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ORIGINAL CONTRIBUTION

Characteristics of young children with persistent conduct problems 1 year after treatment with the Incredible Years program

May Britt Drugli · Sturla Fossum · Bo Larsson · Willy-Tore Morch

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Abstract In the present study, predictors of persistent conduct problems among children aged 4–8 years were investigated in a randomized controlled trial 1 year after treatment with the Incredible Years parent training program (PT), or combined parent training and child treatment (PT + CT). Data were collected before and after treatment and at a 1-year follow-up. Pre-treatment child characteristics predicting persistent conduct problems in the child at the 1-year follow-up were high levels of internalizing and aggression problems as reported by mothers. The only family characteristic predicting persistence of child conduct problems was having contacts with child protection services. Clinicians and researchers need to closely monitor and identify children with conduct problems not responding to parent training programs. These individuals and their families are likely to need further support.

Keywords Conduct problems · Parent training · Non-responders

Introduction

Children with severe aggression and conduct problems not improving during the preschool period are at increased risk for developing violent behaviors, other mental health problems, school dropout and substance abuse during adolescence [7, 18, 19]. As adults they often face occupational difficulties, marital and family problems and criminal offending. The long-term costs for the society for individuals with stable conduct problems are ten times higher as for those without such problems [24]. Thus, such problems in childhood constitute a potential public health problem in need of increased knowledge about how it then should be effectively managed, in addition to cost-effectiveness and client acceptability of effective treatment programs.

Parent training methods are most frequently used in the treatment of young children with conduct problems and positive effects are well documented [9, 13, 15, 19, 23, 25, 26, 27, 29]. By combining parent training with child therapy or teacher-based programs, the effects of intervention have been further enhanced in regard to negative child social interactions with peers [25, 29]. Although most parent training programs produce substantial and positive effects [27], about one-third of the treated children still show conduct problems at clinical levels after treatment [15, 29]. Consequently, increased knowledge regarding the characteristics of non-responders to such interventions and their predictors is important to further increase the effectiveness of standardized and time-limited parent training programs [5].

Results of previous studies of characteristics of children not responding to parent training programs have produced mixed findings [5, 11]. More specific knowledge about the characteristics of this group of children could help identify predictors related to improved outcomes for children and families treated with parent training and/or child therapy to increase the effectiveness of the management of children with severe conduct problems. For example, Webster-Stratton and Hammond [27] found that parental depression, lone parenthood and socioeconomic disadvantage predicted a worse outcome. In a more extensive study, pooling outcomes from several controlled studies using the Incredible

M. B. Drugli (✉) · B. Larsson
Department of Neuroscience, NTNU, Regional Centre for Child and Adolescent Mental Health, 7489 Trondheim, Norway
e-mail: May.B.Drugli@ntnu.no

S. Fossum · W.-T. Morch
Regional Centre for Child and Adolescent Mental Health, University of Tromsø, 9037 Tromsö, Norway

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Years program, Beauchine et al. [5] reported that marital adjustment, maternal depression, paternal substance abuse and child comorbid anxiety/depression at baseline moderated treatment response, while harsh and ineffective parenting both predicted and mediated outcome. Kazdin [12] reported that high levels of child behavior problems and high levels of negative life stress predicted a poor treatment response, while Hemphill and Littlefield [11] found that low pre-treatment levels of behavioral and emotional problems in the child and negative parent–child interaction predicted a worse treatment outcome. In contrast, Scott [23] reported that parent training worked well for children in families with a range of additional psychosocial problems, such as a lone parent household, parental education levels and low family income, but also improved children with high levels of conduct problems.

In a previous study, "The Incredible Years" [15] parent training program (PT) alone or combined with child treatment (PT + CT) were evaluated in a sample of children aged 4–8 years participating in a randomized controlled trial [10, 15]. After treatment, children in both treatment conditions showed significant improvement when compared with those in a waiting-list control group in regard to behavioral problems in the child as well as parenting strategies. However, immediately after treatment and 1 year later, about 40% of the treated children still exhibited various conduct problems in the clinical range according to mothers' report on the Eyberg child behavior inventory (ECBI) [15]. In a further study of this sample, child non-response immediately after treatment was associated with the following pre-treatment characteristics: a diagnosis of ADHD, girl sex, maternal depression and high levels of maternal stress [10].

