

Five- to six-year outcome and its prediction for children with ODD/CD treated with parent training

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Background: While short-term effects of parent training (PT) have been extensively evaluated, long-term outcome and present predictors of a diagnosis for children with ODD/CD treated with parent training are very limited. **Method:** In the present study, diagnostic status as outcome and predictors of treatment response were examined in a 5–6-year follow-up. Out of 99 children who had been treated in a randomised controlled trial evaluating the effects of The Incredible Years parent training (PT) or combined parent training and child treatment (PT+CT) programme, 54.5% participated in the 5–6-year follow-up study. Their diagnostic status was determined with the Kiddie-SADS interview. **Results:** While all children qualified for a diagnosis of ODD/CD before treatment, 5–6 years later, two-thirds no longer received such a diagnosis, the same proportion as found at the 1-year follow-up. The most powerful pre-treatment predictors of diagnostic status at the 5–6-year follow-up were living with mother only and being a girl. At post-treatment the most powerful predictor was found to be high levels of child externalising problems. **Conclusion:** The findings of the study support the maintenance of positive long-term results for young children treated with parent training because of serious conduct problems, and identify characteristics of children and families in need of added support to parent training programmes. **Keywords:** Oppositional defiant disorder, conduct problems, parent training, predictors, long-term outcome. **Abbreviations:** PT: parent training; CT: child treatment, ODD, oppositional defiant disorder; CD: conduct problems; ADHD: attention-deficit/hyperactivity disorder.

Unresolved conduct problems in children with early onset have been found to increase risk for developing violent behaviours, other mental health problems, school dropout and substance abuse during adolescence and adulthood (Odgers et al., 2008). Longitudinal studies in the general population have shown that oppositional defiant disorder (ODD) has a persistence rate of 57% over 4 years (August, Realmuto, Joyce, & Hektner, 1999), while 88% of clinic-referred boys with an early diagnosis of conduct disorder (CD) have been found to meet diagnostic criteria at least once more over a 3-year period (Lahey et al., 1995). In a recent study, a persistence rate of 50% was found for CD after 7 years (Lahey, Loeber, Burke, Rathouz, & McBurnett, 2002).

In numerous randomised controlled trials over the years, parent training programmes have been found to be effective in reducing conduct problems in young children in a short-term perspective (Eyberg, Nelson, & Boggs, 2008; Fossum, Handegård, Martinussen, & Mørch, 2008). Positive effects have been shown to be maintained for at least 1–2 years after treatment for about two-thirds of the treated samples (e.g., Larsson et al., 2009; Nixon, Sweeney,

Erickson, & Touyz, 2004; Reid, Webster-Stratton, & Hammond, 2003; Scott, 2005).

Several studies have also explored pre-treatment predictors of short-term (1–2 years) outcome, including both meta-analytical reviews (Beauchaine, Webster-Stratton, & Reid, 2005; Reyno & McGrath, 2006) and studies of controlled clinical trials (Fossum, Mørch, Handegård, Drugli, & Larsson, 2009; Reid et al., 2003; Reid, Webster-Stratton, & Baydar, 2004; Webster-Stratton & Hammond, 1997). In summary, predictors of adverse treatment outcomes are high levels of conduct problems and ADHD in the child, poor parenting practices, parental mental health and marital adjustment, single parenthood, socioeconomic disadvantage, negative life stress and maternal stress.

While long-term effects of parent training programmes for children are important to investigate, to date, only a few studies have done so for longer periods than 1–2 years. However, Webster-Stratton (1990) reported improvement in parents' report of child conduct problems in a 3-year follow-up study. Frampton, McArthur, Crowe, Linn, and Lovering (2008) found that half the sample of young children with conduct problems remained without a diagnosis 2–3 years after treatment. In a 3-year follow-up study, Kolko et al. (2009) found that 34% and 47% of children treated because of ODD/CD no longer met

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the diagnostic criteria. In a 4-year follow-up, Hutchings, Lane, and Kelly (2004) reported that intensive parent training focused on child management strategies achieved long-term positive effects on both child behaviour and maternal mental health. Hood and Eyberg (2003) examined the long-term effects of Parent Child Interaction Therapy (PCIT) 3–6 years later. They found that improvements in child conduct problems after treatment were well maintained at follow-up for three-quarters of the children. In an extended follow-up study 14 years after parent training, Long, Forehand, Wierson, and Morgan (1994) found no differences between the treated sample and a matched community sample in regard to various measures of delinquency, emotional adjustment, academic progress and relationships with parents.

