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RESEARCH ARTICLE

Preschool children's response to behavioural parent training and parental predictors of outcome in routine clinical care

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Objective: To investigate the effectiveness of behavioral parent training (BPT) for preschool children with disruptive behaviours and to explore parental predictors of response.

Methods: Parents of 68 preschool children, aged between 2.7 and 5.9 years, participated in BPT. We evaluated the changes in children's behaviour after BPT with a one group pretest-posttest design, using a waiting period for a double pretest. Outcome was based on parents' reports of the intensity and number of behaviour problems on the Eyberg Child Behavior Inventory. Predictor variables included parents' attention-deficit/hyperactivity disorder symptoms, antisocial behaviours, and alcohol use, and maternal parenting self-efficacy and disciplining.

Results: Mother-reported child behaviour problems did not change in the waiting period but improved significantly after BPT ($d = 0.63$). High levels of alcohol use by fathers and low levels of maternal ineffective disciplining were each associated with somewhat worse outcome.

Conclusions: BPT under routine care conditions clearly improves disruptive behaviours in preschool children. Mothers who consider themselves as inadequate in disciplining and mothers whose partners do not consume high levels of alcohol report the largest improvements.

KEYWORDS

behavioral parent training, disruptive behaviour problems, parental psychopathology, parenting style, preschoolers

1 | INTRODUCTION

Behavioral parent training (BPT) is a first-line treatment for preschool children with disruptive behaviours (Charach, Carson, Fox, Ali, Beckett, & Lim, 2013; Comer, Chow, Chan, Cooper-Vince, & Wilson, 2013; LaForett, Murray, & Kollins, 2008; Mulqueen, Bartley, & Bloch, 2013), and its efficacy has been confirmed in meta-analyses (Charach et al., 2013; Comer et al., 2013; Mulqueen et al., 2013; Rimestad, Lambek, Zacher Christiansen, & Hougaard, 2016). BPT aims to decrease disruptive behaviour problems in children by enhancing parenting skills. Parents learn to manipulate antecedents of child behaviours in order to enable the child to behave adequately, and how to react to child behaviours in an effective, controlled, consistent, and consequent way (contingency management techniques).

BPT improves not only child disruptive behaviours, including attention-deficit/hyperactivity disorder (ADHD) symptoms, but also parenting skills and sense of competence (Charach et al., 2013; Comer et al., 2013; Mulqueen et al., 2013). However, evidence until now has

mostly been based on formal randomized trials, whereas little is known about BPT outcome in referred cases under routine care conditions. Only one study showed that BPT for clinically referred young children with disruptive behaviour problems, including ADHD symptoms, was effective in reducing behavioural problems in a real-world outpatient mental health setting (Trillingsgaard, Trillingsgaard, & Webster-Stratton, 2014).

Another issue, besides the lack of BPT studies using data from clinical practice, is the limited use of father and teacher reports as outcome measure. In the majority of studies, mothers were the only raters of outcome measures (Fabiano, 2007). Ideally, BPT for preschoolers should consider both parents' ratings. So far, only one trial presented father-reported data of a combined parent and child training for preschool children (Webster-Stratton, Reid, & Beauchaine, 2011). Also, teacher reports of child behaviour are useful in BPT trials, as teachers may be more independent informants and may reflect generalization of intervention effects.

Furthermore, there is large variability in the degree to which individual children improve through BPT (Sonuga-Barke, Daley,

Thompson, Laver-Bradbury, & Weeks, 2001; Webster-Stratton et al., 2011). Various predictors of response to BPT in preschool children with disruptive behaviour problems have been investigated, mostly child factors, such as gender and severity of behaviour problems (Beauchaine, Webster-Stratton, & Reid, 2005; Hautmann et al., 2010; Lavigne et al., 2007; Lavigne, Dahl, Gouze, LeBailly, & Hopkins, 2014; Sonuga-Barke, Daley, & Thompson, 2002; Webster-Stratton, Reid, & Beauchaine, 2013; Werba, Eyberg, Boggs, & Algina, 2006). Whereas male or female gender did not predict change in externalizing behaviour problems after BPT in preschoolers (Beauchaine et al., 2005; Hautmann et al., 2010; Lavigne et al., 2007; Sonuga-Barke et al., 2002; Webster-Stratton et al., 2013; Werba et al., 2006), pretreatment severity of externalizing behaviour problems was found to be a significant predictor of outcome; children with high levels of externalizing behaviour problems before BPT showed more improvement than children with lower levels (Hautmann et al., 2010; Webster-Stratton et al., 2013).

