present study has distinct strengths and limitations. Strengths of the study include a high external validity as it was conducted in general mental health services and had few exclusion criteria. MBT therapists completed a thorough training program, received regular supervision and demonstrated high adherence to manual. We published a protocol beforehand, and we only used one primary outcome measure, which may have protected against multiplicity issues due to random errors (Schulz & Grimes, 2005). The present study is the largest treatment outcome study in adolescents with BPD and the first to test a group-based psychotherapeutic intervention for this diagnostic group. Publication bias is a significant problem in intervention research, and it is important that negative findings like these are reported in a transparent fashion (Higgins, Altman, & Sterne, 2017).

Among the limitations is the fact that TAU was a considerably less intensive treatment than the MBT program. We did not, however, detect a dose–response effect, rather the contrary since the lower rate of premature termination in the TAU group could be related to the less demanding frequency of sessions patients had to attend in order to complete the standard clinical care program.

A second limitation is that we do not have ratings of adherence to the procedure of contacting the patient after each missed session, and can therefore not rule out the possibility that premature termination in some instances was related to the therapists not adhering to this principle. However, as monthly supervision oversaw this aspect, we consider it unlikely to pose any substantial risk on the trial. Third, we can only draw conclusions on the effectiveness of our specific version of the MBT program and cannot rule out the possibility that the lack of effect is accounted for by our modifications of the original treatment program. We abbreviated the MBT-Introduction program from 12 sessions to three, omitted weekly individual sessions (designed to prevent premature termination), and shortened the program from at least 18 to 12 months (Bateman & Fonagy, 2004; Karterud, 2012). Our primary outcome showed 29% remissions in both groups. These are much smaller percentages than found in other trials in this patient group (Elices et al., 2016; Farrell, Shaw, & Webber, 2009; Rossouw & Fonagy, 2012). Given the retention problems in this study, the efficacy of a more comprehensive MBT-G program comprising individual weekly sessions for adolescent BPD is an important question for future research.

Conclusion

The present study is the largest treatment outcome study in adolescents with BPD, has a high external validity, and is the first to test a group-based psychotherapeutic intervention for this diagnostic group. The findings of the study indicate that group-based MBT is nonsuperior to standard clinical care in the treatment of adolescents with BPD. Retention was a large problem and needs attention. Important future research questions are (a) whether group-based MBT may be better indicated as an early first-stage intervention for adolescents with lower levels of symptomatic severity and higher social functioning and (b) to test the efficacy of a more comprehensive MBT-G program comprising individual sessions.

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Key points

- Borderline personality disorder can be diagnosed validly and reliably in adolescents with prevalence rates comparable to those found in adult populations.

- The present study is the largest treatment outcome study in adolescents with BPD and the first to test a group-based psychotherapeutic intervention for this diagnostic group.
- This study tested the effectiveness of mentalization-based treatment in groups and found no superiority to treatment as usual.
- Retention was a large problem and needs attention.
- The efficacy of a more comprehensive MBT-G program comprising individual weekly sessions is an important question for future research.

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