Identifying the characteristics of long-term non-responders after treatment is particularly important because of the possibility of altering a possible antisocial developmental trajectory through more optimal treatment. Webster-Stratton (1990) found in her 3-year follow-up that single parent status, maternal depression, lower social class status and family history of alcoholism and drug abuse predicted treatment non-response in the child. Further, Hood and Eyberg (2003) found in their 3–6-year follow-up study that high levels of child conduct problems after treatment and longer follow-up periods predicted poorer outcome. Frampton et al. (2008) reported that higher initial levels of child conduct and attention problems and parental stress predicted persistent conduct problems 2–3 years later.

The present sample was treated with the Incredible Years Parent Training Program (Webster-Stratton & Hammond, 1997), and two-thirds were found to be free of ODD/CD diagnosis at a 1-year follow-up (Larsson et al., 2009). High levels of internalising and aggression problems in the child and established contact with child welfare services before treatment predicted a diagnosis of ODD/CD at the 1-year follow-up (Drugli, Larsson, Fossum, & Mørch, 2009).

In the present study, we investigated long-term outcome for children with severe conduct problems 5–6 years after treatment with the Incredible Years Parent Training (PT) with or without Child Treatment (PT+CT vs. PT). The following specific questions were addressed: (1) What is the prevalence of ODD, CD and comorbid diagnoses at the 5–6-year follow-up? (2) Which predictors at baseline, post-treatment and at the 1-year follow-up are associated with a persistent diagnosis of ODD and CD 5–6 years after treatment? The following potential predictors were examined: child sex, living situation, treatment condition (PT vs. PT+CT), child psychiatric diagnoses, levels of internalising, attention and aggression problems in the child, maternal depressive symptoms and parenting stress.

Methods

Sample

Baseline sample. The original sample consisted of 127 children aged 4–8 referred for treatment because of oppositional or conduct problems reported by their parents. Ninety-nine children were randomised to treatment and 28 children to a waiting-list control group (WLC). For ethical reasons, the families in the WLC were offered treatment after 6 months and were excluded in the follow-up assessment. 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. Detailed demographic information is given in Table 1.

Mean child age at study entry was 6.6 years ($SD = 1.3$). All children had either a full or sub-threshold (see below) diagnosis of ODD. In addition, 19% ($n = 24$) were diagnosed with CD/sub-threshold CD, 35% ($n = 45$) with ADHD, and 10% ($n = 13$) with anxiety or depression.

The 5–6-year follow-up sample. Fifty-four of the 99 treated families (54.5%) completed a telephone assessment 5–6 years after treatment termination, when mean child age was 12.1 years ($SD = 1.3$). Loss at this follow-up was due to withdrawal at the 1-year follow-up ($n = 9$; 9.1%) (see Larsson et al., 2009), no longer wanting to participate ($n = 29$; 29.3%) and not reachable by phone or letter ($n = 16$; 16.2%).

No significant difference was found between the follow-up sample and non-participants on any of the following pre-treatment factors: child sex, living situation, treatment condition, levels of behavioural, attention and internalising problems and psychiatric diagnoses in the child, day-care vs. school, parents' educational level, contact with child protective services, parental depression, parenting stress and changes in parenting strategies or child conduct problems after treatment (see Table 1). However, out of families participating in the 5–6-year follow-up, 37% had been treated by parent training (PT) only, while 63% had been treated with parent training combined with child therapy (PT+CT), a significant difference when compared to the baseline sample (see Table 1). Because post-treatment and 1-year follow-up results from the main study showed few differences between the two active treatment conditions (Larsson et al., 2009), participants were combined in the statistical analyses.

Procedures

For details of inclusion criteria used in the study and flow-chart, see Larsson et al. (2009). All referred children were first screened with the Eyberg Child Behavior Inventory (ECBI; Boggs, Eyberg, & Reynolds, 1990) (see below), using the 90th percentile as a cut-off score based on Norwegian norms (Reedtz et al., 2008). Children who met this criterion 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 oppositional defiant disorder (ODD) and/or conduct disorder

Table 1 Differences in characteristics between the 5–6-year follow-up sample and the non-participants