The influence of parental factors, such as parental psychopathology, parenting style, and parenting self-efficacy on BPT outcome in preschoolers, has been understudied. This is surprising, as BPT programs are aimed at changing children's behaviour through their parents as mediators. It could well be that various parental factors may influence the capability of parents to learn, practice, and implement specific parenting skills and may therefore play a role in outcome of BPT. The studies that did examine parental variables as possible predictors of response to BPT in preschool children mainly concerned parental internalizing problems, such as depressive mood and parental stress (Beauchaine et al., 2005; Lavigne et al., 2007; Sonuga-Barke et al., 2002). In addition to parental internalizing problems, externalizing behaviour problems in parents may also be of influence on BPT outcome in preschoolers. Although parental externalizing problems, such as parental ADHD, disruptive behaviours, and substance abuse, are more often present in parents of young children with disruptive behaviour problems, compared to parents of non-ADHD children (Chronis et al., 2003), treatment studies that included these behaviours as possible predictors are still scarce. Parental externalizing problems may, however, disrupt parenting and may lead to a situation of reciprocal influences of difficult to handle child behaviour and impaired parental functioning leading to continued disruptive behaviour problems (Breux, Harvey, & Lugo-Candelas, 2014). Therefore, more analyses on the influence of parental externalizing behaviours on BPT outcome in preschoolers are warranted.

One study found high levels of maternal ADHD symptoms to be associated with less successful BPT for preschool children (Sonuga-Barke et al., 2002). Also, alcohol abuse in parents may play a role in the effectiveness of BPT, given that problematic alcohol use of mothers is a risk factor for externalizing behaviour problems in young children, especially when mothers engage in harsh parenting techniques (Conners-Burrow et al., 2015). Furthermore, preschool sons of alcoholic fathers appear to be at increased risk of self-regulation problems, especially when their fathers show less parental warmth (Eiden, Edwards, & Leonard, 2004). In contrast to these observations, a history of parental alcohol or drug misuse was found to be associated with a better response in two BPT treatment study in young children with oppositional defiant disorder (Baydar, Reid, & Webster-stratton,

Key practitioner

- Disruptive behaviours in referred preschool children improve when parents follow behavioural parent training under routine care conditions.
- Behavioural parent training is useful to help parents experience fewer behaviours as troublesome.
- About one third of the parents for whom behavioural parent training was indicated never started the treatment.
- Clinicians are recommended to put additional effort in motivating and facilitating parents to actually participate in behavioural parent training.
- It may be useful to assess and treat problematic alcohol use in fathers before behavioural parent training.
- Behavioural parent training may be particularly effective when mothers perceive themselves as inadequate in disciplining.

2003; Beauchaine et al., 2005). It may, however, well be that current, rather than a history of abuse, has a negative impact on BPT results.

It could also be hypothesized that parents with high levels of antisocial behaviour may be less sensitive to BPT treatment, given that antisocial behaviour symptoms in fathers are associated with child conduct problems (LeMoine & Romirowsky Woods, 2015) and in mothers with reduced warmth and sensitivity towards their children (Jaffee, Belsky, Caspi, & Moffitt, 2006). However, to our knowledge, no studies concerning the role of parental antisocial behaviour in BPT success are available.

Finally, parenting style, especially disciplining practices, and parenting self-efficacy may be involved in BPT treatment outcome. Various studies found an association between inadequate disciplining and elevated disrupted behaviour problems in preschool children (Harvey, Metcalfe, Herbert, & Fanton, 2011; Rinaldi & Howe, 2012; Vecchio & Leary, 2006). We also know that parents of young children with disruptive behaviour problems have a lower sense of parenting competence (Cunningham & Boyle, 2002; Wittkowski, Dowling, & Smith, 2016) and exhibit less adequate discipline practices than parents of children without behaviour problems (Harvey et al., 2011; Lorber, Xu, Slep, Bulling, & O'Leary, 2014). Low levels of maternal self-efficacy were found to be a predictor for maternal coercion (Bor & Sanders, 2004). Regarding the association between parenting self-efficacy and outcome of BPT in preschool children, study findings were mixed. Higher levels of maternal self-efficacy predicted better outcome of parent child interaction therapy (Werba et al., 2006), whereas another study found no effect of parenting self-efficacy on improvement of the child's ADHD symptoms after parent training (Sonuga-Barke et al., 2002).

