

Comparing two evidence-based parent training interventions for aggressive children

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Abstract

Purpose – The purpose of this paper is to explore whether the changes in externalising behaviour for young aggressive children differ between two evidence-based parent training (PT) programmes after treatment. The treatment formats between these programmes differ, and the authors were particularly interested in whether this influenced the results for participants with co-occurring problems (child variables such as heightened levels of attention and internalising problems, and parental variables such as marital status and education) and the consequent additional risk of poorer treatment outcomes.

Design/methodology/approach – A comparison of the individual treatment programme “Parent Management Training – Oregon model” (PMTO) and the group intervention programme “The Incredible Years” (IY) basic training sessions. Outcomes were explored in matched samples from two earlier Norwegian replication studies. The participants were matched on pre-treatment characteristics using a quasi-experimental mis-matching procedure.

Findings – There were no significant differences between the two interventions in parent ratings of externalising behaviours and the lack of differing effects between the two treatments remained when the co-occurring risk factors were introduced into the analyses.

Research limitations/implications – The participants were matched on pre-treatment characteristics using a quasi-experimental mis-matching procedure.

Practical implications – A possible implication of these findings is that parents should be allowed to choose the treatment format of their preference. Further, individual PT may be more appropriate in rural settings with difficulties in forming group interventions.

Social implications – Treatment effects did not differ between these two evidence-based interventions.

Originality/value – To the best of the knowledge independent comparisons of two evidence-based PT interventions are not previously conducted.

Keywords Comparison, Aggressive children, Behavioural changes, Incredible years, Parent training, PMTO

Paper type Research paper

Introduction

Conduct problems, typically characterised by opposition, delinquency, temper tantrums and acting-out behaviours, are of great concern due to the nature, stability and frequency of these problems (e.g. Moffitt, 2006). Conduct problems may develop into more severe disruptive behaviours fulfilling the diagnostic criteria of oppositional defiant disorder (ODD) and conduct disorder (CD) (American Psychiatric Association, 2013). Approximately 10 per cent of children with ODD suffer from lifelong problems and of these more than 90 per cent suffer from at least one other lifetime diagnostic condition (e.g. mood disorders, anxiety disorders, impulse-control disorders or substance-abuse disorders) (Nock *et al.*, 2007). Due to the stability of these problems and the burdens these problems cause for the child or adolescent, family and society

(Romeo *et al.*, 2006), the importance of valid knowledge of effective treatment and in particular effective parent training (PT) interventions is evident.

PT programmes are well established and effective for treating child conduct problems. Several PT interventions have been developed, and they have been subjected to empirical evaluations and included in a number of meta-analyses (e.g. Eyberg *et al.*, 2008; Fossum *et al.*, 2008; Furlong *et al.*, 2012; Kaminski *et al.*, 2008; Lundahl *et al.*, 2006; Reyno and McGrath, 2006). Several treatment programmes have been developed for child conduct problems (see, for instance, Fossum *et al.*, 2008; Furlong *et al.*, 2012; Weisz and Kazdin 2010), both group treatments such as the Triple-P programme (Sanders and Murphy-Brennan, 2010) or individual treatments such as parent-child interaction therapy (Zisser and Eyberg, 2010). In general, these interventions have focused on altering and improving parenting practices by reducing harsh and negative disciplinary strategies and increasing positive practices (e.g. praise and reward for prosocial behaviours), thereby reducing the child's conduct problems.

Following the recommendations of a Norwegian expert conference in 1997 (Ogden *et al.*, 2005), two manualised and evidence-based PT interventions were implemented and empirically tested in clinical practice in Norway: Parent Management Training – Oregon (PMTO) and the Incredible Years (IY) training series. Both programmes are based on the same theoretical foundation. They have been developed on the basis of the extensive research of Gerald Patterson and his colleagues on important causes of child conduct problems and on how these problems can be reduced (Patterson, 1982; Patterson *et al.*, 1992). The Social Interaction Learning model postulates that parent-child coercive interactions have both proximal and causal effects on problems of child conduct (Forgatch *et al.*, 2004). The two treatments have several similarities. Both treatments are considered evidence-based, i.e. fulfilling Weisz and Kazdin's (2010) criteria that evidence-based therapies such as intervention procedures are well specified and documented, that treatment benefits are shown in well-controlled studies and that beneficial effects must be robust across replication. The main goal of both interventions is to stop family coercion by enhancing the quality of parenting practices and thereby reducing the level of child conduct problems.