Pre-treatment factors	Follow-up sample n = 54 % (n) or M (SD)	Non-participants n = 45 % (n) or M (SD)	χ^2 or t-value
Sex			
Boys	83.0 (44)	75.0 (33)	.95 ns
Girls	17.0 (9)	25.0 (11)	
Age-group			
4–5 years (day-care)	35.8 (19)	33.3 (15)	.07 ns
6–8 years (school)	64.2 (34)	66.7 (30)	
Living situation			
Mother and father or mother and stepfather	83.3 (45)	75.6 (34)	
Mother only	16.7 (9)	24.4 (11)	.92 ns
Treatment condition			
PT	37.0 (20)	60.0 (27)	5.19*
PT+CT	63.0 (34)	40.0 (18)	
Child psychiatric diagnosis ¹			
CD	13.0 (7)	26.7 (12)	2.97 ns
No CD	87.0 (47)	73.3 (33)	
Anxiety/depression	7.4 (4)	13.3 (6)	.95 ns
No anxiety/depression	92.6 (50)	86.7 (39)	
ADHD	38.9 (21)	31.1 (14)	.65 ns
No ADHD	61.1 (64)	68.9 (31)	
Child psychiatric symptoms ²			
Aggression	19.9 (7.5)	20.9 (6.4)	.69 ns
Attention	7.6 (3.6)	7.1 (3.5)	-.70 ns
Internalising	12.0 (8.5)	11.0 (8.0)	-.64 ns
Mother education			
College or university	18.8 (9)	11.4 (5)	
High school or partial college	77.1 (37)	79.5 (35)	1.69 ns
Partial high school or less	4.2 (2)	9.1 (4)	
Child protection service			
Contact	22.2 (12)	17.8 (8)	.30 ns
No contact	77.8 (42)	82.2 (37)	
Mother depressive symptoms ³	5.9 (5.9)	7.4 (7.4)	1.07 ns
Mother parental stress ⁴	259.3 (36.6)	271.9 (41.9)	1.29 ns
Pre-post change in child aggression level ²	33.4 (24.7)	43.2 (30.5)	1.70 ns
Pre-post change in positive parenting ⁵	-.9 (.7)	-.7 (.7)	1.72 ns
Pre-post change in negative parenting ⁵	.5 (.5)	.4 (.5)	-1.26 ns

Note: * $p < .05$. ¹Kiddie-SADS; ²CBCL (Child Behavior Checklist); ³BDI (Beck Depression Inventory); ⁴PSI (Parent Stress Index); ⁵PPI (Parenting Practice Interview).

(CD) were invited to participate in the study. Following the procedures suggested by Angold and Castello (1996), a 'sub-threshold diagnosis' refers to those children who scored one criterion less than the four required for a formal DSM-IV diagnosis of ODD or the three required for a formal DSM-IV CD diagnosis, and had diminished psychosocial functioning as reported by the parents in the Kiddie-SADS interview. The mean Children's Global Assessment Scale (CGAS) score before treatment was 57.7 (SD = 7.1).

At the 5–6-year follow-up, an information letter was sent to all treated families who were then contacted by phone and invited to participate in a telephone interview in which the K-SADS was administered.

Because of a low response rate for fathers, only data from mother reports were used in this study for all time-points.

Measures

Demographic information and history of mental health and social services were obtained in interviews with the therapists. All questionnaire measures were collected at pre- and post-treatment and at the 1-year follow-up,

while K-SADS interviews were administered pre-treatment and at the 1- and 5–6-year follow-up. For additional details on all measures, see Larsson et al. (2009).

Kiddie-SADS. This semi-structured diagnostic interview is designed to assess psychopathology in children and adolescents according to DSM-IV criteria (Kaufman, Birmaher, Brent, Flynn, & Morcei, 1997). The interviewers were experienced clinicians who were also trained in the use of the Kiddie-SADS. Random checks showed high reliability among the interviewers, with all Kappa scores being above .90.

Eyberg Child Behavior Inventory (ECBI). The ECBI is a 36-item inventory for parents to report conduct problem behaviours among children aged 2–16 years on a 1–7 scale (Boggs et al., 1990). In this study, total intensity scores were used (range from 36 to 252). Internal consistency was found to be .82, and test-retest has been reported to be .86 (Webster-Stratton, 1998).

Child Behavior Checklist (CBCL). This measure consists of social competence and emotional/behavioural problem scales. On the latter, parents are asked to

rate 118 items on a 0–2 scale for the last 6 months (Achenbach, 1991). Here, the Aggression and Attention subscales and the Internalising broad-band syndrome scale were used. Internal consistency for these subscales were .84, .74 and .84, respectively.

Parent Practices Interview (PPI). The PPI was adopted from the Oregon Social Learning Center's discipline questionnaire, revised for young children (Webster-Stratton, Reid, & Hammond, 2004). 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). Items are rated from 1 to 7, and a total sum score is computed (range = 14–98 and 15–105, respectively). Internal consistency (alpha) was found to be .85 and .65, respectively.

Parent Stress Index (PSI). The PSI, consisting of 101 items, was used to assess parents' perceived stress related to child behaviours and parenting (Abidin, 1995). Parents rated each item on a five-point Likert scale (total score range: 101–505). Internal consistency was found to be .94.

The Beck Depression Inventory (BDI). This widely used measure to assess depressive symptoms was administered to parents (Beck, Steer, & Garbin, 1988). The BDI includes 21 attitudes and symptoms which are rated on a scale ranging from 0 to 3. Total scores range from 0 to 63. In the present study, internal consistency was found to be .89.

