Impala aanvraag 3672334
Beschrijving gewenste item

Titel tijdschrift: European Journal of Developmental Psychology
Auteur tijdschrift: European Society for Developmental Psychology.
Uitgever:
ISSN: ISSN 1740-5629
Titel artikel: STOP4-7, an early intervention for children with behavioural disorders: client characteristics and preliminary findings.
Auteur artikel: De Mey & Braet
Referentie artikel: Jaar 2011 Volume 8 Nummer 2 Pagina's 203-214

Code/Materiaal

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Eigen identifier: 183294

Trefwoord(en): 183294

Plaatskenmerk: UA: UA-UA

Noot voor de leverancier

Status

Impala: rq:impala:3672334
Aantal leveranciers na u: 1
Status: In behandeling
Toegewezen op: 23/03/2016 09:25
In behandeling op: 23/03/2016 11:20
STOP4–7, an early intervention for children with behavioural disorders: Client characteristics and preliminary findings

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To cite this article: Wim De Mey & Caroline Braet (2011) STOP4–7, an early intervention for children with behavioural disorders: Client characteristics and preliminary findings, European Journal of Developmental Psychology, 8:2, 203-214, DOI: 10.1080/17405620903513943

To link to this article: http://dx.doi.org/10.1080/17405620903513943

Published online: 18 Mar 2010.

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STOP4–7, an early intervention for children with behavioural disorders: Client characteristics and preliminary findings

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STOP4–7 is a multimodal early intervention programme for children (4–7 years) with behavioural problems. The programme is based on the research of the Oregon Social Learning Center. The present pilot study evaluates its feasibility in a European sample.

Method: 201 children were involved and 90% of the participants completed the treatment.

Results: On all outcome measures children and parents show a significant progress. The effect sizes range from small to moderate.

Keywords: Early intervention; Children; Behavioural disorders; Parent management training.

Youth violence and antisocial behaviour are serious problems, causing widespread suffering and harm, with a high cost for families, the education system and society. Ecological or transactional models—the most comprehensive models at the moment—stress the interplay of biological, psychological and social factors in the development of antisocial behaviour (Dishion, French, & Patterson, 1995). Poor verbal and executive functioning are considered important biological factors. Psychological factors connected to antisocial behaviour include deficient social-cognitive skills. Social factors include proximal (parenting, relationship factors, social support) and more distal factors (socioeconomic status, neighbourhood, and minority group status, economical and political situation). It is therefore assumed that only...
a multi-component programme that focuses on different risk factors has the best potential for success.

The STOP4–7 programme (De Mey, Messiaen, Van Hulle, Merlevede, & Winters, 2005) is an intervention for children (aged 4 to 7) with serious behavioural problems. It focuses on the child (social skills training), the parents (parent management training), and the teacher (classroom management training). Besides the three manualized training components, there are also individual home and school visits, aimed at tailoring the intervention to the individual family and classroom. The content of the programme is based on the research and the clinical work of the Oregon Social Learning Center, more specifically: the LIFT-programme (Linking the Interests of Families and Teachers; Eddy, Reid, & Fetrow, 2000). The present study evaluated the programme in a European sample.

Antisocial behaviour is here defined as a stable pattern of negativistic, coercive, oppositional, defiant and/or aggressive behaviour against authority figures, behaviour that violates the basic rights of others or breaks age-appropriate social norms and rules (Dishion et al., 1995). Some behaviour—e.g., oppositional and defiant behaviours for preschoolers—is normative during some developmental stages, while not during others (Campbell, 1995). However, research has indicated that deviation from age-appropriate behaviours is already observable in some kids at a young age (e.g., before the age of 7; defined as early starters) and specifically these youngsters seem to be most at risk for developing life-long persistent antisocial behaviour (Moffitt, 1993). This stresses the importance of early intervention and motivates the rationale to focus on young children aged 4 to 7.