PMTO is a structured treatment based on principles of social learning and social interaction (Askeland *et al.*, 2005), intended for parents with children who have developed severe, stable and pervasive conduct problems. The aim of the treatment is to promote effective parenting skills in order to reduce and prevent further escalation of child conduct problems. In PMTO treatment, one important objective of the treatment is to meet the individual needs of each family. The parent(s) of a child meet individually with a therapist. Parents are trained in five parenting practices that form the core components of PMTO: "positive involvement", "skills in encouragement", "problem-solving", "monitoring" and "discipline". These dimensions are practiced extensively during the sessions through role-play and problem-solving discussions. The positive parenting dimensions are introduced and practiced before focus turns to such issues as supervision, limit setting and performance of appropriate, negative contingencies. Each treatment session has a detailed agenda. A typical PMTO session consists of: greetings; going over the home practice assignment(s); reviews, troubleshooting and brainstorming of previous materials; introducing new skills; role play and exercises; addressing individual family needs; and new home practice assignment. The average number of hours of treatment in the current PMTO sample was 24.4.

In IY, parents of five to six families met in groups at a clinic, but IY PT is delivered to groups of 12-14 parents as well. The treatment is a collaborative process between the parents and therapists in the group, and is based on social learning theory, an ecological view of child development and the processes that take place in each family. The parents are taught to employ positive disciplinary strategies, effective parenting skills, strategies for coping with stress and ways to strengthen children's social skills. IY is video based and the video vignettes are employed to initiate therapist-led discussions in the group. Role playing and rehearsals are central aspects of IY and parents are given homework assignments that target challenges relevant to the individual family and its child. Each group meeting starts by going through the homework assignments for each parent(s) and experiences, and views are shared with the other

members of the group. As with PMTO, positive parenting practices are presented to the parents prior to more disciplinary strategies, such as natural consequences of children's behaviour, ignoring mild mis-conduct and effective setting of limits. The IY methodology includes a number of targeted interventions for parents, children and teachers (Webster-Stratton and Reid, 2010). In the IY sample, two therapists and the parents of five or six children met weekly for two-hour sessions for 11-13 weeks and the average number of treatment hours was 22.6.

As mentioned above, both PMTO and IY training series were the subjects of two trials for the purpose of replicating the effectiveness of the interventions in Norway. The PMTO sample consisted of children both from a sub-sample participating in a randomised controlled trial (RCT) (Ogden and Hagen, 2008), as well as a sub-sample participating in a Norwegian exploration of PMTO on a national level. The PMTO sample and the procedures are described into more detail by Kjøbli and Ogden (2009), whereas the IY sample participated in a RCT (Larsson *et al.*, 2009). In the two RCTs, findings were that both PMTO and IY demonstrated positive behavioural change in the children when compared to either a treatment-as-usual control condition (Ogden and Hagen, 2008) or a waiting-list control (Larsson *et al.*, 2009). In both treatments, altered parenting practices were found to be the active mediators (Ogden and Hagen, 2008; Fossum *et al.*, 2009).

Reyno and McGrath (2006) reported that response to PT is often influenced by variables not directly involving the child, with socio-economic status and maternal mental health being particularly salient factors. Reviews have shown that outcomes of PT varies (see, for instance, Fossum *et al.*, 2008; Lundahl *et al.*, 2006). As a natural consequence, researchers have been led to examine a variety of child, parent and familial variables that may predict treatment response. As far as we know though, the knowledge of how and if treatment outcomes differ, including the formats of treatments, is rather limited. Some studies focusing on the treatment format of PT suggest that individual or group-based treatment formats do not influence the effects on child conduct problems (Chadwick *et al.*, 2001). Similarly, in an early study of IY, Webster-Stratton (1984) reported the same outcomes in child behaviours for children in individual or group treatments. Cunningham *et al.* (1995) found no differences in the results obtained by the two treatment formats, i.e. large-scale groups consisting of approximately 27 members vs individual PT. In these studies, the treatment curricula being compared are similar in all domains, except for the treatment format. However, in a meta-analysis of PT interventions, Lundahl *et al.* (2006) found that individual interventions resulted in larger treatment effects in child behaviours than group treatments, especially when delivered to disadvantaged families.