Treatment

Detailed information on the treatment conditions used in this study is provided in Larsson et al. (2009) and Webster-Stratton and Hammond (1998). Forty-seven children were randomised 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.

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 two-hour session and participated in the Basic Incredible Years Parenting Program. The programme teaches parents the use of positive discipline strategies, effective parenting skills, strategies for coping with stress, and ways to strengthen child prosocial skills.

Child Therapy (CT). Children participated in groups of six, together with two therapists, which met weekly at the clinic in two-hour sessions during 18 weeks in the Incredible Years Dinosaur Child Program. This treatment programme addresses interpersonal difficulties in young children with ODD and CD to increase prosocial skills, conflict resolution skills, playing and cooperating with peers.

Therapists. Fifteen therapists administered the parent training groups and nine the child therapy at the

two sites. Each had a Bachelor or a Master's degree in mental health-related fields and all were experienced clinicians from child psychiatry or child protection services. Those with a bachelor degree were certified social workers with 3–5 years of work experience before entering training in the Incredible Years Program. All therapists were trained and certified according to the procedures established by the Incredible Years Program. To ensure treatment integrity, the therapists followed a treatment manual and completed standard checklists throughout all therapy sessions and also received continuous supervision from a certificated trainer during the study period.

Design

A randomised between-group design with pre- and post-treatment measurements was used at baseline (see Larsson et al., 2009). Children were randomised to parent training, parent training combined with child treatment or a waiting-list control group. For ethical reasons, children in the waiting-list control group were offered treatment after 6 months and removed from the study post-assessment. Therefore, only treated children were included in the study at the 1-year and 5–6-year follow-up evaluations. International RCT number: ISRCTN10430476.

Ethics committee

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

Statistics

Frequency of psychiatric diagnoses at the 5–6-year follow-up was calculated. To investigate differences between the baseline sample and the long-term follow-up sample, associations between categorical variables were analysed with χ^2 test and differences between group means were investigated with independent *t*-tests. Analysis of predictors of a diagnosis of ODD/CD at the 5–6-year follow-up was performed with bivariate logistic regression analyses with crude OR estimates and 95% CI. A subsequent multivariate logistic regression with forward stepwise procedures was used to examine the most powerful predictors of still receiving a diagnosis of ODD/CD. An alpha level of $p < .05$ indicated statistical significant results.

Results

Diagnostic status at the 5–6-year follow-up

Table 2 presents the prevalence rates of psychiatric diagnoses at pre-treatment and the 1- and 5–6-year follow-ups. A total of 33.3% of the children ($n = 18$) had ODD and/or CD diagnoses at the 5–6-year follow-up. Only one child received a CD diagnosis without meeting the criteria for an ODD diagnosis. Of these 18 children, 55.6% ($n = 10$) also received a diagnosis of ADHD, and 5.6% ($n = 1$) had a diagnosis of anxiety or depression. Of the 36 children no longer having an ODD/CD diagnosis at the 5–6-year follow-

up, 47.2% ($n = 17$) had a diagnosis of ADHD and three a combined diagnosis with both anxiety/depression and ADHD. Thus, 35.2% of the treated children ($n = 19$) did not receive any psychiatric diagnosis at the long-term follow-up.

When stability of an ODD/CD diagnosis over the long-term period was examined, only 9.3% ($n = 5$) of the children met the criteria for an ODD/CD diagnosis at both follow-up points. In contrast, 38.9% of the treated children ($n = 21$) did not receive an ODD/CD diagnosis at any of the follow-up evaluations (see Table 2). About half (51.9%) of the treated children changed diagnostic status between the two follow-up evaluations as follows: 24.1% ($n = 13$) having no diagnosis of ODD/CD at the 1-year follow-up received such a diagnosis at the 5–6-year follow-up, while 27.8% ($n = 15$) of the children who still fulfilled the criteria for an ODD/CD diagnosis at the 1-year follow-up no longer received such a diagnosis 5–6 years later.

Predictors of 5–6-year outcome

The results of the logistic regression analysis showed that being a girl, living with mother only, a diagnosis of CD, and higher levels of child internalising problems as reported by mothers were significant *pre-treatment* predictors for the child to have a diagnosis of ODD/CD at the 5–6-year follow-up (see Table 3).