One of the most influential developmental models for describing and understanding the dynamics that underlie the development of oppositional behaviour and aggression in children is Patterson’s theory of the “coercive process” (Patterson, Reid, & Dishion, 1992). It is assumed that a strategy to manage this problematic process has to be the core of an effective parent-training intervention. However, parent training does not affect the ability of these children to make friends. Therefore, an effective intervention not only focuses on the parents but on the social skills of the child as well (Woolgar & Scott, 2005). Unfortunately, parent training does not generalize to the school setting. If children with behavioural problems already attend school, they try to repeat their successful coercive strategies there. So, adding a teacher-training component is also assumed to help an early intervention to be successful (Woolgar & Scott, 2005). Sadly, consistent and positive classroom experiences may be the least available for the children who are most at risk. Therefore, teacher training is assumed to add to the efficacy of a combined child and parent training, especially concerning the problem behaviour observed at school (Webster-Stratton, Reid, & Hammond, 2001).
To conclude, embedded in a social-ecological theory and supporting research, STOP4–7 first aims to impact on the antisocial behaviour of young children by altering key aspects of the child's social context in ways that promote prosocial behaviour rather than antisocial behaviour; in particular the proximal contexts in which the child is embedded: the family and school.

METHOD

Participants

Between January 2000 and June 2006, 201 children and their families participated in the programme: 81% were boys (N = 163), 19% girls (N = 38). The ratio of boys to girls was 4:1. All children were referred for oppositional defiant disorder (ODD) or conduct disorder, as measured by a clinical score on the externalizing syndrome scale of the Child Behaviour Checklist or the Teacher Report Form. Most children were referred by the school counselling team. All children were between 4 years 0 months and 7 years 11 months of age. The mean age of the children was 68.84 months (SD = 12.72); the mean t-score was respectively on the Child Behaviour Checklist (CBCL; Achenbach & Rescorla, 2001) externalizing scale 71.12 (SD = 8.68) and on the Teacher Report Form (TRF) externalizing scale 67.73 (SD = 9.68).

Procedure

Spread over different locations in the province of East Flanders, the STOP4–7-project was announced as a programme for children aged four to seven because of disruptive behaviour disorders. Comorbid attention deficit hyperactivity disorder (ADHD) or an autism spectrum disorder (ASD) was no contra-indication. It was required that during the study the medication had to be kept constant. It was a condition sine qua non that parents were willing to participate in the parent training group for ten weeks. All parents signed an informed consent and the study design was approved by the local ethical committee.

The STOP 4–7 programme consists of 3 components: a group training for parents, teachers and children on ten different days, spread over a three-month period. During the study-period, 22 STOP4–7-training groups were run. The children came to the centre for a whole day while their parents came in the afternoon for a two-hour session. The teacher—classroom management—training consisted of three 3-hour sessions (De Mey et al., 2005).

(1) Child social skills training. For ten days the children learnt important social-cognitive skills: role taking, problem solving and self control. The training components were adapted from the LIFT programme.
(Ramsey, Lathrop, Tharp, & Reid, 1993) and we taught these skills through coaching, modelling and behavioural rehearsal. Each day was organized as a regular school day with a mix of activities: talking and listening, working and playing, eating together, doing chores, playing outside. Each day was structured in the same way. Small tokens accompanied by a lot of compliments were given for small accomplishments, up to ten tokens an hour per child. A puppet was the children’s guide through the different steps. A turtle helped the children to refrain from acting impulsively and aggressively, and helped them to relax and cool down.

(2) Parent management training. The programme is based on the principles of behaviour modification and social learning. The two most important goals of the parent training module are strengthening the parenting skills, and strengthening their parental self-efficacy (Bandura, 1977). In ten consecutive weeks, parents learnt to observe and track the negative and positive behaviour of their children. Positive reinforcement and the appropriate use of a token economy were the central skills parents had to learn in the training, together with structuring the life of their child. Only from the fifth session on did we look at the negative behaviours and how to change the contingencies by means of ignoring, time-out or punishment. Also, problem-solving skills, communication skills and self-control (of the parents themselves) were important topics in the parent training.

(3) Classroom management training. The teacher-training programmes, described in the international literature (Webster-Stratton, 2000), are based on social learning principles, just as are most parent-management-training programmes. The content of the training equals that of the parent group, but because of their professional background, there are fewer sessions for teachers. A first focus is managing the maladaptive behaviour of a child both in their classroom and on the playground. The balance between training new skills and reinforcing the skills the teachers already master as well as the self-efficacy of the participants is very important. Communication with parents of children with problem behaviour receives a great focus in the teacher training.

We expected that as a result of the intervention:

- the problem behaviour of the children would diminish at home as well as in school;
- parents would behave less inconsequently and harshly while positive parenting would increase; and
- the children would report more prosocial problem solving answers and less antisocial answers.
Measures

On the Child Behaviour Checklist, parents rated the frequency of problematic behaviours by means of a 3-point Likert scale. The items can be grouped in two broadband scales: internalizing and externalizing problem behaviour. The internal consistency ranges from .63 to .79. The teachers completed a teacher version (TRF) of the CBCL. Reliability and validity of both these instruments are well established (Achenbach & Rescorla, 2001).