The purpose of this study was to match the samples for range in child age and severity of conduct problems at the initiation of treatment. We were interested in exploring whether differences in treatments in regular practices are evident *per se* and in particular whether the format of treatment (i.e. individualised or group) influenced treatment outcomes. To the best of our knowledge, no studies have explored whether individual or group PT with two distinct, but in many respects-related, evidence-based treatments (i.e. PMTO or IY) are associated with greater behavioural change in some recipients, in particular among children and families at heightened risk of poorer treatment outcomes.

Methods

Participants

The participants were young children in Norway who had been referred to outpatient treatment for disruptive and aggressive behaviours as experienced by their parents. Child characteristics were: age: 3.9-9.0 years; within the clinical range of the Child Behaviour Checklist (CBCL) (Achenbach, 1991) Aggression subscale at study initiation; no debilitating physical impairment.

The study involved 236 children and their families; 59 girls and 177 boys, with an age of 7.1 years (SD = 1.4). The maternal age at study intake was 35.0 years (SD = 6.3) and 21.7 per cent had not completed high school. In total, 36 per cent of the children lived in single-parent families. All but 3.4 per cent of the participants were native Norwegians. The pre-treatment scores on various demographic variables, the CBCL and their standard deviations are presented for both

the PMTO and IY samples in Table I. Demographic information was obtained from clinical interviews conducted by the clinicians.

Both mean child and maternal age differed significantly between the treatments, and both the children and the mothers in PMTO were older than the IY sample. Apart from these variables there were no significant differences.

Excluded participants in PMTO and IY. In PMTO a total of 130 children were older than 9.0 years and were excluded. Of the 3.9-9.0-year-old children, 47 scored below the 90th percentile on the CBCL Aggression subscale (Larsson and Frisk, 1999). All children in the IY sample of children were within the predetermined age range, but 12 children were excluded because their score on the CBCL Aggression subscale was below the 90th percentile.

Procedures

Informed consent was obtained from the families on the basis of written and verbal information about the research programmes. Since these procedures have been described elsewhere (Larsson *et al.*, 2009; Ogden and Hagen, 2008; Kjøbli and Ogden, 2009), we only briefly address them here.

Measures

Conduct problems. The problem part of the CBCL consists of 118 items (0-2 scale) rated by parents and addressing various emotional and behavioural problems in the child (Achenbach, 1991). Here, the Aggression subscale was used to match the two samples in severity of aggression. The Aggression subscale comprises 20 items, and scores range from 0 to 40. To compare the reductions in parent-rated externalising behaviour, we utilised the Externalising Syndrome scale, which comprises the Aggression and Delinquency subscales. These consist of 33 items and scores range from 0 to 66. The Internalising Syndrome scale includes 31 items and scores range from 0 to 62, the Attention subscale consisting of 11 items, with scores ranging from 0 to 22, and the Social Problems subscale, which comprises eight items and whose scores range from 0 to 16.

Treatments and therapists

PMTO. The therapists and the parents met individually for one weekly session of 60 minutes. The treatment was given according to the PMTO manual (Askeland *et al.*, 2005). PMTO

Table I Demographic information for the two treatments at pre-treatment	PMTO (n = 147) Mean (SD)	IY (n = 89) Mean (SD)
<i>Family variables</i>		
Maternal age*	36.8 (6.2)	32.7 (5.7)
Single-parent family	35.3%	37.3%
<i>Maternal education</i>		
Less than 11 years	18.7%	26.8%
Completed high school	47.5%	40.2%
Some university/college	25.9%	17.1%
Completed university/college	7.9%	15.9%
<i>Child variables</i>		
Age*	7.3 (1.4)	6.6 (1.4)
Boys	72.8%	78.7%
Parent reported ADHD	37.4%	38.2%
CBCL internalising	12.6 (7.5)	12.0 (7.6)
CBCL attention	7.7 (3.6)	7.6 (3.5)
CBCL social problems	4.7 (2.7)	5.2 (2.8)
CBCL externalising	25.4 (8.9)	25.8 (8.1)
Notes: PMTO, parent management training Oregon; IY, incredible years, ADHD, attention deficit hyperactivity disorder; CBCL, child behaviour, checklist. * $p < 0.01$		

therapists worked in different children's service agencies across Norway, as social workers, psychologists and so forth. PMTO therapists had undergone 18 months of training and had completed three to five full-scale training therapies prior to certification and thus prior to participation in the study. The Norwegian therapist training programme consists of six seminars and at least five supervised cases during a period of 18 months. Norway is organised into five health regions, and 44 of the PMTO therapists worked in region east, 31 in region west, 29 in region south, 12 in the mid-region and 15 in region north. In all, 131 PMTO therapists contributed to the evaluations of PMTO. Certification is based on observation of four videotapes and is evaluated using a therapist scoring system. The certification period for PMTO therapists lasts for three years, and therapists must renew their certification by documenting treated cases, seminar participation and maintenance supervision.

IY

In all, 15 therapists administered the BASIC IY PT programme for children aged three to eight years (Webster-Stratton, 2001) at two sites. All had therapists' bachelor's or master's degree in mental health-related fields and clinical experience. The therapists had been trained according to IY certification procedures and were certified by the programme developer. The therapists received continuous supervision from a certified IY trainer using video reviews of the parent groups, observations and role plays. The therapists completed standard check lists for each session and tracked group activities for each session (number of vignettes showed, role-plays conducted, home tasks, etc.). All sessions were videotaped for evaluation by the mentor and weekly peer- and self-evaluation meetings. All parents in the IY sample participated in the PT programme and half of the children received the child intervention "the Dinosaur school". In "the Dinosaur school", groups of six children meet with two therapists for a two-hour session in the clinic for 18 weeks. Differences in behavioural changes were small and non-significant statistically and actually in favour of PT alone on maternal reports on the CBCL, both at post-treatment and one-year follow-up in this trial (see Larsson *et al.*, 2009). The differences between the conditions remained small at five-to-six-year follow-up as well (Drugli *et al.*, 2010) and the two samples are merged to improve statistical power.

Statistical procedures

One-way ANOVA and χ^2 tests were used to test for differences between the PMTO and IY samples on premeasures and demographical variables, depending on whether the outcome variable was continuous (or inherently continuous) or categorical. To evaluate whether the PMTO and IY samples differed on child behaviour change from pre-treatment to post-treatment, we used one-way ANOVA on change scores, a reliable way of measuring change (Rogosa, 1995). Analysis of covariance (ANCOVA) was used when pre- to post-change differences between the groups were evaluated, controlling for selected covariates. Unless otherwise stated, a significance level of 0.05 was adopted. SPSS 19 was used in the data analysis. Following the recommendations of Achenbach (1991), the analyses were performed using the CBCL raw scores.

Results

Attrition

In all, 49 reports on children's scores on CBCL Externalising were incomplete and 98 cases were complete in PMTO, while seven were incomplete and 82 were complete for the IY children. The non-completers and the completers did not differ significantly on the CBCL Externalising pre-treatment score $F(1, 234) = 0.74$, nor in marital status $\chi^2(1) = 0.62$, or level of education $\chi^2(3) = 1.96$.

Treatment dosages

Mean treatment dosages did not differ significantly between the two interventions (see Table II). Treatment dosages varied more in PMTO. We tested whether there was a different association

Table II Information about treatment dosages and mean change scores on CBCL for two treatments

	<i>PMTO</i> Mean (SD)	<i>IY</i> Mean (SD)	ANOVA ^a
Treatment dosages ^b	12.2(4.7)	11.3(1.6)	$F(1, 128) = 3.38$
CBCL internalising	2.7(7.6)	4.8(6.2)	$F(1, 178) = 3.88$
CBCL attention	1.4(3.0)	1.9(3.4)	$F(1, 178) = 1.28$
CBCL social problems	1.2(2.8)	1.6(2.6)	$F(1, 178) = 1.46$
CBCL externalising	8.3(9.5)	9.6(8.5)	$F(1, 178) = 0.85$

Notes: PMTO, parent management training Oregon; IY, incredible years; ANOVA, analysis of variance; CBCL, child behaviour checklist; mean, mean change, from pre- to post-treatment. ^aANOVA resulted in no significant differences. ^bBased on the Brown-Forsythe test due to significant difference in the variation in, treatment dosages in PMTO and IY

between treatment dosage and pre-treatment CBCL Aggression in the two conditions. This test showed no significant interaction between group and dosage on this scale $F(1, 183) = 1.4$.

Change in child behaviour

Group differences on change in child behaviour were tested both with a bivariate approach, and a multivariable approach controlling for child and maternal characteristics. In the bivariate analysis, there were no significant group differences in change from pre- to post-treatment on any of the CBCL scales. The unadjusted mean scores, standard deviations and ANOVAs are shown in Table II.

Focusing on CBCL externalising, we found no significant group differences in change from pre-treatment to post-treatment, when controlling for child characteristics (pre-treatment internalising, social problems, attention problems and child age) and/or maternal characteristics (age, single parent and level of education).

Discussion

The purpose of this study was to determine whether the reductions in aggressive behaviours differed between two manualised and evidence-based PT programmes (Weisz and Kazdin, 2010) with somewhat different approaches in their treatment curricula. PMTO was developed by Forgatch and Patterson (2010) and the format tested in this study adopts an individual approach in the sense that the parents meet alone with a therapist for as many sessions as are considered necessary. The other programme, the IY, was developed by Webster-Stratton and Reid (2010) and takes a group-based approach. The parents of five to six children met at the clinic with two therapists for approximately 11-12 sessions.

We were interested in examining whether the amount of child behavioural change would be larger or smaller following one or the other of the programmes and, in particular, when a child or its family was at heightened risk of less favourable treatment outcomes for variables such as child co-occurring problems, parent educational levels and marital status. Although treatment outcomes were not evaluated in a randomised trial, the reductions in parent-rated child aggression between the two treatments were clear, including in cases of children and families with heightened risk. This may be important, since the findings suggest that individual or group PT formats do not differ in reducing child aggression. Previous studies of IY have shown that this intervention is effective for children with mothers reporting high levels of depression and stress (Hutchings *et al.*, 2007), single parenthood (Gardener *et al.*, 2010) and for boys with attention problems (Hartman *et al.*, 2003).

The finding in this study may also be of relevance for policy makers in clinical practice when considering which treatment and treatment format to implement. Cunningham *et al.* (1995) reported that group treatment has economic advantages over individual PT. A practical interpretation of our findings may indirectly suggest that group interventions should be implemented in urban settings while individual PT may be more appropriate in rural settings. In rural settings, too few families may be available to fill up parent groups on a regular basis. Still,

whenever possible, parents should be allowed to choose the treatment format of their preference. It may be a good strategy to offer individual PT in cases where families are unable to take part in a group, for instance because of maternal depression or low socio-economic background (Lundahl *et al.*, 2006). To elaborate, some parents may for instance prefer to meet with a therapist privately or their time schedule may demand a higher degree of flexibility as to when to meet. Whereas others may appreciate the group format, for instance due to meeting others with similar struggles and learning from others. Whenever possible, this should be taken into consideration in clinical practice. Nevertheless, group PT has resulted in statistically significant reductions in parent mental health problems (Furlong *et al.*, 2012), strongly suggesting that the major challenge may be to involve these parents in treatment, whatever treatment format is available.

Engaging parents in the treatment process may result in better treatment effects and maintenance of any gains (Diamond and Josephson, 2005). For success in this aspect, independent of intervention format, it is important to tailor the interventions to the particular difficulties of the child and his or her problems. Although both of the interventions explored here highlight this in their manuals, individual PT would intuitively seem to be more likely to ensure this. Lundahl *et al.* (2006) suggested that individual PT is more suited for families with low socio-economic status. The lack of significant differences in outcomes between the formats in this study suggest the need for more research. According to Chadwick *et al.* (2001), the advantages of individual interventions include greater possibilities of rescheduling sessions and opportunities to perform more detailed and accurate functional analysis of the child's behaviour. The group treatment format allows fewer such possibilities for giving families individual attention, and only the general principles and some specific examples can be addressed during the meetings. On the other hand, when Cunningham *et al.* (1995) reviewed the advantages of parenting groups and individually based PT, they found that solving problems in large groups revealed a wider range of options and difficulties in child management and more information regarding normal child development. Recently, due to the possible advantages of the group format, a group version of PMTO has been developed and evaluated with positive outcomes in Norway for children at risk of developing severe conduct problems (Kjøbli *et al.*, 2013).