The results of logistic regression analyses with stepwise solution showed that after controlling for the predictors – a diagnosis of CD and higher levels of internalising problems – living with mother only and being a girl were the strongest and significant predictors of keeping an ODD/CD diagnosis at the 5–6-year follow-up [$B = 3.20$, $SE = 1.15$, $OR = 24.60$, $p < .01$; $B = 1.97$, $SE = .98$, $OR = 7.16$, $p < .05$, respectively]. Nagelkerke's R^2 was 41.3%. Overall, this model could classify 80.8% of all subjects correctly, 61.1% of those still showing an ODD/CD diagnosis at the 1-year follow-up and 91.2% of those without such diagnosis.

The following significant *post-treatment* predictors of an ODD/CD diagnosis in the child at the 5–6-year follow-up were found: high levels of child internalising and externalising problems, high levels of mother's depressive symptoms and maternal stress in parenting (see Table 3).

Table 2 Child psychiatric diagnosis before treatment and at the 1-year and 5–6-year follow-up

Child psychiatric diagnosis	Pre-treatment* ($N = 127$) % (n)	1-year follow-up ($n = 88$) % (n)	5–6-year follow-up ($n = 54$) % (n)
ODD	100 (127)	34.0 (30)	31.5 (17)
CD	18.9 (24)	3.4 (3)	9.3 (5)
ADHD	35.4 (45)	25.0 (22)	50.0 (27)
Anxiety/depression	10.2 (13)	5.7 (5)	7.4 (4)

Note: *At pre-treatment a waiting-list control group consisting of 28 children was included in the total sample.

After controlling for high levels of child internalising problems, high levels of mother's depressive symptoms and maternal stress in parenting by use of logistic regression analyses with stepwise solution, only high levels of child externalising problems remained as a significant post-treatment predictor of a diagnosis of ODD/CD at the 5–6-year follow-up [$B = .13$, $SE = .05$, $OR = 1.13$, $p < .01$]. Nagelkerke's R^2 was 24.7%. Overall, this model could classify 76.1% of all subjects correctly, 58.8% of those still receiving a diagnosis of ODD/CD at the 1-year follow-up and 86.2% of those without such a diagnosis.

None of the variables measured at the 1-year follow-up predicted a child diagnosis of ODD/CD at the 5–6-year follow-up.

Discussion

Very few studies have yet explored potential long-term predictors of a diagnosis of ODD/CD 5–6 years after participating in parent training. In the present study, the 5–6-year outcomes of a parent training programme, the Incredible Years, administered to 4–8-year-old children because of serious conduct problems, were investigated. About two-thirds of the treated children in the present study were free of a diagnosis of ODD/CD 5–6 years after treatment. In longitudinal studies the desisting rate for untreated children with an early diagnosis of ODD/CD has been reported to be 50% or less (August et al., 1999; Lahey et al., 1995, 2002), which provides support to possible long-term effects of parent training in the present study. However, the rates of CD are found to vary over a certain period of time (Lahey et al., 2002) and changes in diagnosis found in the present study may therefore be due to the natural course of the disorder.

The prevalence rate of ADHD in the treated children showed a remarkable decrease after treatment. This may be due to the fact that parents in the Kiddie-SADS interview, who were the sole information source, also expressed high satisfaction with the treatment programme. At the 5–6-year follow-up most of the children who received a diagnosis of ADHD had been thoroughly assessed and diagnosed in a child outpatient clinic, now indicating that a 50% prevalence rate of ADHD might be a more correct figure in the sample.

Pre-treatment predictors of having a diagnosis of ODD/CD at the 5–6-year follow-up were found to be child living with mother only, being a girl, a diagnosis of CD and high levels of internalising problems in the child. Children living in families with mothers only were found to be at the highest risk for keeping a diagnosis of ODD/CD at the 5–6-year follow-up. This finding is like the results reported by Webster-Stratton (1990) in that 80% of children in single parent families were non-responders to treatment 3 years later. These outcomes indicate that two-parent families may benefit more from parent

Table 3 Predictors pre- and post-treatment and at the 1-year follow-up for the child to receive an ODD/CD diagnosis at the 5–6-year follow-up. Crude OR estimates with CI 95% ($n = 54$)

Predictors	Pre-treatment OR (CI 95%)	Post-treatment OR (CI 95%)	1-year follow-up OR (CI 95%)
Sex	5.5* (1.19–25.54)		
Living situation (Both parents or mother and stepfather vs. mother only)	28.00** (3.12–251.30)		
Treatment condition (PT vs. PT+CT)	.79 (.24–2.58)		
Child diagnosis			
CD ¹	6.54* (1.13–38.00)		.73 (.40–1.35)
ADHD ¹	1.41 (.79–2.52)		.75 (.42–1.35)
Anxiety/depression ¹	.80 (.25–2.59)		1.32 (.71–2.48)
Child psychiatric symptoms			
Conduct problems ²	1.07 (.99–1.17)	.10* (.01–1.10)	1.08 (.99–1.19)
Attention problems ²	1.12 (.96–1.32)	1.15 (.99–1.35)	1.00 (.97–1.16)
Internalising problems ²	1.10* (1.01–1.19)	1.02* (1.00–1.29)	1.07 (.95–1.19)
Maternal stress ³	1.01 (.99–1.03)	1.02* (1.00–1.04)	1.00 (.98–1.02)
Maternal depressive symptoms ⁴	1.09 (.99–1.21)	1.30* (1.07–1.58)	1.02 (.92–1.14)

Note: * $p < .05$, ** $p < .001$. ¹Kiddie-SADS; ²CBCL (Child Behavior Checklist); ³PSI (Parent Stress Index); ⁴BDI (Beck Depression Inventory).

training when the child exhibits severe ODD or CD problems, a finding also reported in other studies (Bagner & Eyberg, 2003; Webster-Stratton, 1985). While being a girl enhanced the risk for displaying clinical levels of conduct problems 5–6 years after treatment, caution needs to be exercised because only a few girls were included in the study. However, girls who exhibit serious conduct problems at early ages may be at particular risk for maintaining already established problems and respond more poorly to treatment than boys. Conduct problems in girls may be especially difficult to deal with for parents, also evidenced by higher parental stress and lower treatment response than parents of boys (Fossum et al., 2009).

Also, a diagnosis of CD before treatment was found to increase the risk for the child still to receive a diagnosis of ODD/CD at the 5–6-year follow-up. The prevalence of CD among young children is fairly low. However, those children who meet the criteria for such a diagnosis at 4–8 years of age also face a particular risk for developing antisocial behaviours throughout childhood, adolescence and adulthood (Rowe, Maughan, Costello, & Angold, 2005). Further, elevated levels of pre-treatment internalising problems were a predictor of a diagnosis of ODD/CD at the 1-year follow-up (Drugli et al., 2009) and at the present 5–6-year follow-up. Children with combined externalising and internalising problems have also been documented elsewhere to be at high risk for lasting mental problems (Sourander et al., 2007). Therefore, extended follow-up evaluations and care should be offered to these children and their families to track and possibly prevent relapses of positive treatment gains.

After treatment, high levels of conduct problems in the child were found to be the strongest predictor of a diagnosis of ODD/CD at the 5–6-year follow-up. At this time-point children with high levels of internalising problems and children of mothers with high

levels of stress and depressive symptoms also emerged as risk groups for maintaining a diagnosis of ODD/CD in the child 5–6 years after treatment. These predictors further indicate that parents with low energy and mental health problems have a reduced capacity to continue to use parent practices acquired in the training programme. Reid et al. (2003) also highlighted the significance and stability of maternal depressive symptoms as a predictor of child non-response to treatment at a 2-year follow-up. Agencies involved in extended follow-up care should carefully evaluate stress and depressive symptoms in each parent before and after treatment. Thus, a broader treatment focus beyond parent training may be necessary for this particular group to achieve improved short- and long-term outcome.

It is possible that some of the treatment non-responders in the present study face a heightened risk for developing chronic conduct problems and that standardised parent training is not sufficient for these children. Eyberg et al. (2008) recommended that parent training for some children should be tailored to the individual needs of the child, family and setting. Further knowledge on this issue will contribute to the development of more effective treatment packages and follow-up routines for an especially vulnerable group of children such as those with an early diagnosis of ODD/CD.

Limitations

A limitation of the study is the relatively high proportion (45.5%) of non-participants in the 5–6-year follow-up evaluation, which may have produced a biased sample. However, very few significant differences between participants and non-participants were found. While the response rate in the present study was the same as in the study of Long et al. (1994) but higher than in the studies by Hutchings et al. (2004) and Frampton et al. (2008) with

estimates of 44% and 43%, respectively, it was lower than in the studies by Hood and Eyberg (2003), Webster-Stratton (1990) and Kolko et al. (2009); 58%, 82% and 86%, respectively. In addition, the reduced sample size at the follow-up may also have limited the identification of predictors of outcome.

There is limited evidence of stability of conduct problems in children (Broidy et al., 2003), and the results found in the present study may therefore be due to the natural course of the disorder. Another limitation of the present study is that the only outcome measure was the presence or not of a formal psychiatric diagnosis of ODD/CD in the child. Psychiatric diagnoses represent a categorical approach toward child mental health. Even if a child does not meet the diagnostic criteria, the child may still show high levels of psychiatric symptoms or have problems with psychosocial functioning (Angold & Costello, 1996).

However, the strengths of the present study were the use of strict inclusion criteria in that all children received a diagnosis or sub-threshold diagnosis of ODD and/or CD before treatment based on a semi-structured interview, meaning that 4–8-year-old children with severe behavioural problems were included.