The goals of the present study were to investigate predictors of treatment non-response 1 year after parent training and/or child therapy. The following pretreatment predictors were investigated: age and sex of the child, and levels of child aggression, attention and internalizing problems as reported by mothers, conduct problems as reported by teachers, a diagnosis of both oppositional defiant disorder (ODD) and conduct disorder (CD), ADHD or anxiety/depression, lone parenthood, mother's educational level, contact with child protection service, mother treatment because of psychiatric problems, mother parenting style (positive and harsh parenting), parenting stress and treatment condition (PT vs. PT + CT).

Methods

Participants

The present sample consisted of 127 children 4–8 years old referred for treatment to two child psychiatric outpatient clinics because of oppositional or conduct problems as experienced by their parents. The study was conducted in two university cities in Norway, Trondheim and Tromsø. Exclusion criteria were children with gross physical impairment, sensory deprivation, intellectual deficit or autism. All but one family in the study were native Norwegians. To be eligible for the study, children were required to have been medicated for at least 6 months, and five children were on drug treatment for ADHD when entering the study. Two families dropped out during the treatment period. Child and family characteristics for the total sample are presented in Tables 1, 2.

Table 1 Child and family characteristics

	% (*n*)
Child	
Gender	
Boys	80% (101)
Girls	20% (26)
Age[a]	6.6 (1.3)
Setting	
In day care	31% (39)
In school	69% (87)
Psychiatric diagnoses	
ODD, possible diagnoses	13% (16)
ODD, certain diagnoses	87% (111)
CD, possible diagnoses	11% (14)
CD, certain diagnoses	8% (10)
ADHD	35% (45)
Anxiety/depression	10% (13)
Enuresis	14% (18)
Encopresis	7% (9)
Tourette/tics	4% (5)
Family	
Living situation	
Both parents[b]	47% (60)
Mother and stepfather	21% (26)
Single mothers	32% (41)
Mother education	
College or university	14% (16)
High school or partial college	78% (90)
Partial high school or less	8% (9)
Father education	
College or university	19% (18)
High school or partial college	72% (69)
Partial high school or less	9% (9)

Percentages and number of subjects within parenthesis

[a] Mean and SD

[b] Including 8 adoptive- and foster parents and 4 parents with shared custody

Table 2 Bivariate predictors for children without and with an ODD/CD diagnosis at the 1-year follow-up

Predictors at T1	Without an ODD/CD diagnosis M (SD, *n*)	Still with an ODD/CD diagnosis M (SD, *n*)	*t*-value or χ-value
Treatment condition			
PT	48.3% (28)	40.0% (12)	
PT + CT	51.7% (30)	60.0% (18)	
Sex			
Girls	19.0% (11)	21.4% (6)	
Boys	81.0% (47)	78.6% (22)	NS
Age group			
In day care (4–6 years)	27.6% (16)	37.9% (11)	
In school (6–8 years)	72.4% (42)	62.1% (18)	NS
ADHD			
Diagnosis	53.4% (31)	60.0% (18)	
No diagnosis	46.6% (27)	40.0% (12)	NS
Anxiety/depression			
Diagnosis	8.6% (5)	10.0% (3)	
No diagnosis	91.4% (53)	90.0% (27)	NS
Living situation			
Both parents	51.7% (30)	50.0% (15)	
Mother and stepfather	22.4% (13)	13.3% (4)	
Single mother	25.9% (15)	36.7% (11)	NS
Mother education			
College or university	5.5% (3)	7.7% (2)	
High school or partial college	80.0% (44)	73.1% (19)	
Partial high school or less	14.5% (8)	19.2% (5)	NS
Child protection services			
Being in contact	6.9% (4)	43.3% (13)	
No contact	93.1% (54)	56.7% (17)	18.1**
Mother treated for psychiatric problems			
Being treated	30.6% (15)	54.5% (12)	
Not being treated	69.4% (34)	45.5% (10)	NS
Parenting stress (PSI)	262.2 (41.7)	266.3 (31.1)	NS
Aggression problems at home (CBCL)	18.5 (6.6)	23.8 (7.4)	−3.37*
Attention problems at home (CBCL)	6.9 (3.6)	8.4 (3.5)	NS
Internalizing problems at home (CBCL)	10.5 (6.7)	14.3 (8.8)	−2.12*
Aggression problems in day care/school (PBQ/TRF)	2.7 (1.7)	3.4 (1.7)	NS

CBCL child behavior checklist, *PSI* parent stress index, *TRF* teacher report form, *PBQ* preschool behavior questionnaire

* $p < 0.05$, ** $p < 0.01$

In this study, treatment non-response versus treatment response was defined by fulfilling the diagnostic criteria for a diagnosis of ODD or CD. Only one child with a diagnosis of CD did not fulfill the criteria for an ODD diagnosis.