Limitations

There are several limitations to this study. The participants in this study were not randomised to different treatment conditions (PMTO or IY). This study is a combination of two separate studies with two samples being matched in a quasi-experimental fashion with only one outcome measure in common. The fact that the study participants were not randomised to the treatment conditions may have biased the outcomes. The two project manuals were developed separately with no predesigned plan of merging these data. Consequently, caution in interpreting our findings is required.

The fact that more data were missing on CBCL in PMTO and that these children were a little older than the children receiving IY, may have influenced the results. The clinical trial of PMTO in Norway showed that the treatment became less effective for older children (Ogden and Hagen, 2008). Also IY has been more effective for younger than older children (Gardener *et al.*, 2010). This is also reported in meta-analysis of treatments for child conduct problems (Fossum *et al.*, 2008). Consequently, children's age could have led to treatment results in favour of IY, and caution interpreting these results is important.

The PMTO participants were included in a study of the intervention under real-world conditions including numerous research sites. The IY participants may have been studied under more ideal conditions since only two clinics in Norway and far fewer therapists were involved in the treatment. Still, the IY therapists were recruited and worked in regular clinical settings with additional workloads besides running the groups. Nevertheless, this may have biased the outcomes in favour of group treatment, raising the question of the scale-up discounts following a large-scale implementation because of loss of service infrastructure and programme fidelity (Welsh *et al.*, 2010).

Unfortunately, only one measure of treatment outcome was the same in the studies (i.e. the CBCL), thus restricting the possibilities of comparing treatment outcomes to this measure.

A multi-informant, multi-site assessment with data on the sustainability of child behavioural change would have made the comparison more valid. Nor do we have any comparison of changes in parenting. This is unfortunate, in view of the importance of changing parenting practices for achieving positive treatment outcomes. Clearly, more knowledge of this and other potential mediators and moderators in treatment is essential for future considerations of which treatment format would be more advantageous. Such factors should be evaluated under more stringent methodological control, preferably in a RCT. However, even with these limitations in mind, we would still emphasise the pre-treatment similarities between the two groups and the methodological steps taken to perform a thorough examination of differences in treatment outcomes.

Conclusions

The changes in child aggressive behaviour following PMTO and IY appear to be equal for both interventions at post-treatment. This is also true in cases when a child or its family was at heightened risk of smaller changes in child behaviour. These factors include child co-occurring problems, parent educational levels and marital status. Given that both treatments are evidence based and built on the same theoretical foundation, this was to be expected. However, we do not know whether treatment outcomes differ in other PT interventions and treatment formats, and more knowledge of this is of both scientific and clinical importance.

Assuming that outcomes of group-based and individually oriented PT are equal, as indicated in this study, parents can be offered the treatment format of their choice. After a thorough initial child and family assessment, the therapists should be able to recommend individual or group treatment format, considering their treatment needs, preferences and situation. This would be in line with the recommendations from Sackett *et al.* (1996) that evidence-based treatment should be based on a combination of scientific evidence, client experiences and preferences and the professional's experiences and competence.

To achieve this, comparison of treatment programmes and curricula for children with conduct problems being of good methodological quality is imperative.

Summary of implications for policy and practice

- Two evidence-based treatments for aggressive behaviours are compared. Treatment outcomes did not differ between the treatments for children aged 3.9-9.0 years. There were no differences controlling for children or families at heightened risk of less favourable treatment outcomes (i.e. child co-occurring problems, parent educational levels and marital status).
- Assuming that outcomes of group-based and individually oriented PT are equal, as indicated in this study, parents can be offered the treatment format of their choice. After a thorough initial child and family assessment, the therapists should be able to recommend individual or group treatment format, considering their treatment needs, preferences, and situation.

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