Conclusions

This study adds to the limited existing knowledge about long-term treatment effects for children treated because of severe conduct problems with a standardised parent training programme, The Incredible Years. Professionals who manage families having a child with early and severe conduct problems should conduct a broad assessment of child and family factors before and after treatment to identify those families who are in need of additional support because of a non-response to parent training programmes. Many of these families will probably need integrated and more comprehensive services at different levels. In future research, more focus should be given to long-term outcome aspects of parent training.

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Key points

- Positive short-term effects of parent training methods for children with conduct problems are well documented in a number of RCT studies.
- This study adds to the limited literature about long-term outcomes after standardised parent training for children treated because of conduct problems.
- This study also investigates predictors of treatment response vs. non-response and adds to the knowledge regarding 'what works for whom'.
- Knowledge about important predictors of treatment response is of great clinical interest. Such predictors may help clinicians to identify children and families who are in need of additional support or interventions other than parent training.

References

- Abidin, R.R. (1995). *Parenting stress index* (3rd edn). Odessa, FL: Psychological Assessment Resources, Inc.
- Achenbach, T.M. (1991). *Manual for the Child Behavior Checklist 4–18 and 1991 profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Angold, A., & Castello, J.E. (1996). Toward establishing an empirical basis for the diagnosis of oppositional defiant disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 1205–1212.
- August, G.J., Realmuto, G.M., Joyce, T., & Hektner, J.M. (1999). Persistence and desistance of oppositional defiant disorder in a community sample of children with ADHD. *Journal of the American Academy of Child and Adolescent Psychiatry*, 38, 1262–1270.
- Bagner, D.M., & Eyberg, S.M. (2003). Father involvement in parent training: When does it matter? *Journal of Clinical Child and Adolescent Psychology*, 32, 599–605.
- Beauchaine, T.P., Webster-Stratton, C., & Reid, M.J. (2005). Mediators, moderators and predictors of 1-year outcomes among children treated for early-onset conduct problems: A latent growth curve analysis. *Journal of Consulting and Clinical Psychology*, 73, 371–388.
- Beck, A.T., Steer, R.A., & Garbin, M.G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, 8, 77–100.
- Boggs, S.R., Eyberg, S., & Reynolds, L.A. (1990). Concurrent validity of the Eyberg Child Behavior Inventory. *Journal of Clinical Child Psychology*, 19, 75–78.
- Broidy, L.M., Nagin, D.S., Tremblay, R., Bates, K.A., Brame, B., Dodge, K.A., et al. (2003). Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: A six-site, cross-national study. *Developmental Psychology*, 39, 222–245.
- Drugli, M.B., Larsson, B., Fossum, S., & Mørch, W.T. (2009). Characteristics of young children with persistent conduct problems one year after treatment with the Incredible Years program. Manuscript submitted for publication.