Procedures

Information about the study was given to referral agencies or professionals such as teachers, physicians, health nurses and child welfare workers throughout the project period. All clinically referred children were first screened by means of the ECBI [8, 21] using the 90th percentile as a cut-off score according to Norwegian norms [20]. Children who attained such a cut-off score or higher as rated by one of the parents were subsequently interviewed by one of three trained interviewers using the KIDDIE-SADS (see description below). Those who received a sub-threshold or certain diagnosis of ODD and/or CD were offered to participate in the study. The term "sub-threshold diagnosis" refers to those children who scored one criterion less than the four required for a formal DSM-IV ODD diagnosis or the three items required for a formal DSM-IV CD diagnosis, and had diminished psychosocial functioning, a procedure suggested by Angold and Castello [4].

Data were collected before and after treatment and at a 1-year follow-up. Parents were paid 250 Norwegian crowns

(corresponding to about 31 euro) and teachers were paid 150 Norwegian crowns (corresponding to about 19 euro) at each assessment point. In the present study, mother and teacher reports pre-treatment and at a 1-year follow-up were used. Because of a low response rate, father reports were not used. The response rate for both mothers and teachers for treated children ($n = 99$) at the 1-year follow-up was 90.7% ($n = 88$).

Treatment

Parent training (PT)

Ten to twelve parents met in groups with two therapists at the clinic during a 12–14-week period for a weekly 2-h session and participated in the basic Incredible Years parenting program. The program teaches parents the use of positive discipline strategies, effective parenting skills, strategies for coping with stress and ways to strengthen child pro-social skills.

Child therapy

Six children and two therapists met weekly in 2-h sessions during 18 weeks in the Incredible Years dinosaur child program administered at the clinic. The treatment program addresses interpersonal difficulties in young children with ODD and CD in order to increase their pro-social skills, conflict resolution skills, playing and cooperation with peers. For further descriptions of the two treatment approaches, see Webster-Stratton and Hammond [28].

Forty-seven children were randomized to PT treatment and 52 children to combined PT + CT treatment. Two families (1.6%) dropped out early during treatment, both from the PT condition, and were removed from the analysis.

Therapists

Fifteen therapists administered the parent training groups and nine the child therapy at the two sites. Each had a bachelor or a master degree in mental health-related fields and all were experienced clinicians. The therapists were trained according to certification procedures established by the Incredible Years program, and they received continuous supervision from a certificated mentor throughout the study.

Assessment measures

Interview with the parents

Before treatment, all parents were interviewed by the therapist about different background variables regarding parent educational level, who the child live together with, contact with the child protection services and parent treatment for psychiatric problems.

KIDDIE-SADS

This semi-structured diagnostic interview is designed to assess psychopathology in children and adolescents according to DSM-IV criteria [14]. Here, only the diagnoses most relevant for the 4–8 years age group were included being based on parent reports of current psychopathology among children. Three trained persons conducted the diagnostic interviews. All interviews were recorded and random checks showed high reliability with all Kappa scores being above 0.90.

Eyberg child behavior inventory

The ECBI is a 36-item inventory for parents to assess conduct problem behaviors among children aged 2–16 years on a 1–7 scale [8, 22]. In this study, total intensity scores were used (range from 36 to 252) to indicate frequency of behavior problems. Internal consistency was found to be 82, and test–retest has been reported to be 0.86 [28].

Child behavior checklist

This measure consists of social competence and emotional/behavioral problem scales. On the latter, parents are asked to rate 118 items on a 0–2 scale for the last 6 months [2]. Here, the aggression and attention subscales were used, in addition to the internalizing broad-band syndrome scale. Internal consistency for these subscales were 0.84, 0.74 and 0.84, respectively. Test–retest reliability has been found to be high and inter-parent agreement to range from 0.65 to 0.75 for the subscales [2].

Parent practices interview

The parent practices interview (PPI) was adopted from the Oregon Social Learning Center's discipline questionnaire, revised for young children [29]. Two summary scores were used: harsh discipline (14 items including use of parental force such as verbal or physical aggression), and positive parenting (15 items including verbal encouragement, praise and reinforcement and use of incentives or privileges). The scores range from 1 to 7, and an average summary score is computed. Internal consistency was found to be 0.85 and 0.65, respectively.

Parent stress index

Here, the total stress scale, consisting of 101 items was used to assess parents' perceived stress related to child

behaviors, as well as stress related to parenting [1]. Parents rated each item on a 5-point Likert scale (total score range 101–505). Internal consistency was found to be 0.94.

Preschool behavior questionnaire (PBQ)

The preschool behavior questionnaire (PBQ) includes 30 items of conduct problems and are completed by day-care teachers for children aged 4–6 years [6]. In this study, items in the aggression (7 items), hyperactive/distractible (4 items) and internalization (5 items) subscales were used. Items were scored on a 0–2 scale, and computed sum scores for the subscales range from 0 to 14, 0 to 8 and 0 to 10, respectively. Internal consistency was 0.80, 0.63 and 0.82 and in the Behar study [6] test–retest reliabilities for these subscales were 0.93, 0.94 and 0.60, respectively.

Teacher report form

On this measure, teachers are asked to rate school-aged children's academic performance, four general adaptive characteristics, and 112 emotional/behavioral problems scored on a 0–2 scale [3]. In this study, the aggression and attention subscales and the internalizing syndrome scale were used. Their sum scores range from 0 to 50, 0–40 and 0–70, respectively. Test–retest reliability for the problem scales has been found to be 0.90, and 0.55 for inter-rater agreement [3]. For the teacher report form (TRF) measures, the aggression subscales were compared with data from a Norwegian normative study to establish optimal cut-off points between a school sample and the present clinical sample [7, 16].

Design

The main design and outcome of the study is described by Larsson et al. [15]. An experimental randomized control between-group design was used with pre- and post-measurements, and a 1-year follow-up of treated children. The trial is registered with the international RCT number ISRCTN10430476.

In the present study, only data from pre-assessment and the 1-year follow-up of treated children is used. Thus no data from a untreated control group was used.

Ethics committee

Informed consent was obtained from all parents. The Regional Committee of Ethics on Medical Research, University of Tromsø and The Norwegian Data Inspectorate approved the study.

Statistics

To increase statistical power data from both active treatment groups were pooled together. The rationale behind this procedure was based on findings from the main outcome study of the same sample of children showing no significant difference between PT versus PT + CT conditions on mother reports of child behavior problems at the 1-year follow-up [15]. Few measures were discarded due to missing data, since overall item responses were good but scores for subscales or total scores were not computed if a subject had more than 10% of items missing.

In analysis of associations between categorical variables, chi-square tests were used, and for analysis of differences between-group means, independent t tests were employed. Significant predictors in bivariate analyses were entered in multivariate logistic regression with backward elimination procedures to examine further the most powerful baseline predictors for children still fulfilling the criteria for an ODD diagnosis at the 1-year follow-up.

An alpha level of $p < 0.05$ indicated statistic significance result.

Results

Conduct problems in the clinical range at the 1-year follow-up

While all treated children fulfilled the criteria for an ODD or a CD diagnosis or a sub-threshold diagnosis of ODD or CD before treatment, 34% ($n = 30$) of the treated children still had such a diagnosis at the 1-year follow-up and were according to our definition defined as treatment non-responders. About two-thirds (66%) of the children were treatment responders at the 1-year follow-up.

Predictors of persistent conduct problems at the 1-year follow-up

At the 1-year follow-up, mothers of children still receiving a diagnosis of ODD or CD reported significant higher levels of child aggression and internalizing problems on the Child behavior checklist (CBCL) at baseline [t (82) = −3.4, $p < 0.01$ and t (82) = −2.1, $p < 0.05$, respectively] than mothers of those children who no longer fulfilled diagnostic criteria. Also pre-treatment scores of child attention problems were higher among the treatment non-responders [t (82) = −1.96, $p = 0.05$].

Further, having contact with child protection services (vs. no contact) was found to predict treatment non-response at the 1-year follow-up [χ^2 (1) = 18.1, $p < 0.001$]. The proportion of mothers being treated

because of psychosocial problems were somewhat higher in the group of treatment non-responders as compared to treatment responders [χ^2 (1) = 3.7, $p = 0.06$].

None of the other predictors showed significant results.

Predictors of persistent conduct problems in the clinical range at the 1-year follow-up: results of multivariate analysis

The following baseline predictors in bivariate analyses emerged as significantly associated with persistent conduct problems in the child: aggression and internalizing problems as reported by mothers and families having contact with child protection service.