In the present study, we examined the effects of BPT on disruptive behaviours of referred preschool children in a real-world clinical setting, using mothers, fathers, and teachers to assess outcome.

Consistent with previous studies, we hypothesized that BPT would result in decreased disruptive behaviour problems in children, with moderate effect sizes. Furthermore, we examined the role of parental psychopathology, including parental ADHD symptoms, antisocial behaviours, and alcohol use, as well as maternal disciplining and self-efficacy as possible predictors of BPT outcome. We expected elevated levels of parental psychopathology, low maternal sense of parenting competence, and maternal ineffective disciplining to be associated with worse BPT outcome. Due to the modest sample size, we were unable to investigate all possible parental predictors. We chose to focus on parental externalizing behaviours, sense of parenting competence, and parental discipline style.

2 | METHOD

2.1 | Study design

We evaluated the changes in children's behaviour after BPT treatment with a one group pretest–posttest design, using a double pretest. The time between the initial assessment (T0, the first pretest) and directly before the start of the BPT (T1, the second pretest) was approximately 13 weeks ($M = 12.80$, $SD = 9.41$). In the waiting period (T0–T1) results of the clinical assessment were reported to the parents and treatment options were discussed. There was no treatment offered during this period. The treatment period (T1–T2, posttest within 4 weeks after the last treatment session) was approximately 18 weeks ($M = 17.8$, $SD = 8.93$). We conducted outcome assessments at T0, T1, and T2 for parent-reported child behaviour problems, and T1 and T2 for teacher-reports. Furthermore, we collected data on predictor variables at T1.

2.2 | Participants and procedure

We conducted our study at our outpatient clinic for child and adolescent mental health, in which parents of preschool children with disruptive behaviour problems receive BPT as part of routine care. As part of our standard diagnostic procedures, ADHD symptoms and other disruptive behaviour symptoms were assessed with a semistructured interview with the parents (i.e., the Dutch version of the Parent Interview for Child Symptoms PICS-4; Schachar, Ickowicz, & Sugarman, 2000) and the teacher/caregiver (i.e., the Dutch version of the Teacher Telephone Interview: TTI; Tannock et al., 2002); we also collected mother' reports of child problem behaviour on the Eyberg Child and Behavior Inventory (ECBI; (Eyberg & Pincus, 1999)), as part of our regular assessment procedure.

Our sample consisted of parents of 68 children with behaviour problems at home (i.e., score on the Intensity scale of the ECBI ≥ 131 and/or at least two oppositional defiant symptoms), who received BPT between 2010 and 2014. In that period, in 134 families, BPT was indicated, and 83 (62%) actually started the treatment. Fourteen families (10%) did not want any treatment, four families wanted only pharmacological treatment (3%), and 15 families (11%) could not organize to come to treatment on a regular basis. Furthermore, nine families (7%) preferred care from another organization, and the remaining nine families (7%) did not start for a variety of reasons.

We could not analyse data of parents of 15 children who had also received parent training in this period, as they failed to provide adequate T2 ratings: Seven T2 assessments were filled in too late and parents of eight children were unable or unwilling to fill in the T2 assessments. These 15 children did not differ from the 68 analysed children in age, T1 severity of behaviour problems, and parental education level.

Twenty-nine of the analysed families (43%) had received some kind of previous parent counselling but not in the form of a manualized behavioural parent training. None of the children had previous or current pharmacological treatment. Participating parents gave written informed consent to use the routine care assessments for research purposes. The study was approved by the Medical Ethical Committee of the University Medical Centre Groningen.

Characteristics of the analysed families are presented in Table 1. Although one of the secondary caretakers was a grandmother, we report on secondary caretakers as "fathers." Parents of 66% ($n = 45$) of the participating children completed all 12 BPT sessions, and 34% ($n = 23$) stopped the treatment before the last session (range 1–11 sessions). The mean number of sessions for the whole group was 9.6 ($SD = 3.66$), with a significant difference between both caregivers, $t(53) = 2.37$, $p = .021$, if they both participated in BPT ($n = 53$), that is, mothers received on average one more session than fathers. Reasons for treatment drop out included not being able to manage to come to the outpatient clinic on a regular basis ($n = 11$; 48%), mostly because of a stressful family situation related to illness or working problems. Eight families (35%) dropped out because BPT did not meet their expectations. Parents of two children (8.5%) stopped because they felt no need for treatment anymore, and two families (8.5%) terminated the treatment because of personal circumstances.