The Parental Behaviour Scale (Van Leeuwen & Vermulst, 2004) comprises items expressing parental behaviour. Parents rated the frequency of each behaviour towards the target child on a 5-point Likert scale ranging from “never” to “always”. The items in this scale are grouped in eight scales. The Cronbach’s alpha ranged from .59 to .82 (internal consistency; Van Leeuwen & Vermulst, 2004). We focused on the subscales of positive parenting and inconsequent disciplining, because these constructs proved to be important in the development of antisocial or prosocial behaviour.

The Parental Scale of Competence (PSOC) comprises 16 items and two scales: parental efficacy and parental satisfaction. Parents rate themselves on a 6-point Likert scale from “very like me” to “very unlike me”. Johnston and Mash (1989) reported an internal consistency on the efficacy and satisfaction scales of .76 and .75, respectively. While the PBS measures parenting behaviour, the PSOC captures the more cognitive and emotional aspects of parenting.

In the Wally (Webster-Stratton, 1990) the child was shown thirteen drawings of hypothetical problem situations. The child had to generate as many answers as possible. Answers are categorized as “prosocial” or “antisocial”, based on a coding manual. Webster-Stratton et al. (2001) reported data on validity and a satisfactory internal consistency.

Treating missing data. All questionnaires were filled in before the training started (pre) and at the end (post). However, despite considerable efforts, not all parents were able to fill in all three questionnaires although they filled in the primary outcome measure (CBCL). Missing data, which were not caused by drop-out of treatment, were estimated if we could prove that the data were missing completely at random (MCAR) using Little’s (1988) MCAR test (see Table 1).

Analyses. A total of 201 children wanted to participate in the treatment, 193 started the treatment but of these 12 dropped out. So, 181 children completed the treatment. For an overview of participation and treatment drop-out rates and study drop-outs see Figure 1. The analyses regarding treatment effects were by intention to treat. A mean of 22.5% of the data is
TABLE 1
Characteristics of participants in the research programme

<table>
<thead>
<tr>
<th>Participants involved in pre-treatment measurements, N = 169 (total research group)</th>
<th>Post-treatment, N = 87 (complete responders)</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex (N = 169)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>139</td>
<td>82.2%</td>
</tr>
<tr>
<td>Girls</td>
<td>30</td>
<td>17.8%</td>
</tr>
<tr>
<td><strong>Age (N = 127)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 year</td>
<td>31</td>
<td>24.4%</td>
</tr>
<tr>
<td>5 year</td>
<td>35</td>
<td>27.6%</td>
</tr>
<tr>
<td>6 year</td>
<td>36</td>
<td>28.3%</td>
</tr>
<tr>
<td>7 year</td>
<td>25</td>
<td>19.7%</td>
</tr>
<tr>
<td><strong>Highest educational level mother (N = 111)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary and special education</td>
<td>17</td>
<td>15.3%</td>
</tr>
<tr>
<td>Secondary education</td>
<td>57</td>
<td>51.4%</td>
</tr>
<tr>
<td>Higher education</td>
<td>37</td>
<td>33.3%</td>
</tr>
<tr>
<td><strong>Highest educational level father (N = 100)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary and special education</td>
<td>9</td>
<td>9%</td>
</tr>
<tr>
<td>Secondary education</td>
<td>62</td>
<td>62%</td>
</tr>
<tr>
<td>Higher education</td>
<td>29</td>
<td>29%</td>
</tr>
<tr>
<td><strong>Family composition (N = 118)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Original family</td>
<td>71</td>
<td>60.2%</td>
</tr>
<tr>
<td>Newlywed family</td>
<td>18</td>
<td>15.3%</td>
</tr>
<tr>
<td>Only mother</td>
<td>29</td>
<td>24.5%</td>
</tr>
<tr>
<td><strong>Number of children (N = 119)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only child</td>
<td>21</td>
<td>17.6%</td>
</tr>
<tr>
<td>Two children</td>
<td>60</td>
<td>50.4%</td>
</tr>
<tr>
<td>Three children</td>
<td>27</td>
<td>22.8%</td>
</tr>
<tr>
<td>Four or more children</td>
<td>11</td>
<td>9.2%</td>
</tr>
<tr>
<td><strong>Mean CBCL scores (N = 169)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Externalizing t-scores</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Mean | 70.96 | 69.91 |
| Standard deviation | 9.163 | 9.372 |

*Note: CBCL = Child Behaviour Checklist.*
STOP4-7, AN EARLY INTERVENTION

Figure 1. Flow diagram of participation and drop out in treatment and research.

missing. None of the variables correlated with the outcome measure. Moreover, comparison of means and covariances of all variables using Little’s (1988) missing completely at random (MCAR) test revealed that data were missing completely at random: \( \chi^2(2575) = 2646.690 \), ns. Therefore, missing values were estimated using maximum likelihood estimation and the expectation maximization (EM) algorithm available in SPSS.