These predictors were included in a subsequent logistic regression analysis. The results showed that having contact with child protection service significantly predicted group membership at the 1-year follow-up [$B = -2.04$, SE = 0.68, OR = 0.13, $p < 0.05$] with Nagelkerke's R square of 30.5%. Overall, this model could classify 77.7% of all subjects correctly, 46.4% of those still showing an ODD or a CD diagnosis at the 1-year follow-up and 92.9% of those without a diagnosis.

Discussion

In the present study, predictors of persistent versus no persistence of conduct problems among children aged 4–8 years were investigated 1-year after treatment with the Incredible Years parent training program (PT), or combined parent training and child therapy (PT + CT) in a randomized controlled trial.

In their meta-analytic review of predictors of parent training efficacy, Reyno and McGrath [21] concluded that response to parent training is often influenced by factors not directly involving the child, for example, parental socioeconomic status and maternal mental health, in that such factors predict reduced treatment effect. In the present study, both family and child variables predicted persistence of clinical levels of child conduct problems at the 1-year follow-up, although family involvement with the child protection services was found to be the strongest predictor in multivariate analysis.

Pretreatment child characteristics predicting persistent conduct problems in the child at the 1-year follow-up were high levels of child emotional (internalizing problems) and behavioral problems as reported by mothers. This finding indicates that children who displayed severe internalizing and externalizing problems before treatment also were at highest risk for continuing to exhibit serious conduct problems 1 year after treatment. Hemphill and Littlefield [11] found that children with high levels of emotional and behavioral problems before treatment improved their home behavior most after treatment; however, no information of proportion of children still scoring within clinical range was provided. In the present study, many children achieved a substantial reduction of parent-reported conduct problems after treatment, in particular among those scoring highest on the ECBI before treatment. Striking positive changes in behaviors of the treated children were also reported by parents in qualitative interviews after treatment [17]. In spite of these improvements, a proportion of the children still exhibited clinical levels of conduct problems 1 year after treatment. These children are likely to represent those being especially hard to treat. Young children with complex and high levels of conduct problems may therefore need more extensive, other or supplementary treatment than what they did receive in this study.

The only family and parental characteristics that predicted persistent conduct problems in the child at the 1-year follow-up was family being in contact with the child protection services. This finding suggests that families with multiple problems may need supplementary treatment to the one offered by The Incredible Years PT and PT + CT programs for the child to achieve normal functioning 1 year after treatment. These families are likely to need help also with other aspects of their lives than improving their parenting skills, for example, coping with different kinds of life stress. Such families may also need more concrete support, so that positive parenting strategies learned during intervention sessions are better generalized to the home setting with support from other professionals working with the family, such as social workers from the child protection services.

Limitations of the study

The present study included a highly selected clinic sample of 4–8 year-old children diagnosed with oppositional or conduct disorders recruited to a randomized controlled treatment study. The findings from this study may therefore not be possible to generalize to children with minor or moderate conduct problems. Another limitation is that we no longer had a group of untreated children at the 1-year follow-up because of ethical reasons. In spite of limited statistical power due to the small number of children included in the present study, the differences obtained here are of clear clinical importance.

Conclusion

Children showing high levels of internalizing and behavioral problems before treatment were found to face an increased risk for persistent conduct problems 1 year after treatment

with the Incredible Years was finished. However, the most significant predictor of treatment non-response was families being in contact with the child protection services.

An important implication of the study is that clinicians should closely monitor and identify children not responding to treatment and still receiving an ODD or a CD diagnosis after treatment. These children and their families are likely to need further support, because the children are at particular risk for having stable and serious conduct problems throughout childhood, adolescence but also into their adult lives. Quite many children with early onset conduct problems will continue to have such problems later on as adults, and young children who are hard to treat faced high risk for belonging to this group. In particular, families being in contact with the child protection services may need more adjusted and supplementary support to the Incredible Years PT and PT + CT intervention programs. When such families are referred to parent training programs, it is important to establish a close cooperation between all the professions working within the family. Children with high levels of emotional and behavioral problems are also likely to need more than the basic Incredible Years program (PT and PT + CT) to achieve better treatment outcomes.

Future research should investigate the efficacy of supplementary or extended treatment approaches to further enhance the effects of a standardized and structured intervention such as the Incredible Years program for families having multiple problems and a young child with severe conduct problems.

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