2.3 | Treatment

In a previous study, we had demonstrated the effectiveness of our BPT programme for behavioural and internalizing problems of school-aged children with ADHD (van den Hoofdakker, van der Veen-Muders, Sytema, Emmelkamp, Minderaa, & Nauta, 2007). We adapted the BPT manual for preschool children (Behavioral Parent Training Groningen--Preschool; BPTG-P). BPTG-P was provided in a group or individual format and consisted of 12 sessions: 2-hr group sessions led by two therapists, or 1-hr individual sessions led by one therapist. Both formats were comparable in content and structure of the sessions. Therapists were graduated psychologists, trained, and experienced in delivering BPT to parents of children with behavioural problems. Parents could express their preference for the individual or group format and the majority of parents ($n = 60$, 88%) preferred and started the individual BPTG-P.

The primary focus of the BPT was to reduce disruptive child behaviours and to increase positive child behaviours. Psychoeducation and restructuring of unhelpful and inaccurate cognitions were part of every session. The first treatment phase focused on teaching parents how to observe and report children's behaviour in Antecedent-Behavior-Consequence schedules and how to manipulate antecedents to evoke appropriate behaviours (van den Hoofdakker et al., 2007). Parents were taught to structure the environment, set rules, give

TABLE 1 Child and family characteristics

Child characteristics	n	%	Mean	SD	Range
Number	68				
Male	54	78			
Female	14	22			
Age in years	68		4.66	0.88	2.67–5.92
Total IQ	65 ^a		101	14.2	72–131
ADHD symptoms	68		10.4	3.63	4–18
ODD symptoms	68		2.28	1.90	0–8
CD symptoms	68		0.31	0.94	0–6
Group educational activity					
Preschool	53	78			
Kindergarten	13	19			
At home with a caretaker	2	3			
Family characteristics					
Highest education level					
Low	27	40			
Middle	29	42			
High	12	18			
Single-mother family ^b	15	22			
Two-parent family	53	78			
Maternal characteristics					
Number	68				
Age in years			33.1	4.53	24–44
Biological mothers	67	98.5			
Foster mother	1	1.5			
Characteristics of the secondary caregiver					
Number	58				
Age in years			36.1	4.58	24–54
Biological fathers	51 ^c	88			
Foster father	1	1.5			
Stepfather	5	9			
Grandmother	1	1.5			

Note. ADHD = attention-deficit hyperactivity disorder; ODD = oppositional defiant disorder; CD = conduct disorder.

^aThree children were not testable.

^b33% ($n = 5$) of the single mothers were accompanied by the biological father of the child in the BPT, 7% ($n = 1$) by her own mother, 7% ($n = 1$) by the stepfather, and 53% ($n = 8$) participated alone.

^c9% ($n = 5$) of the biological fathers provided baseline data but did not take part in BPT and 91% ($n = 53$) did actually participate.

instructions, praise appropriate behaviours, and anticipate misbehaviours. The second phase of the treatment focused on contingency management techniques and maintenance training. Treatment was tailored for each child, based on behaviour problems selected by the parents in the first treatment session. Furthermore, parents were stimulated to play with their child on a daily basis, in order to increase positive parent-child interactions.

We strongly recommended two-parent families to participate together in the treatment. In case it was not possible for the father to participate, the therapists discussed with the mother how to inform the father about the parent training and how to involve him in homework assignments. We encouraged single mothers to join in with the father of the child or with another important person.

Homework assignments tailored to the specific target behaviours were an important part of the training. Each week, the parents read about and trained the skill that had been introduced in the preceding session. Every session started with discussions about the homework reports from both parents, and every session ended with new homework assignments. In between, a new topic was introduced and practiced.

After each session, therapists completed a treatment integrity checklist in which they reported which parts had been included. Topics that had not been covered were postponed to the next session. Supervision was given on a weekly basis, and all sessions were video recorded to check adherence to the treatment protocol. Observed adherence to the treatment protocol was high ($M = 96\%$ of all topics covered, $SD = 70\%$, range 79–100%).

2.4 | Measures

The mothers' scores on the Intensity Scale of the ECBI (Eyberg & Pincus, 1999) was our primary outcome measure. The ECBI is a 36-item inventory of current disruptive problem behaviours for children aged 2 to 16, consisting of two scales: the Intensity Scale (ECBI-I) measuring the frequency of child behaviour problems on a 7-point Likert scale (1 = never to 7 = always), and the Problem Scale (ECBI-P) reporting if the item-behaviour is a problem or not (ECBI-P) for the parent on a dichotomous scale (0 = no, 1 = yes). The cut-off of the Intensity Scale is 131 (higher scores indicating that the child potentially has a significant problem) and of the Problem Scale is 15 (higher scores indicating that the parent is significantly distressed by the child's behaviour; Eyberg & Pincus, 1999). Mothers' ratings on the ECBI-P were a secondary outcome measure. Cronbach's coefficient α (which provides a lower bound for the reliability of the scale) equalled .92 for both parents' ECBI-I in our sample. Fathers' ratings on the ECBI-I and ECBI-P were also secondary outcome measures as well as teachers' reports of externalizing behaviour problems on the Externalizing Scale of the Caregiver-Teacher Report Form (Achenbach & Rescorla, 2000), a 36-item subscale of the preschool version of the TRF consisting of attention problems and disruptive behaviours. On the Caregiver-Teacher Report Form, the teacher scores current child behaviour, now or within the last 2 months, with 0 (not true), 1 (sometimes true), or 2 (very true or often true). Cronbach's coefficient α equalled .96 for the Externalizing Scale in our sample.

A number of possible parental predictors were assessed in both parents at baseline. We used the total score on the 18-item Adult ADHD Rating Scale (AARS; Barkley & Murphy, 1998) to assess parental ADHD symptoms. Ratings are on a 4-point Likert scale ranging from 0 (never or rarely) to 5 (nearly all the time) over the last 6 months. Cronbach's coefficient α equalled .92 for the mothers' and fathers' scores on the AARS in our sample. Parental antisocial behaviour was measured with the total score on the Subtypes of Antisocial Behavior Questionnaire (STAB; Burt & Donnellan, 2009), a 32-item self-rating scale on aggressive behaviour in adults during the last year scored on a 5-point Likert scale ranging from 1 (never) to 5 (nearly all the time). Cronbach's coefficient α equalled .82 for the both parents' STAB in our sample. Parental frequency of alcohol use, binge drinking, typical drinking patterns, and harm caused by drinking was assessed by the

Alcohol Use Disorders Identification test (AUDIT; World Health Organization; Babor & Higgins-Biddle, 2001). This questionnaire consists of 10 items on frequency and amount of alcohol use, typical drinking patterns, and harm caused by drinking, with ratings between 0 (never, 1 or 2, no) and 4 (4 or more times a week, 10 or more, daily or almost daily, yes). Ratings of ≥ 8 in men and ≥ 7 in women are considered to indicate problematic alcohol use (Babor & Higgins-Biddle, 2001). Cronbach's coefficient α equalled .72 for mothers' and fathers' scores on the AUDIT in our sample.

The mothers' total score on the Parenting Scale (PS; Arnold, O'Leary, Wolff, & Acker, 1993) was used as a measure of dysfunctional parenting style and extent to which parents are able to set rules in various discipline situations. The PS consists of 30 items, scored on a 7-point Likert scale, varying from 1 (always) to 7 (never). A low PS score indicates an effective disciplining practice. Cronbach's coefficient α equalled .83 for mothers' PS in our sample. The mothers' total score on the Parenting Sense of Competence Scale (PSOC; Johnston & Mash, 1989) was used to measure parenting satisfaction and parenting self-efficacy regarding the parenting role. The PSOC consists of 16 items, scored on a 6-point Likert scale, varying from 1 (strongly agree) to 6 (strongly disagree). A low PS score indicates an effective discipline strategy, and a high PSOC score indicates stronger sense of competence. Cronbach's coefficient α equalled .84 for mothers' PSOC in our sample.

2.5 | Statistical analysis

Changes in ECBI-I and ECBI-P ratings for mothers and fathers separately were analysed with repeated measures analysis of variance (ANOVA), using the available parental data from T0 to T1 ($n = 67$) and from T1 to T2 ($n = 68$). The same was done with regard to changes in teachers' reports on the Externalizing Scale of the TRF from T1 to T2. Outcome data were analysed with an intention-to-treat approach, which means that T2 data of all participants were included, irrespective of the number of treatment sessions they had received. With repeated measures ANOVA, with a Greenhouse-Geisser correction in case our data violated the assumption of sphericity. We also measured overall change of mean outcome scores between the initial assessment (T0, first pretest) and posttreatment (T2), with pair-wise post hoc T0-T1 and T1-T2 comparisons in case of a significant overall time effect. Significant p values were adjusted with the Holm-Bonferroni procedure, to correct for multiple testing (Gaetano, 2013). To evaluate the clinical significance of the results based on changes in mothers' and fathers' scores on the ECBI-I and ECBI-P from T1 to T2, effect sizes were calculated with Cohen's d .

We explored discrepancies between parents on parenting stress and parental psychopathology using independent t tests. To assess the predictive value of parental and parenting variables, two multiple regression analyses were conducted, with posttreatment scores (T2) from mothers on the ECBI-I and ECBI-P, respectively, as dependent variables. First, to control for baseline effects on the outcome measure at T2, the outcome measure at T1 was entered in both regression analyses. In the second step, we added both mothers' and fathers' scores at pretreatment (T1) on parental characteristics (AARS, STAB, and AUDIT). In the third step, mothers' ratings on parenting factors

(PS and PSOC) were added to significant parental characteristics. Predictors that were not significant were removed from the analyses.

We considered the variables "received some kind of previous parent counseling" and "individual or group format" both as covariates in the repeated measures ANOVA, and as control variables in the regression analyses, but they were removed in all analyses because of non-significance.

In case of more than half items missing, the scale was discarded from analyses. If there were guidelines available on how to deal with missing items, we followed these guidelines. In case of no such rules and less than half missing values for a scale, these values were replaced with the mean of other items of the scale. In case of more than 50% items missing, the scale was discarded from analyses. In total, <0.1% of the total item scores, randomly distributed among scales, assessment time points, and participants, was missing.

The statistical significance level was set at $p < .05$. All analyses were performed in the Statistical Package for the Social Sciences.

3 | RESULTS

3.1 | Changes in child behaviour

Parental and teacher or caregivers' ratings on child's behaviour problems are listed in Table 2. Repeated measure ANOVAs revealed that mean ECBI scores differed significantly between T0 and T2, both on mothers' ECBI-I, $F(1.52, 100.) = 23.0, p < .001$, and ECBI-P ratings $F(2.0, 122) = 32.6, p < .001$, as well as on fathers' ECBI-I, $F(1.66, 71.2) = 12.0, p < .001$, and ECBI-P, $F(1.70, 66.1) = 16.9, p < .001$. Post hoc tests showed that between T0 and T1, there were no significant differences in maternal ECBI-I ($p = .561$) and ECBI-P ($p = .792$) reports, and neither did fathers report changes on both ECBI-I ($p = .988$) and ECBI-P ($p = .417$). In contrast, after the BPT phase (from T1 to T2), mothers and fathers reported significant improvements on both scales of the ECBI, with moderate to large effect sizes (range 0.51–0.87, see Table 2). Teachers also reported significant changes in externalizing behaviour problems after BPT, the effect size was small (see Table 2).

3.2 | Predictors of change

On the predictor variables, parents only differed in alcohol use, with mothers ($M = 1.88$, range 0–7) drinking significantly less, $t(120) = -4.84, p < .001$, alcohol than fathers ($M = 4.14$, range 0–15). There were two mothers with problematic alcohol use (AUDIT scores ≥ 7) participating in our study and eight fathers (AUDIT scores ≥ 8), who all had a partner with nonproblematic alcohol use.

Results on the hierarchical multiple regression analyses are reported in Table 3. Higher scores on the ECBI-I before treatment were associated with higher scores after BPT. It appeared that 38% of the variance in ECBI-I scores at T2 could be predicted by the ECBI-I score at T1 (see Table 3). Also, higher mother ratings on ECBI-P at T1 were associated with a higher score on the ECBI-P after treatment, accounting for 21% of the variance (see Table 3).