RESULTS

For the twelve children who dropped out of treatment an intention-to-treat analysis was made: pre-treatment scores were repeated as post-treatment data. As can be seen in Table 2, the findings suggest significant improvements on most measures (e.g., the problem behaviour of the child at home and in the school, and also of the parental skills (positive parenting, and inconsequent and harsh disciplining), parental self-efficacy, and, finally, also the social-problem-solving skills of the children. On all measures we see a significant, positive change (\( p < .01 \)), except for the competence subscale of the PSOC. The effect sizes are moderate for problem behaviour at home (CBCL, total score and externalizing), parenting skills (SOG, inconsequent disciplining), and problem-solving skills (Wally, percentage of prosocial answers). On the other measures (CBCL, internalizing; SOG, positive parenting and harsh disciplining; PSOC, satisfaction; and TRF, total score, internalizing and externalizing) the effect sizes are rather small. About 50% of the children still score above the clinical cut-off on the CBCL externalizing problem scale, after treatment.

DISCUSSION

The present study aimed to evaluate the feasibility of a multicomponent treatment programme for young children with behavioural problems. The
TABLE 2
Results of the intervention (N = 193)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Pre-test</th>
<th>SD</th>
<th>Post-test</th>
<th>SD</th>
<th>T-test</th>
<th>p-value</th>
<th>ES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBCL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Externalizing</td>
<td>71.12</td>
<td>8.680</td>
<td>64.97</td>
<td>10.835</td>
<td>.000</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>Internalizing</td>
<td>59.10</td>
<td>10.142</td>
<td>56.15</td>
<td>10.426</td>
<td>.000</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>Total problem-score</td>
<td>67.54</td>
<td>8.037</td>
<td>62.75</td>
<td>9.184</td>
<td>.000</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>SOG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive parenting</td>
<td>27.14</td>
<td>5.61</td>
<td>27.58</td>
<td>3.643</td>
<td>.232</td>
<td>0.09</td>
<td></td>
</tr>
<tr>
<td>Inconsequent disciplining</td>
<td>9.86</td>
<td>2.567</td>
<td>8.50</td>
<td>2.090</td>
<td>.000</td>
<td>0.58</td>
<td></td>
</tr>
<tr>
<td>Hash disciplining</td>
<td>5.05</td>
<td>2.275</td>
<td>4.34</td>
<td>1.729</td>
<td>.000</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>PSOC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competence</td>
<td>25.85</td>
<td>4.121</td>
<td>25.65</td>
<td>5.648</td>
<td>.592</td>
<td>-0.04</td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>35.10</td>
<td>6.723</td>
<td>36.78</td>
<td>6.817</td>
<td>.000</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Externalizing</td>
<td>67.73</td>
<td>9.680</td>
<td>64.90</td>
<td>9.351</td>
<td>.000</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>Internalizing</td>
<td>55.56</td>
<td>8.721</td>
<td>54.03</td>
<td>9.028</td>
<td>.002</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>Total problem-score</td>
<td>65.62</td>
<td>8.149</td>
<td>62.56</td>
<td>9.445</td>
<td>.000</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wally % prosocial</td>
<td>65.50</td>
<td>20.082</td>
<td>74.97</td>
<td>19.329</td>
<td>.000</td>
<td>0.48</td>
<td></td>
</tr>
</tbody>
</table>

Note: CBCL = Child Behaviour Checklist; TRF = Teacher Report Form; SOG = Schaaf voor Opvoedingsgedrag (Parent Behaviour Scale); PSOC = Parental Scale of Competence.

Preliminary results of the STOP4–7 intervention were promising. We found that the children improved and, as well as a significant change in child behaviour, parenting skills and parental self-efficacy were also enhanced. The effect sizes were moderate, which is a good result for an intervention not implemented in a university setting (Weisz, Jensen-Doss, & Hawley, 2006).