- Eyberg, S.M., Nelson, M.M., & Boggs, S.R. (2008). Evidence-based psychosocial treatments for children and adolescents with disruptive behavior. *Journal of Clinical Child and Adolescent Psychology, 37*, 215–237.
- Fossum, S., Handegård, B.H., Martinussen, M., & Mørch, W.T. (2008). Psychosocial interventions for disruptive and aggressive behaviour in children and adolescents: A meta-analysis. *European Child and Adolescent Psychiatry, 17*, 438–451.
- Fossum, S., Mørch, W.T., Handegård, B.H., Drugli, M.B., & Larsson, B. (2009). Parent training for young Norwegian children with ODD and CD: Predictors and mediators of treatment outcome. *Scandinavian Journal of Psychology, 50*, 173–181.
- Frampton, I., McArthur, C., Crowe, B., Linn, J., & Lovering, K. (2008). Beyond parent training: Predictors of clinical status and service use two to three years after Scallywags. *Clinical Child Psychology and Psychiatry, 13*, 593–608.
- Hood, K.K., & Eyberg, S.M. (2003). Outcomes of parent-child interaction therapy. Mothers' reports of maintenance three to six years after treatment. *Journal of Clinical Child and Adolescent Psychology, 32*, 419–429.
- Hutchings, J., Lane, E., & Kelly, J. (2004). Comparison of two treatments for children with severely disruptive behaviours: A four-year follow-up. *Behavioural and Cognitive Psychotherapy, 32*, 15–30.
- Kaufman, J., Birmaher, B., Brent, D., Flynn, C., & Morcei, P. (1997). Schedule for affective disorders and schizophrenia for school-age children—present and lifetime version (K-SADS PL): Initial and validity data. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 980–988.
- Kolko, D.J., Dorn, L.D., Bukstein, O.G., Pardini, D., Holden, E.A., & Hart, J. (2009). Community vs. clinic-based modular treatment of children with early-onset ODD or CD: A clinical trial with 3-year follow-up. *Journal of Abnormal Child Psychology*, published online.
- Lahey, B.B., Loeber, R., Burke, J., Rathouz, P.J., & McBurnett, K. (2002). Waxing and waning in concert: Dynamic comorbidity of conduct disorder with other disruptive and emotional problems over 7 years among clinic-referred boys. *Journal of Abnormal Psychology, 111*, 556–567.
- Lahey, B.B., Loeber, R., Hart, E.L., Frick, P.J., Applegate, B., Zhang, Q., et al. (1995). Four-year longitudinal study of conduct disorders in boys: Patterns and predictors of persistence. *Journal of Abnormal Psychology, 104*, 83–93.
- Larsson, B., Fossum, S., Clifford, G., Drugli, M.B., Handegård, B.H., & Mørch, W.T. (2009). Treatment of oppositional defiant and conduct problems in young Norwegian children: Results of a randomized controlled replication trial. *European Child and Adolescent Psychiatry, 18*, 42–52.
- Long, P., Forehand, R., Wierson, M., & Morgan, A. (1994). Does parent training with young noncompliant children have long-term effects? *Behaviour Research and Therapy, 1*, 101–107.
- Nixon, R.D., Sweney, L., Erickson, D.B., & Touyz, S.W. (2004). Parent-child interaction therapy: One and two-year follow-up of standard and abbreviated treatments for oppositional preschoolers. *Journal of Abnormal Child Psychology, 32*, 263–271.
- Ogders, C.L., Moffitt, T.E., Broadbent, J.M., Dickson, N., Hancox, R.J., Harrington, H., et al. (2008). Female and male antisocial trajectories: From childhood origins to adult outcomes. *Development and Psychopathology, 20*, 673–716.
- Reedtz, C., Bertelsen, B., Lurie, J., Handegård, B.H., Clifford, G., & Mørch, W.T. (2008). Eyberg Child Behavior Inventory (ECBI): Norwegian norms to identify conduct problems in children. *Scandinavian Journal of Psychology, 49*, 31–38.
- Reid, J., Webster-Stratton, C., & Hammond, M. (2003). Follow-up of children who received the Incredible Years Intervention for oppositional-defiant disorder: Maintenance and prediction of 2-year outcome. *Behavior Therapy, 34*, 471–491.
- Reyno, S.M., & McGrath, P.J. (2006). Predictors of parent training efficacy for child externalizing behavior problem – a meta-analytic review. *Journal of Child Psychology and Psychiatry, 47*, 99–111.
- Rowe, R., Maughan, B., Costello, E.J., & Angold, A. (2005). Defining oppositional defiant disorder. *Journal of Child Psychology and Psychiatry, 46*, 1309–1317.
- Scott, S. (2005). Do parenting programmes for severe child antisocial behaviour work over the longer term, and for whom? One year follow-up of a multi-centre controlled trial. *Behavioural Cognitive Psychotherapy, 33*, 1–19.
- Sourander, A., Jensen, P., Davies, M., Niemela, S., Elonheimo, H., Ristikari, T., Helenius, H., Sillanmaki, L., Piha, J., Kumpulainen, K., Tamminen, T., Moilanen, I., & Almquist, F. (2007). Who is at greatest risk for adverse long-term outcomes? The Finnish from boy to man study. *Journal of the American Academy of Child and Adolescent Psychiatry, 46*, 1148–1161.
- Webster-Stratton, C. (1985). The effects of father involvement in parent training for conduct problem children. *Journal of Child Psychology and Psychiatry, 26*, 801–810.
- Webster-Stratton, C. (1990). Long-term follow-up of families with young conduct problem children: From preschool to grade school. *Journal of Clinical Child Psychology, 19*, 144–149.
- Webster-Stratton, C. (1998). Preventing conduct problems in Head Start children: Strengthening parenting competencies. *Journal of Consulting and Clinical Psychology, 66*, 715–730.
- Webster-Stratton, C., & Hammond, M. (1997). Treating children with early-onset conduct problems: A comparison of child and parent training interventions. *Journal of Consulting and Clinical Psychology, 65*, 93–109.
- Webster-Stratton, C., & Hammond, M. (1998). Conduct problems and level of social competence in Head Start children: Prevalence, pervasiveness, and associated risk factors. *Clinical Child and Family Psychology Review, 1*, 101–124.
- Webster-Stratton, C., Reid, M.J., & Hammond, M. (2004). Treating children with early-onset conduct problems: Intervention outcomes for parent, child, and teacher training. *Journal of Clinical Adolescent Psychology, 33*, 105–112.