Second, the multiple regression analyses revealed that more problematic alcohol use in fathers predicted higher scores on the ECBI-P at T2 (see Table 3), and mothers rating themselves as less adequate in

TABLE 2 Outcome measures at both pretreatment time points (T0 and T1) and after treatment (T2)

Variable	n	Initial assessment (T0, first pretest)			n	Pretreatment (T1, second pretest)			t	n	Posttreatment (T2)			t	Cohen's d
		Mean	SD	Range		Mean	SD	Range			Mean	SD	Range		
Mothers' ECBI-intensity	67	158	23.8	118–219	68	158	24.5	89–216	0.58	69	140	32.5	63–235	5.68***	0.63
Mothers' ECBI-problem	63	19.4	5.75	5–34	68	19.2	6.25	4–35	0.27	68	13.0	7.94	0–34	6.77***	0.87
Fathers' ECBI-intensity	52	145	22.0	103–202	58	147	26.2	94–217	0.02	51	132	31.9	62–212	4.70***	0.51
Fathers' ECBI-problem	48	18.4	7.65	5–34	57	17.6	6.91	0–33	0.82	51	12.4	8.8	0–36	4.48***	0.66
Teachers' TRF-Externalizing					58	27.4	16.2	1–58		54	24.5	16.9	0–58	2.21*	0.18

Note. ECBI = Eyberg Child Behavior Inventory; TRF = Teacher Report Form.

t-test values; Holm–Bonferroni adjusted *p* values.

**p* < .05,

***p* < .01,

****p* < .001.

TABLE 3 Hierarchical multiple regression analyses predicting change in disruptive behaviour problems after behavioral parent training with parental factors and maternal parenting factors

Predictor	Intensity of disruptive behaviour problems after treatment (ECBI-I, T2)			Number of disruptive behaviour problems after treatment (ECBI-P, T2)		
	R ²	SE B	β	R ²	SE B	β
Step 1	.38			.21		
Constant		20.4			2.79	
ECBI-I before treatment (T1)		0.13	0.62***			
ECBI-P before treatment (T1)					0.14	0.47***
Step 2				.32***		
Constant					-2.94	
ECBI-P before treatment (T1)					0.14	0.44***
Fathers' alcohol use (AUDIT)					0.25	0.35**
Step 3	.44***					
Constant		26.8				
ECBI-I before treatment (T1)		0.12	0.60***			
ECBI-P before treatment (T1)						
Mothers' parental effectiveness in disciplining (PS)		0.19	-0.26**			

Note. ECBI = Eyberg Child Behavior Inventory; AUDIT = Alcohol Use Disorders Identification test; PS = Parenting Scale.

**p* < .05,

***p* < .01,

****p* < .001.

disciplining before treatment predicted lower scores on the ECBI-I after treatment (see Table 3). None of the other factors (i.e., parental ADHD, parental antisocial behaviour, and maternal parenting self-efficacy) predicted the ECBI-I and ECBI-P ratings after treatment.

4 | DISCUSSION

In the current study, we examined the effectiveness of BPT in referred preschool children's disruptive behaviour problems and the role of various possible parental predictors of treatment response. Fathers and mothers reported significant and large improvements of children's behaviours after BPT, both in intensity and number of problematic behaviours (effect sizes ranged from 0.51–0.87). Especially the father

reports on child outcome are informative, as these reports are scarce (Rimestad et al., 2016). Although we did not include a control group in our study design, the significant improvements after BPT stand out from the non-significant changes during the waiting list period. Therefore, it may be assumed that the reductions of the disruptive behaviours were not merely due to time. Moreover, also the more independent teachers reported improvement of child behaviour after BPT treatment points to true effects. Thus, also in the natural setting of an outpatient mental health clinic results BPT in significant improvements of disruptive behaviours.

Parents not only indicated improved behaviour in their children but also experienced fewer child behaviours as problematic after BPT. This result may be due to the cognitive interventions that were part of the BPT programme and that were aimed to learn to

differentiate between developmentally appropriate and disruptive child behaviours, to increase parental understanding of disruptive behaviours in a developmental context, and to establish realistic expectations of the possibilities to change the child's behaviour. However, further research is needed to investigate if changes in parental cognitions are indeed related to more tolerance towards children's disruptive behaviours.

Although treatment attendance appeared to be high, about one third of the parents dropped out of the treatment, mostly because they could not manage to organize participation in BPT on a regular basis. Parents of preschool children, who spend most of their time at home and need to be continuously monitored, may have more difficulties to attend to treatment than parents of school-aged children. Offering child care for the children in the family during the BPT sessions may enhance presence at the treatment sessions (Trillingsgaard et al., 2014). For some families, it may be necessary to provide BPT at home, because attending clinic-based BPT sessions may be too demanding.

We found that pretreatment level of behaviour problems was an important predictor of treatment outcome, and parental factors only played a modest role. In contrast with findings of the Multimodal Treatment Study of children with ADHD (Hoza et al., 2000), BPT in our study was most effective in children from mothers rating themselves as less adequate in disciplining before treatment, perhaps due to room for improvement in mothers who showed less good parenting before treatment. Another explanation may be that mothers who consider themselves already as effective in disciplining before the treatment are less receptive to therapists' advices concerning changes in parental behaviours. It could also be argued that mothers who perceive themselves as good in disciplining tend to attribute the behaviour problems more to the child and less to their own parenting role and therefore are less willing to change their own behaviours.

Alcohol use in fathers played a role in the amount of behaviour problems after BPT as well. Mothers perceived more behaviour problems in their children after treatment in case fathers were currently more problematic alcohol users. Large drinking discrepancies between partners have been shown to be negatively associated with relation satisfaction, especially for young couples with children (Foulstone, Kelly, Kifle, & Baxter, 2016). Having a partner with high alcohol consumption may lead to relational stress and more parenting responsibilities in mothers. It may be more difficult for these mothers to implement and practice the learned parenting skills because of lack of support or negative parenting practices of their partners. Therefore, it could be that mothers with a partner drinking a lot of alcohol experience their children's behaviour more often as demanding.

We found no associations between parental ADHD and response to BPT, despite presence of high levels of self-rated ADHD in almost a third of the parents. This finding is in contrast with a previous preschool study (Sonuga-Barke et al., 2002) but in line with an earlier study from our group (van den Hoofdakker, Nauta, van der Veen-Mulders, Sytema, Emmelkamp, Minderaa, & Hoekstra, 2009). However, the fact that parental ADHD was not predictive of response to BPT may be related to the sample, as those with lacking organizational skills did not even start BPT (11% of otherwise suitable families).

Also, pretreatment maternal parenting satisfaction and parenting self-efficacy was not associated with BPT outcome. Finally, antisocial

behaviour in parents was also not found to be predictive for changes in children's behaviour after BPT, perhaps because of low parental ratings on the STAB.

5 | LIMITATIONS

A strength of our study was the embedding within clinical practice and the use of mother, father, and teacher outcome ratings. However, a number of limitations must also be acknowledged, most notably the lack of a control group and the modest sample size. Because of no control group, the possibility remains that factors other than the intervention produced the effect, although no effects were reported in the waiting period before the intervention. The modest sample size may explain why we did not find other significant predictors than the mother-rated level of dysfunctional parenting and alcohol use in fathers for changes in children's disruptive behaviour after BPT.

Furthermore, we only used information from self-report questionnaires and not from blinded observers. Future research on divergence and convergence between self-ratings and blinded observational data of child and parenting behaviour should provide additional important information on this topic.

6 | CLINICAL IMPLICATIONS

BPT treatment in a real-world outpatient mental health setting clearly improves preschool children's disruptive behaviour problems. Furthermore, BPT is useful to help parents experience fewer behaviours as troublesome, maybe due to a better understanding of their child and more realistic expectations. However, about one third of the parents for whom BPT was indicated could not manage or were not motivated to participate in BPT and never started BPT, thus refraining from an effective treatment. This highlights the importance of motivating and facilitating parents to actually participate in BPT. Special formats may be needed for families who are not able to participate, such as home-based BPT.

All in all, BPT is a valuable intervention for parents of young children with disruptive behaviour problems, especially for those that are open to this intervention and can manage to participate. BPT may be particularly useful when mothers perceive themselves as inadequate in disciplining practices. Finally, alcohol problems in fathers may be targeted before or during BPT, but we do not know if such an additional intervention will enhance BPT outcome.

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CONFLICT OF INTEREST

On behalf of all authors, the corresponding author states that there are no conflicts of interest.

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