Although only 43% of the participants were able to fill in all measures, this study is unique because data from all families were collected. We were specifically surprised that only 12 families dropped out during the treatment. In contrast to a lot of other studies, the STOP4–7 intervention kept even the participating families from lower SES groups in the intervention to the end. Also, the parents indicated feeling satisfied and this leads us to conclude that the programme fits well and is feasible.

It seems a matter of common sense that it is more cost effective to intervene at an earlier stage in the development of antisocial behaviour. In meta-analyses and reviews parent-management training (PMT) proved to be the most effective single intervention to treat children with antisocial behaviour problems. It was our experience that multimodal programmes add to the effectiveness of PMT, including the training of the child and its
teacher. Training the child in social skills in one form or another has also been recommended by others and its feasibility in European children is now also demonstrated (Webster-Stratton, Reid, & Hammond, 2004).

The typical escalation of aggressive and disobedient behaviour during the second year and its relative decline by the fifth year suggests that the preschool period may be a "sensitive period" for the maintenance and acceleration of these behaviours. Even if some preschoolers fail to outgrow normative non-compliance, tantrums and aggression, these behaviours have not yet stabilized and therefore remain relatively malleable and open to intervention. It is also hypothesized that secondary consequences such as academic underachievement, peer rejection, and negative expectations by teachers can be prevented when treating at this young age. The present intervention is also seen as one of the few ways to encounter the negative prognosis of ODD, given that treatment of antisocial adolescents sometimes even has negative outcomes (Dishion, McCord, & Poulin, 1999).

Follow-up will be necessary to further evaluate the progress of the children. We should acknowledge that half of the children still scored above the clinical cut-off for behavioural problems at the end of the training. In other similar studies researchers have found between 88% (McIntyre, 2008) and 15% (Webster-Stratton et al., 2004) of the children still receiving a clinical score on a questionnaire measuring behaviour change. Probably, the period is too short to detect large effects in all children already. Important to signal is the significant positive change and large effect size of the change in parenting skills on inconsequent disciplining. Influential theoretical models (Patterson, 1982) predict a change in child behaviour accordingly with change in parent behaviour (parenting skills) in the long term.

A strength of the study is that we collected years of experience in PMT. In order to be effective for as many families as possible—especially for the most problematic families—a balance needs to be struck with the demands of the parents, including a flexible implementation of the programme and supply, which implicates standard guidelines and checks on treatment integrity.

The study has some limitations that need also to be acknowledged. First, several projects and studies bear evidence that it is an advantage to intervene over a longer period of time, focusing on some pivotal moments (periods of transition), such as the transition from infant to primary school and from primary to secondary school. From this point of view, a long-time follow-up of the at-risk children is necessary before firm conclusions about the effectiveness of PMT in our community can be formulated.

This is a pre–post design that does not allow us to differentiate between spontaneous remission, methodological artefact or real treatment effect. A control group is needed and will be planned in future designs. However, we want to argue that in this specific group, spontaneous remission can be ruled out. Tremblay (2000) reported that aggression in most children was
characterized by spontaneous remission except within a small group of children in whom the aggression remained the same or even deteriorated. Also Angold, Costello, Burns, Erkanli, and Farmer (2000) found that during the period before treatment started, the behaviour of these children grew more problematic instead of decreasing.

Finally, the study included some measures but lacked the means to include more and better questionnaires to measure the effects of the interventions. To come to more robust conclusions, it is recommended that a multi-method approach be used, and that it should include observational measures as well (Patterson, 1982).

We call this study a practice-driven evaluation (Veerman & van Yperen, 2007): It was aimed at finding what can be called “practice-based evidence” (Barkham & Mellor-Clark, 2003). Practice-driven evaluation thus stands in contrast to method-driven evaluation, which takes the method as its starting point and thus favours adherence to strict methodological rules with the randomized clinical trial as the golden standard. Practice-driven evaluation is utilization focused (Patton, 1997). Although the research design is open to a lot of criticism, the current results open up perspectives. In the dissertation of the first author other studies, which started later, on the STOP4–7 intervention will be reported (De Mey, 2010).

To conclude, in this article we proved that the STOP4–7 intervention, a multimodal programme, is effective in reducing antisocial behaviour problems in young children, in the short run. However, new designs, with new measures, with better means to include all the families in the study and with a long-time follow-up is necessary before more firm conclusions can be drawn about the effectiveness of this programme.

References:


