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de Vries, S.L.A.; Hoeve, M.; Wibbelink, C.J.M.; Asscher, J.J.; Stams, G.J.J.M.

DOI
10.1016/j.childyouth.2017.10.011

Publication date
2017

Document Version
Final published version

Published in
Children and Youth Services Review

Children and Youth Services Review 82 (2017) 413–426

Contents lists available at ScienceDirect

Children and Youth Services Review

journal homepage: www.elsevier.com/locate/childyouth

A randomized controlled trial of the effectiveness of the youth crime prevention program 'New Perspectives' (NP): Post-treatment changes and moderator effects☆,☆☆,☆☆☆,☆☆☆☆,☆☆☆☆☆

Sanne L.A. de Vries*, Machteld Hoeve, Carlijn J.M. Wibbelink, Jessica J. Asscher, Geert Jan J.M. Stams

University of Amsterdam, The Netherlands

ARTICLE INFO

Keywords:
Effectiveness
Randomized controlled trial (RCT)
Prevention
Juvenile delinquency
New Perspectives
Care as usual

ABSTRACT

Objectives: New Perspectives (NP) aims to prevent that youth at onset of a criminal career will develop a more persistent criminal behavior pattern. The study aim was to examine whether NP was effective relative to care as usual in preventing and reducing (persistent) delinquency. Moreover, we examined improvements in secondary outcomes (e.g., peer and parent relationships and cognitive distortions) and other outcomes (e.g., substance use and self-esteem).

Methods: At-risk youth ($N = 101$) aged 12 to 19 years were randomly assigned to the intervention group (NP, $n = 47$) or control group ('care as usual', $n = 54$). The effects of the NP intensive phase (3 months after program start) and aftercare phase (6 months after program start) were analyzed.

Results: NP and care as usual did not differ on any of the outcome measures at both post-test occasions. The effects of NP were the same for boys and girls, different age groups, and ethnic groups.

Conclusions: The overall null-effects are discussed, including implications for further research, policy, and practice.

1. Introduction

Juvenile delinquency is a serious problem given its negative consequences for victims, society, and juvenile offenders. In the Netherlands approximately one third (38%) of the adolescents between 12 and 17 years of age have reported a crime at any moment in their life (Van der Laan & Blom, 2011). Of those juveniles, about 36% recidivate (Wartna, Blom, & Tollenaar, 2011). The Dutch prevalence rates are comparable to self-reported juvenile delinquency in the United States, but are relatively high compared to other European countries (Enzmann et al., 2010).

The fact that many youngsters with disruptive behaviors develop personality disorders (Rey, Morris-Yates, Singh, Andrews, & Stewart, 1995) and a persistent criminal trajectory (Loeber, Burke, & Pardini, 2009) underscores the need to intervene at an early stage in adolescents' lives. It is therefore very important to establish the effectiveness of interventions that aim to prevent persistent juvenile delinquency. This article reports on the effects of the preventive intervention New Perspectives (NP), a short, intensive ambulant program designed to help divert adolescents in early stages of delinquency from committing future offenses (Elling & Melissen, 2007). The present study is one of the first outside the USA to examine the effectiveness of a prevention program targeting adolescents (in pre-, mid- and late adolescence) at risk for persistent delinquency by using a randomized controlled trial, comparing NP with care as usual (CAU). In the Dutch field of secondary crime prevention, the NP intervention is one of the few youth interventions following the *Risk-Need-Responsivity* principles (RNR model, Andrews, Bonta & Hoge, 1990; Andrews, Zinger, et al., 1990).

☆ Sanne de Vries, Machteld Hoeve, Carlijn Wibbelink, Jessica Asscher, & Geert Jan Stams, Forensic Child and Youth Care Sciences, Research Priority Area Yield, managed by the Research Institute of Child Development and Education, University of Amsterdam (UvA), The Netherlands.

☆☆ This work was supported by ZonMw, The Netherlands Organization for Health Research and Development (project 157000.4006).

☆☆☆ **Trial registration**: Dutch trial register number NTR4370. The study is financially supported by a grant from ZonMw, the Dutch Organization for Health Research and Development, grant number 157004006. The study is approved by the Ethics Committee of the University of Amsterdam, approval number 2011-CDE-01.

☆☆☆☆ **Grant number**: 80-82435-98-10109/157004006.

☆☆☆☆☆ **Ethics Committee Approval number:** 2011-CDE-01.

* Corresponding author at: Research Institute Child Development and Education, Utrecht University, 3584 CS Utrecht, The Netherlands.
E-mail address: L.A.devries@uu.nl (S.L.A. de Vries).

http://dx.doi.org/10.1016/j.childyouth.2017.10.011
Received 21 June 2016; Received in revised form 27 September 2017; Accepted 10 October 2017
Available online 12 October 2017

2. Previous research on programs preventing delinquency

Prevention programs have been developed in diverse settings with various degrees of impact on juvenile delinquency. In their recent systematic review, Farrington et al. (2016) concluded that all types of preventive interventions (individual, family- or school-based) contribute to a reduction of 5% in the prevalence of problem behavior. The effectiveness of interventions can be improved by certain conditions, related to the theoretical foundation, intensity, format, and components of the program. First, Andrews, Bonta, et al. (1990), Andrews, Zinger, et al. (1990) and Andrews and Bonta (2010) have shown that therapeutic interventions adhering to the RNR model could reduce offender recidivism by up to 35%. In accordance to the risk principle of the RNR model, several researchers have stated that youth with a higher risk profile profit most from prevention programs (Deković et al., 2011; Farrington et al., 2016; Lösel and Beelmann, 2003). Second, many systematic studies indicated that family-based (e.g., Farrington & Welsh, 2003) and multimodal interventions (e.g., Lipsey, 1995) are successful in preventing and reducing delinquent behavior. Third, it is well known that behaviorally oriented interventions can produce a strong positive impact on the prevention of antisocial behavior (e.g., Lösel & Beelmann, 2003).

Despite the abovementioned positive results of prevention programs, several studies could not find convincing evidence of the effectiveness of prevention or even showed negative effects. For example, two meta-analytic studies (Schwalbe, Gearing, MacKenzie, Brewer, & Ibrahim, 2012; Wilson & Hoge, 2012) could not find evidence for the effectiveness of diversion (the overall impact of diversion on delinquency was nonsignificant or differences were no longer significant when a sound research design was used, such as RCT). Moreover, group-based and highly intensive prevention proved to be counterproductive in several studies (e.g., De Vries, Hoeve, Assink, Stams, & Asscher, 2015; Sawyer, Borduin, & Dopp, 2015; Wilson & Hoge, 2012). Finally, early preventive interventions had no significant effects on the reduction of criminal behavior in adulthood (Deković et al., 2011).

In conclusion, findings on the effectiveness of preventive interventions are mixed. On the basis of these earlier reviews, it is likely that prevention programs that adhere to the RNR-model and are behaviorally oriented and family-based will have the most positive impact. In order to draw firm conclusions, further convincing evidence by examining the effectiveness of youth crime prevention is highly needed. In addition, given that most studies have been conducted in the USA, research in countries other than the USA is needed. The present study will be an addition to the existing literature on prevention by examining the effects of the Dutch prevention program New Perspectives.

3. New Perspectives

The NP-program is based on the theoretical framework of the RNR model (Andrews, Bonta, et al., 1990; Andrews, Zinger, et al., 1990). First, NP adheres to the *risk principle* by applying risk assessment and providing modules (NP Prevention and NP Plus) that differ in treatment intensity in order to adjust to the offender's risk of recidivism. Second, NP aims to prevent a persistent delinquent trajectory of at-risk adolescents. In order to prevent persistent delinquent behavior, NP addresses the following criminogenic needs (as secondary treatment goals): poor relationships in the social network (parents and peers), cognitive distortions, and poor parenting behavior. The multisystemic approach of NP enables treatment of these multiple factors related to delinquency and recidivism (*needs principle*). At the start of the intervention phase, social workers systematically assess the client's criminogenic needs in order to target these dynamic criminogenic factors in treatment. Third, NP is based on the *responsivity principle* by adjusting treatment to the client's motivation level and personal background. Techniques of motivational interviewing and individual coaching are used to influence motivation levels of adolescents. Additionally, the NP program is carried out in a multimodal format by incorporating a variety of effective cognitive social learning strategies (incl. problem-solving skills and cognitive restructuring methods, Elling & Melissen, 2007). NP attempts to modify cognitive distortions by using *cognitive restructuring* techniques based on Ellis' (1962) Antecedent-Belief-Consequence (ABC) model of emotional disturbances. The ABC model aims to give clients insight into their irrational beliefs, or cognitive distortions, and their dysfunctional behavioral consequences (Ellis & Dryden, 1997). To conclude, given that the NP program is based on the RNR model, including behaviorally oriented techniques, and a multimodal format, NP is considered to be a promising intervention preventing persistent delinquency.

Previous uncontrolled evaluation studies of NP have shown reductions in delinquency and improvements in the different life domains, such as family, school, and peers (Buysse, Van den Andel, & Van Dijk, 2008; Geldorp, Groen, Hilhorst, Burmann, & Rietveld, 2004; Noorda & Veenbaas, 1997). For example, Noorda and Veenbaas (1997) concluded that 72% of 300 youngsters showed a decrease in delinquent behavior and long term (after 9 months) improvements in multiple life areas. Improvements were found in family bonds, leisure time, and peer affiliations (Geldorp et al., 2004; Noorda & Veenbaas, 1997). However, previous evaluation studies lacked use of a control group and, consequently, it is questionable if the positive results can be attributed to the intervention. Using a randomized controlled trial is the most rigorous way to evaluate treatment effects (Clingempeel & Henggeler, 2002). Finally, De Vries, Hoeve, Asscher, and Stams (2014a) found moderate to high levels of adherence to prescribed treatment procedures and components in treatment of 76 adolescents (meeting NP selection criteria). An average of 73% adherence to the NP-program components was found, which corresponded to the recommended minimum levels of program integrity of 60% (Durlak & DuPre, 2008).

4. The present study

The present study uses a randomized controlled trial to examine the short term effects (3 and 6 months after start of program) of NP relative to the effects of care as usual. First, we examined whether NP is effective in decreasing delinquent behavior, the primary program goal. Second, we examined individual and social criminogenic factors, which are considered to be the secondary program goals of NP, including poor parenting behavior, poor social bonds with parents (adolescent-parent attachment), deviant peer affiliations, and cognitive distortions (Andrews & Bonta, 2010; Elling & Melissen, 2007). Also, other individual factors that have been found to be associated with delinquency were assessed, such as substance use (D'Amico, Edelen, Miles, & Morral, 2008), and low self-esteem (Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005). Finally, we examined program outcomes related to depression and anxiety (internalizing behavior problems), because these problems often co-occur with externalizing problems (Barker, Oliver, & Maughan, 2010).

Next to the overall program effectiveness, it is important to examine which youngsters benefit most from the intervention (Kazdin & Weisz, 1998). The NP target group is very diverse regarding ethnic background, gender, and age. In this respect it is important to examine possible differential effects of NP for boys and girls, and adolescents from different cultural backgrounds and ages. It is well known that the criminogenic factors differ depending on gender, the specific ethnic background and age of the adolescent. A large amount of studies identified gender-specific risk factors, such as the covert nature of girls' antisocial behavior and the heightened risk of co-occurring disorders compared to boys (e.g., Hipwell & Loeber, 2006). Also, different risk factors have been found in non-indigenous groups, including migration stress factors, such as loss of family and friends, poor integration, and feelings of alienation and discrimination (Stevens & Vollebergh, 2008). Finally, it is well-known that the extent and impact of risk factors

change with age. For example, the influence of peers in the adolescent's behavior increases with age, whereas the impact of parental supervision decreases with age (Loeber, Slot, & Stouthamer-Loeber, 2006; Van der Put et al., 2011). As a consequence, examination of possible differential effects of prevention programs for different subgroups is needed. Thus, in addition to examining the overall program effects, we investigated effects of potential moderators. Since NP can be seen as a regular, but individualized program, we did not have expectations about differential effects for girls and males, different age groups or non-indigenous groups.

5. Method

5.1. Participants

A total of 160 adolescents and parents were recruited for the study at baseline and randomly assigned to the intervention NP (n = 81) or the control group (n = 79). Despite the efforts made, 59 adolescents (37%) and 99 parents (62%) dropped out at first assessment. Also, 10 adolescents and 22 parents did not complete the second assessment (T2) and 6 adolescents and 16 parents were lost at third assessment (T3). More details of attrition rates are presented in Appendices A and B. Post-hoc power calculations with the program G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) indicated that 50 adolescents per condition (assuming an alpha of 0.05, and a correlation of 0.50 between baseline covariates and outcome variables) were sufficient to detect a difference in problem behavior at post-test (power > 0.80, a small effect size defined by Cohen, 1988, as 0.20). There was also sufficient power to perform moderator analyses for different subgroups (power > 0.80 to detect small effects for 4 groups). Further, for MANOVA's on the sample of adolescents (total N = 101) and parents (total N = 61), sufficient power remained to test program effectiveness and to conduct moderator analyses (power > 0.80 to detect small to medium effects for a 2 × 2 design with four independent variables). See also the study protocol of De Vries, Hoeve, Asscher, and Stams (2014b).

Little's MCAR test indicated that data were missing completely at random for adolescents, χ^2 (5329) = 2210.110, p = 1.000, and parents, χ^2 (2805) = 91.275, p = 1.000. Although we concluded that the data were missing completely at random, as the drop-out rates in the present study were relatively high, we conducted additional analyses (independent sample t-tests and chi-square analyses) comparing participants and non-participants (adolescents and parents) on the basis of demographic factors and pre-intervention scores. Only in the outcome aggressive behavior, we found a significant difference between participants and drop-outs t(99) = −2.890, p = 0.005 (direct aggression), t(99) = −2.041, p = 0.044 (direct aggression), t(99) = −2.045, p = 0.044 (indirect aggression). The adolescents who were lost at post-test showed lower levels of aggressive behavior than those who were retained. Overall, participants who dropped out and did not participate in the post-intervention assessments (T2 and T3) did not differ significantly on demographic variables or on most of the outcome variables from those retained. Therefore, all participants who completed one or more of the three assessments were included in the analyses, resulting in 101 adolescents (NP n = 47, CAU n = 54) and 61 parents (NP n = 26, CAU n = 35). Multiple imputation by the expectation maximization algorithm was applied to estimate missing values of adolescent and parent data on the outcome variables (Graham, 2009; Tabachnick & Fidell, 2013). Missing values on the categorical outcome measure of delinquency were not estimated.

The final sample of adolescents consisted of 68 boys and 33 girls, aged M = 15.58 (SD = 1.53, range = 12.30–19.30). Eighty-three percent (n = 84) of the juveniles belonged to an ethnic minority group, that is, at least one of the youth's parents was born abroad (second generation). The largest second generation groups had a Surinamese (27%, n = 27), or a Moroccan (24%, n = 24) background. More than half (55%) lived in a single-parent home. With regard to the education level, 40% followed lower secondary vocational education (VMBO), 41% intermediate vocational education (MBO), 12% university preparatory education (HAVO/VWO), and 8% special education. The participants were on average 15.12 years old (SD = 1.46) when they first came into contact with the police. The sample of 61 parents were M = 44.48 years of age (SD = 7.02, range = 33.03–63.05) and the majority of the parents were female (n = 53). The educational level of parents ranged from elementary school (5%) to university degrees (20%). Independent sample t-tests and chi-square analyses revealed no differences between treatment conditions at pre-test on demographic factors and outcome variables. Additional characteristics of adolescents are presented in Table 1.

5.2. Procedure

Participants were recruited at five locations of a large youth care institution in the urban area of Amsterdam between 2011 and 2013. Adolescents were mainly referred by a collaboration between professionals of the National Board of Child Protection and the Juvenile Justice Department ('Veiligheidshuis'), local child welfare agencies, elementary or secondary schools, Youth Care Agency of Amsterdam, or they were self-referred.

Adolescents were screened for participation in NP by clinical professionals based on the following criteria: (1) age 12 to 23 years, (2) experiencing problems in multiple life domains (school, family, peers, leisure time), and (3) being at risk for the development and progression of a deviant life style, such as predelinquents with antisocial behavior, first time offenders, and adolescents with mainly minor police contacts and offenses (such as shop lifting and joyriding). Exclusion criteria were an IQ below 70, severe psychiatric problems, a long history of delinquency, severe drugs-or alcohol use (dependency), absence of residence status in the Netherlands, and absence of motivation to stop committing criminal acts.

Data of adolescents and parents were collected at three points in time: prior to treatment (T1 pre-test assessment), 3 months after the pre-test assessment (T2 post-test, at termination of the intensive intervention phase), and 6 months after pre-test (T3 post-test, at termination of the aftercare phase). A more elaborate description of the randomization process can be found in the study protocol of De Vries et al. (2014b).

Table 1
Background characteristics and problem severity in NP and CAU.

	NP (n = 47)		CAU (n = 54)		t
	M	SD	M	SD	
Mean age	15.66	1.44	15.51	1.61	−0.489
Age at first police contact	15.07	1.56	15.15	1.41	−0.220

	NP (n = 47)		CAU (n = 54)		
	%	n	%	n	χ^2
Older juveniles (from 16 years)	48.9	23	44.0	24	0.408
Male	63.8	30	70.4	38	0.489
Ethnic minority status	78.7	37	87.0	47	1.241
History in youth care	70.2	33	72.2	39	0.050
Problem behavior[a]	46.8	22	53.7	29	0.478
Meets DSM-IV criteria					
Overt aggression	52.3	23	69.8	37	3.134
Covert aggression	54.5	24	49.1	26	0.290
Substance Use	19.6	9	20.4	11	0.010
Depression	15.2	7	22.2	12	0.792

[a] Composite score based on pre-intervention scores on delinquency, aggression, substance use, cognitive distortions, and deviant peers.

5.3. Conditions

Adolescents meeting inclusion criteria for NP were randomly assigned to the experimental and control group. The experimental group received NP, a voluntary ambulant program consisting of an intensive coaching phase of 3 months followed by a 3-month aftercare phase. Social workers, who have low caseloads, are available 24 h a day, 7 days per week. At the start of the intervention, the social worker drafts an action plan including treatment goals and appropriate techniques of intervention, which are derived from a structured assessment of the client's criminogenic needs. During the intensive coaching phase, the average contact intensity per week is 8 h per client. The aftercare phase is characterized by a low contact intensity, ranging from a minimum of 4 h to a maximum of 12 h total contact intensity (in 12 weeks). Core activities of NP include setting goals (action plan), motivational interviewing, individual coaching, cognitive restructuring and involving the social network (peers, parents, teachers etc.). Aspects of parenting behavior are addressed by using various techniques for parenting, such as psychoeducation and empowerment. Peer affiliations are addressed by teaching skills to resist negative peer influences, reinforcing friendships with prosocial peers and improving leisure time activities of adolescents (Tan, Brussen, Sewraj, Rijnveld, & Bontes, 2010).

Adolescents in the control group received care as usual (CAU). Within the group of adolescents receiving treatment, these services included probation service (20%), individual counseling (monitoring/supervision, 17%), family counseling (monitoring/supervision, 9%), individual coaching (influencing cognition and behavior, 13%), academic service coaching (tutoring and special education included, 15%), and other programs, such as social skills training, clinical group care, crisis intervention, family therapy, and Real Justice group conferencing (26%). Most services were carried out in an ambulant setting (63%), in a mixed format (individual and family-based, 46%), and most services were provided by the Child Protection Board of Amsterdam (37%). Notably, 35% of the juveniles (n = 19) did not receive an intervention (see also Appendix A for an overview of the flow of participants through the study and Appendix D for a description of treatment types offered in the CAU and NP conditions).

5.4. Measures

In addition to the primary and secondary outcomes we collected data on potential moderators including gender, age, and ethnicity. Participants were instructed to answer the questions for the last three months at each measurement.

5.4.1. Delinquent behavior

The primary outcome measure, the prevalence of offending, was assessed by the 'Self-report Delinquency Scale' (SRD) of the Research and Documentation Centre (WODC; Van der Laan & Blom, 2006; Van der Laan, Blom, & Kleemans, 2009). Adolescents reported if they ever participated in diverse delinquent acts. Three subscales of the SRD scale were used for examination of the program effectiveness: *violent crime* (*7 items*), *vandalism* (*4 items*), and *property crime* (*6 items*). The acts ranged from minor offenses to more severe offenses. First, for the 17 types of offending activities, participants were asked if they had been engaged in each of these acts. An example is: "Have you ever wounded anyone with a knife or other weapon?". Next, for each of the acts, where respondents answered with "yes", they were asked how often they participated in diverse delinquent acts during the past 3 months. In the present study, sum scores were used, indicating how often the participant showed delinquent activities in the previous three months. Cronbach's alphas for delinquent behavior were T1 α = 0.80; T2 α = 0.62; and T3 α = 0.88.

5.4.2. Parenting behavior

Parental support (*10 items: warmth* and *responsiveness*), authoritative control (10 items: *explaining* and *autonomy*), and restrictive control (10 items: *strictness* and *discipline*), were assessed with the 'Parenting Behavior Questionnaire' (PBQ, Wissink, Deković, & Meijer, 2006). All items were measured using a 5-point Likert scale (1 = never to 5 = very often). An example is: "How often do your parents give you a compliment" (support). In the present study, reliability analyses resulted in the following Cronbach's alphas: 0.90 (T1), 0.92 (T2), and 0.93 (T3) for parental support; 0.81 (T1), 0.81 (T2), and 0.85 (T3) for authoritative control; and 0.85 (T1), 0.85 (T2), and 82 (T3) for restrictive control. This questionnaire was also used for reports of parents. Items are adapted to the perspective of the parent, for example: "How often do you give your child a compliment?" Reliability analyses of parent reports resulted in 0.78 (T1), 0.73 (T2), and 0.80 (T3) for parental support; 0.59 (T1), 0.63 (T2), and 0.70 (T3) for authoritative control; and 0.62 (T1), 0.65 (T2), and 64 (T3) for restrictive control.

Parental knowledge about adolescent's whereabouts was measured by the 'Vragenlijst Toezicht Houden' (VTH), the Dutch version of the parental monitoring scale of Brown, Mounts, Lamborn, and Steinberg (1993). Both parents and child reported on how much parents knew about who the child's friends are; how they spent their money; where they were after school; which place they went when they left home; what they did in their leisure time; and what grades they received at school. Cronbach's alphas were 0.83 (T1), 0.82 (T2), and 0.81 (T3) for child reports and 73 (T1), 0.83 (T2), and 0.88 (T3) for parent reports.

5.4.3. Adolescent-parent attachment

The quality of adolescent-parent relationships was assessed by using the short Dutch validated version of the 'Inventory of Parent and Peer Attachments' (IPPA; Armsden & Greenberg, 1987; Gullone & Robinson, 2005). The IPPA consists of 12 items assessed on a 4-point Likert scale (1 = almost never to 4 = almost always), measuring three subscales: the adolescents' *trust* in availability and sensitivity of the attachment figure, the quality of *communication* and the extent of *anger and alienation* in the relationship with the attachment figure. An example of an item is: "If my parent knows something is bothering me, he/she asks me" (communication). Cronbach's alphas for the communication, trust and alienation scales were 0.73 (T1), 0.77 (T2), and 0.83 (T3), 0.74 (T1), 0.77 (T2), and 0.79 (T3), and 0.63 (T1), 0.62 (T2), and 0.66 (T3), respectively. For all scales (PBQ, IPPA, and VTH) of parenting behavior, total mean scores were used for the analyses.

5.4.4. Peer affiliations

Adolescents' perceptions of peer affiliations were measured by the Dutch version of the 'Friends' scale (Deković, Wissink, & Meijer, 2004), which is part of the 'Family, Friends & Self Scale' (FFS, Simpson & McBride, 1992). The FFS consists of 17 items assessed on a 5-point Likert scale (1 = none of my friends to 5 = almost all of my friends), divided in two subscales: affiliation with deviant (10 items, e.g., "How many of your friends have damaged other peoples' property on purpose?") and prosocial peers (7 items, e.g., "How many of your friends like to play sports?"). Cronbach's alpha's were 0.92 (T1), 0.92 (T2), and 0.93 (T3) for deviant, and 0.71 (T1), 0.78 (T2), and 0.85 (T3) for prosocial peers. *The intensity of contact with peers* was measured by a subscale of the 'Basic Peer Questionnaire' (BVL, Weerman & Smeenk, 2005), measuring how often participants spend time with their peers during the week and weekends. Two frequency items and two duration items were rated on a 3-point scale (1 = never to 3 = 3 or more days or on Saturday and Sunday, and 1 = less than 1 h to 3 = all day resp.). One is a rated on a 4-point scale (1 = never to 4 = 5 times a week) and examines how often respondents go to parties with their friends. Cronbach's alpha's were 0.72 (T1), 0.66 (T2), and 0.76 (T3). Total mean scores were used for the analyses.

5.4.5. Cognitive distortions

Distortions in adolescents' cognition were assessed with the Dutch validated version (HID, Nas, Brugman, & Koops, 2005) of the 'How I Think Questionnaire' (Gibbs, Barriga, & Potter, 2001). The HIT contains 54 items: 39 items refer to the four-category typology of self-serving cognitive distortions: *self-centered attitude*, *blaming others*, *minimizing-mislabeling* (consequences of) *behavior*, and *assuming the worst*, 8 items are used to screen suspect responding, and 7 items are positive fillers. All items were assessed, using a 6-point Likert scale (1 = disagree strongly to 6 = agree strongly). An item example is: "I make mistakes because I am with the wrong people". Total mean scores of the four self-serving cognitive distortions scales were used. Cronbach's alpha's of the self-centered scale were: 0.72 (T1), 0.68 (T2), and 0.78 (T3); blaming others: 0.75 (T1), 0.71 (T2), and 0.75 (T3); mislabeling: 0.76 (T1), 0.78 (T2), and 0.80 (T3); and assuming the worst: 0.73 (T1), 0.64 (T2), and 0.82 (T3).

5.4.6. Prosocial behavior

The 'Prosocial Behaviour Questionnaire' (PBQ; Weir & Duveen, 1981) was used to assess positive aspects of behavior. This self-report questionnaire consists of 20 items to be answered on a 4-point scale (1 = never to 4 = always). An item example is: "If there is an argument, I try to do something about it." A total mean score was used for the analyses. Cronbach's alpha's were 0.87 (T1), 0.91 (T2) and 0.91 (T3).

5.4.7. Self-esteem

Feelings of worth and satisfaction with oneself were measured by using the Dutch version (Treffers et al., 2002) of the global self-worth 5-item subscale from the 'Self-Perception Profile for Adolescents' (CBSA, Harter, 1988). Adolescents first chose which of two descriptions described them better (e.g., "Some youngsters are often disappointed in themselves"; "Other youngsters are almost never disappointed in themselves"), then they reported whether that description was a 'little true' or 'totally true' for them (4-point scale). A total mean score was used for the analyses. Results of the reliability analyses were: $\alpha = 0.67$ (T1); $\alpha = 0.76$ (T2); and $\alpha = 0.80$ (T3).

5.4.8. Aggressive behavior

Aggression was measured by the Dutch self-report validated version of the 'Buss-Durkee Hostility Inventory' (BDHI-D, Buss & Durkee, 1957) consisting of two subscales 'Overt Aggression' (measuring the tendency to express verbal or physical aggression) and 'Covert Aggression' (determining the emotional and cognitive components: hostility, irritability, suspicion, and anger). The questionnaire contains 35 items to be answered on a 2-point scale (1 = not true and 2 = true). An item example is: "If someone hits me first, I let him have it (overt aggression)". Total mean scores for the covert and overt aggression scales were used for the analyses. Results of the reliability analyses of overt aggression were: $\alpha = 0.77$ (T1); $\alpha = 0.70$ (T2); and $\alpha = 0.71$ (T3) and for covert aggression: $\alpha = 0.79$ (T1); $\alpha = 0.85$ (T2); and $\alpha = 0.83$ (T3).

5.4.9. Substance use

Abuse and dependency of alcohol and drugs among adolescents was measured by the CRAFFT Substance Abuse Screening Test (Knight, Sherritt, Shier, Harris, & Chang, 2002). The CRAFFT is based on 6 items. An item Example is: "Do you ever forget things you did while using alcohol or drugs?". Participants answered these questions with 'yes' or 'no'. Total mean scores were used for the analyses, $\alpha = 0.84$ (T1); $\alpha = 0.83$ (T2); and $\alpha = 0.86$ (T3).

5.4.10. Externalizing behavior problems

The socio-emotional development of adolescents was measured by the Dutch 72-item questionnaire 'Sociaal-Emotionele Vragenlijst' (SEV; Scholte and van der Ploeg, 2007). In the present research the dimension externalizing behavior was used, divided in two subscales: attention deficit, hyperactivity and impulsivity (18 items, T1 $\alpha = 0.93$; T2 $\alpha = 0.90$; T3 $\alpha = 0.92$) and social behavioral problems (26 items: oppositional defiant behavior, aggression, and antisocial behavior, T1 $\alpha = 0.94$; T2 $\alpha = 0.95$; T3 $\alpha = 0.94$). Parents reported on externalizing behavior of their child on a 5-point scale (1 = never to 5 = very often). An item example is: "Your child is easily distracted".

5.4.11. Internalizing problems

Cognitive, affective, and behavioral symptoms of depression were measured by the 'Child Depression Inventory-2' (CDI-2, Breat & Timbremont, 2002), a revision of the CDI (Kovacs, 1985), based on DSM-IV. Adolescents reported how they felt in the past two weeks on 3-point scale (27 items; 1 = sometimes to 3 = always). An item example is: "All bad things are my fault". Total sum scores were used for the analyses, $\alpha = 0.83$ (T1); $\alpha = 0.84$ (T2); and α 0.84 (T3). Symptoms of anxiety were assessed by use of the 'Spence Children's Anxiety Scale' (SCAS, Spence, 1998). The SCAS is based on the DSM-IV and measures the following symptoms of anxiety: *generalized anxiety*, *separation anxiety*, *social phobia*, *panic disorder*, *agoraphobia*, *obsessive-compulsive disorder*, and *physical injury fears* (Scholing, Nauta, & Spence, 1999). The SCAS is based on 45 items, to be answered on a 4-point scale (1 = never to 4 = always). An item example is: "I worry about things" (generalized). Total sum scores were used for the analyses, $\alpha = 0.88$ (T1); $\alpha = 0.91$ (T2); and $\alpha = 0.93$ (T3).

Adolescents' internalizing behavior was also assessed by using parent reports on three subscales of the questionnaire 'Sociaal-Emotionele Vragenlijst' (SEV; Scholte and van der Ploeg, 2007): general anxiety, social anxiety, and depressive behavior (18 items). An item example is: "Your child is anxious without a clear reason". Cronbach's alphas were 0.88 for all three assessments of internalizing behavior.

5.5. Analytic strategy

An intention-to-treat analysis was applied following the principle of Montori and Guyatt (2001): all participants were included in the analysis regardless of the level of participation (attendance to the assigned intervention) in the intervention and drop-out from the study (at post-test assessments). This method was used to exclude confounding effects of treatment motivation (or offending propensity) that may occur when cases are analyzed based on the treatment actually delivered.

Univariate (ANCOVA) and multivariate (MANCOVA) analyses of covariance were conducted to assess intervention effects. The outcome measures at post-test (T2 and T3) were treated as dependent variables, treatment condition (NP or CAU) as factor, and pre-intervention scores of the outcome variables as co-variates. Multivariate analyses of covariance were applied, because we examined more than one dependent variable (taking into account correlations between variables) and different dimensions based on an overall theoretical construct. Additionally, using multivariate tests increases the power to detect group differences and reduces the probability of making Type I errors (Tabachnick & Fidell, 2013).

In order to investigate the effects of moderators, the same univariate and multivariate analyses of covariance were conducted, with the moderators as factor, and including an interaction term of condition x moderator. Post-hoc analyses for moderator effects were performed by splitting the file according to the moderator and again conducting an ANCOVA or MANCOVA. Subsequently, effect sizes (Cohen's *d*) were calculated for each group using formulas from Lipsey and Wilson (2001). In all analyses, in order to reduce the probability of making Type I errors we applied a Bonferroni correction and therefore the significance level was set to 0.017.

6. Results

6.1. Delinquency and problem behavior

Of the adolescents in the sample, 80% reported having ever committed one or more of the delinquent acts at the first assessment. Risk assessments revealed that 28% of the NP-group showed a very low risk of reoffending, 43% low to moderate risk, and 11% a high to very high risk (18% unknown). Unfortunately, the risk assessment results were only available for NP-participants. The results for delinquency and behavioral and emotional problems were available for NP and CAU. Rates of behavioral and emotional problems were as follows; 20% of the adolescents showed problematic substance use, 60% showed (severe) overt aggression, 50% showed (severe) covert aggressive behavior disorders, 19% of the adolescents showed disorders related to depression. No differences between NP and CAU were found in behavioral and emotional problems.

Over 40% (43% in the NP group; 41% of the controls) had committed an offense (vandalism, property or violent acts) in the three months before the pre-test took place. Three months after pre-test, 26% in the NP group and 32% in the control group had committed an offense. At post-intervention assessment (6 months after pre-test), 19% of the youths in the NP group and 22% in the control group had committed an offense.

6.2. Intervention effects

Table 2 presents the results of the *t*-tests (pre-test), univariate and multivariate analyses of covariance for NP and CAU. Results of parent reports are presented in Table 3.

6.2.1. Primary outcome

The effects of NP on self-reported delinquency were assessed after the intensive phase and aftercare phase. The univariate analyses of covariance indicated that no significant differences were found between NP and CAU on delinquent behavior.

6.2.2. Secondary and other outcomes

Results based on adolescent and parent reports showed no intervention effects on the secondary outcomes at both post-test occasions. Again, no significant differences between the NP and CAU group were found on the remaining outcomes (prosocial behavior, self-esteem, externalizing and internalizing behavior).

6.3. Moderators of effectiveness

The influence of moderators (gender, age, and ethnicity) on the program effects was tested. These analyses were based on reports of adolescents and parents.

6.3.1. Gender

Gender did not significantly influence program outcomes, indicating that in both boys and girls similar effects were found for NP and CAU on primary, secondary and other outcomes.

6.3.2. Age

In order to assess the influence of age on program effectiveness, the group was divided into a group of adolescents younger than 16 years of age ($n = 54$) and a group of adolescents that were 16 years or older ($n = 47$). The division in age group was based on age criteria of NP, consisting of two different modalities for younger (NPP/NP Plus) and older adolescents (NP). Program effects were not significantly affected by age, indicating that the effects of NP relative to CAU were fairly similar for younger and older adolescents.

6.3.3. Ethnic minority status

The influence of ethnicity was assessed by dividing adolescents into two groups: native Dutch adolescents, and second generation adolescents from ethnic minority groups. No significant moderator × -intervention effects were found. In different ethnic groups similar effects were found for NP and CAU.

7. Discussion

The present study examined the short term effects of a prevention program for adolescents at risk for a deviant life style on criminogenic and protective factors, and (persistent) delinquent behavior. Moreover, we examined which specific groups of adolescents benefited most from the NP-program. NP did not outperform CAU on the primary outcome of delinquency, secondary outcomes (parenting behavior, attachment, peers and cognitive distortions), and other outcomes that are assumed to be related to delinquency (such as substance use). Results of the present study concur with findings of Mulvey, Arthur, and Reppucci (1993, no reduction in self-reported delinquency), Schwalbe et al. (2012), and Wilson and Hoge (2012) examining the effects of preventive interventions (e.g., diversion) for delinquency and delinquency-related outcomes, but contradict findings of Farrington and Welsh (2003), Piquero, Farrington, Welsh, Tremblay, and Jennings (2009), Lösel and Beelmann (2003), and De Vries et al. (2015), that show small to medium positive effects of prevention programs. Most of the studies reported positive effects of family-based prevention programs. NP can be considered as a multimodal intervention, in which a combination of individual coaching (e.g., motivational interviewing), and techniques of parent training (e.g., psychoeducation) are embedded. However, NP is not considered as a family-based program, and the improvement of parenting behavior is not the main focus of the NP-intervention.

Following on from the previous paragraph, the focus and content of the NP program might be a plausible explanation of not finding program effects. Although NP can be considered as a theoretically grounded skill building program, NP lacks a structured and clear therapeutic intervention approach that attempts to involve the youth in a supportive and constructive process of change (Lipsey, 2009). The general coaching style of the NP program (counseling and social work) is comparable to other preventive interventions, such as coaching communities programs, education programs, and probation programs, which have not been proven effective in reducing delinquent behavior in the long-term (Berry, Little, Axford, & Cusick, 2009; Cox, 1999; Lane et al., 2005). These preventive interventions do not integrate specialized effective components of behavioral modeling, contracting, and training parenting skills, which have been proven effective in the treatment of at-risk youth (De Vries et al., 2015).

Post-hoc analyses (repeated measures) showed that both participants in the NP-intervention and CAU displayed a reduction in delinquency and small improvements in some other relevant outcomes, including parenting behavior, attachment, externalizing behavior, and self-esteem (results available upon request). Equally positive changes in the experimental and control condition suggest that CAU targeting the prevention of persistent delinquency in at-risk juveniles may also have produced positive effects. Quality standards for youth services and interventions are known to be relatively high in The Netherlands. However, only a minority of European interventions adhere closely to the RNR-principles (Koehler, Lösel, Akoensi, & Humphreys, 2013). The majority of adolescents who were referred to the CAU condition received monitoring and supervision by child protection workers and youth probation services (see Appendix D). The present study revealed that although various problem behaviors decreased, those who followed the NP program, even though specifically focusing on delinquent behavior, did not show better outcomes than those who received the programs of CAU.

Another explanation for the null-effects of NP can be found in a possible mismatch between the intensity of the program and the risk

Table 2
Means, standard deviations and intervention effects of NP (N = 47) vs. CAU (N = 54), adolescent self-reports.

	Pre-test			Post-test (3 months)				Post-test (6 months)			
	M	*SD*	*t*	*M*	*SD*	*F* for group[a]	Cohen's *d* (95% CI)	*M*	*SD*	*F* for group[a]	Cohen's *d* (95% CI)
Self-report Delinquency[b]			0.964			0.034	0.04 (− 0.38, 0.45)			2.574	0.33 (− 0.08, 0.74)
NP	0.830	1.291		0.600	1.033			0.302	0.674		
CAU	1.130	1.760		0.706	1.154			0.750	1.532		
Parenting behavior						1.174	0.22 (− 0.18, 0.61)			0.055	0.05 (− 0.34, 0.44)
Support (PBQ)			1.013								
NP	3.336	0.910		3.574	0.908			3.381	0.958		
CAU	3.520	0.913		3.553	1.008			3.500	1.106		
Authoritative control (PBQ)			1.305								
NP	3.604	0.760		3.658	0.630			3.571	0.722		
CAU	3.782	0.610		3.810	0.631			3.689	0.738		
Authoritarian control (PBQ)			0.639								
NP	2.719	0.760		2.653	0.808			2.719	0.784		
CAU	2.811	0.686		2.665	0.717			2.756	0.702		
Monitoring			0.483								
NP	2.8330	0.617		2.844	0.606			2.994	0.579		
CAU	2.889	0.611		2.948	0.556			3.048	0.608		
Attachment						1.629	0.25 (− 0.14, 0.65)			1.121	0.21 (− 0.18, 0.60)
Communication			0.884								
NP	2.660	0.844		2.645	0.833			2.800	0.982		
CAU	2.809	0.846		2.871	0.851			2.737	0.901		
Trust			0.932								
NP	3.021	0.737		2.958	0.705			3.076	0.818		
CAU	3.167	0.818		3.236	0.739			3.073	0.786		
Alienation			1.253								
NP	3.154	0.677		3.258	0.643			3.193	0.713		
CAU	3.315	0.611		3.217	0.581			3.344	0.533		
Peers						1.712	0.26 (− 0.13, 0.65)			0.413	0.13 (− 0.26, 0.52)
Deviant peers			− 0.465								
NP	1.696	0.803		1.682	0.791			1.546	0.702		
CAU	1.628	0.666		1.689	0.767			1.632	0.906		
Prosocial peers			− 0.016								
NP	3.404	0.626		3.254	0.885			3.317	0.775		
CAU	3.402	0.716		3.322	0.686			3.260	0.963		
Contact intensity			0.513								
NP	2.243	0.449		2.305	0.423			2.181	0.517		
CAU	2.289	0.456		2.177	0.410			2.179	0.451		
Cognitive distortions						0.732	0.17 (− 0.22, 0.56)			0.392	0.12 (− 0.27, 0.52)
Self-centered			− 0.587								
NP	2.671	0.749		2.388	0.660			2.405	0.804		
CAU	2.581	0.784		2.544	0.748			2.328	0.786		
Blaming			− 0.291								
NP	2.602	0.809		2.379	0.636			2.421	0.801		
CAU	2.554	0.837		2.484	0.800			2.426	0.762		
Mislabeling			− 0.209								
NP	2.596	0.802		2.393	0.709			2.323	0.771		
CAU	2.562	0.802		2.507	0.898			2.408	0.879		
Assuming the worst			− 1.160								
NP	2.713	0.682		2.436	0.556			2.434	0.692		
CAU	2.547	0.742		2.555	0.696			2.432	0.863		
Prosocial behavior			0.504			0.014	0.02 (− 0.37, 0.41)			0.028	0.03 (− 0.36, 0.42)
NP	2.697	0.499		2.669	0.558			2.712	0.492		
CAU	2.742	0.395		2.694	0.503			2.734	0.554		
Self-esteem			− 0.717			0.981	0.20 (− 0.19, 0.59)			2.638	0.32 (− 0.07, 0.72)
NP	3.121	0.704		3.020	0.704			3.145	0.724		
CAU	3.024	0.657		3.089	0.678			3.349	0.808		
Aggression						0.213	0.09 (− 0.30, 0.48)			1.023	0.20 (− 0.19, 0.59)
Overt aggression			1.433								
NP	0.579	0.224		0.597	0.193			0.549	0.186		
CAU	0.642	0.215		0.616	0.195			0.601	0.221		
Covert aggression			0.810								
NP	0.430	0.205		0.450	0.274			0.411	0.249		
CAU	0.466	0.237		0.458	0.224			0.403	0.245		
Substance use			− 0.385			0.402	0.13 (− 0.26, 0.52)			2.350	0.31 (− 0.09, 0.70)
NP	0.937	1.749		1.038	1.737			1.191	1.877		
CAU	0.815	1.442		0.813	1.426			0.733	1.431		
Internalizing problems						0.604	0.16 (− 0.24, 0.55)			0.195	0.09 (− 0.30. 0.48)
Depression			0.162								
NP	10.292	6.080		9.761	7.553			9.039	7.351		
CAU	10.500	6.748		8.441	5.849			8.153	6.068		

(*continued on next page*)

Table 2 (*continued*)

	Pre-test			Post-test (3 months)				Post-test (6 months)			
	M	*SD*	*t*	*M*	*SD*	*F* for group[a]	Cohen's *d* (95% CI)	*M*	*SD*	*F* for group[a]	Cohen's *d* (95% CI)
Anxiety			− 0.732								
NP	58.228	11.467		57.369	14.962			56.189	16.338		
CAU	56.519	11.919		55.295	10.480			54.522	12.571		

[a] *F* test statistics are based on univariate analyses of covariance (*Delinquency*, *Prosocial behavior*, *Self-esteem*, and *Substance use*) and multivariate analyses of covariance (*Parenting behavior*, *Attachment*, *Peers*, *Cognitive distortions*, *Aggression*, and *Internalizing problems*).

[b] Due to missing values on delinquent behavior: NP group (n = 40, T2; n = 43, T3) and CAU (n = 51, T2; n = 52, T3).

levels of the clients (risk principle, Andrews, Bonta, et al., 1990; Andrews, Zinger, et al., 1990). A meta-analytic study of De Vries et al. (2015) showed that the intensity of prevention programs is related to their effectiveness (see also Wilson & Hoge, 2012; Wilson & Lipsey, 2000). NP is considered to be a short, but a relatively intensive program. Previous studies and the present study concluded that a subgroup of adolescents with low risk for reoffending entered the NP-program (e.g., Geldorp et al., 2004; 28% of the NP adolescents in the present study). NP may be too intensive for these adolescents. In the present study, 11% of the NP-adolescents showed a high to very high risk of re-offending. In addition, a relatively high percentage of the sample (19% depression; 60% overt aggression) could be classified in the clinical range of internalizing and externalizing problems. Consequently, these higher risk adolescents may need a longer lasting and more specialized intervention. Moreover, a closer look at the NP elements shows that adhering to the risk principle could be improved in the intervention. Although risk assessment is implemented in the intake phase, the clinical practitioners do not apply risk assessment by default. Moreover, the instrument used is not validated for the NP-group of first offenders. In conclusion, not fully adhering to the risk principle, and referral of adolescents with very low or high risk levels of re-offending or adolescents with severe emotional and behavioral problems to the NP program may explain the null-effects.

A final explanation could be related to program integrity. Although NP showed moderate to high program integrity levels, lower levels of treatment adherence were found for the aftercare program phase (De Vries et al., 2014a). Results of the program integrity study (De Vries et al., 2014a) revealed that in 45% of the cases (N = 76, total sample) during the aftercare phase, < 60% of standard services were carried out. Durlak and DuPre (2008) suggested that minimum levels of program integrity of 60% are needed to reach program effectiveness. The lower levels of program integrity may be due to unclear descriptions of the aftercare program guidelines and activities (De Vries et al., 2014a; Kazdin & Weisz, 1998). Also, in 46% of the cases, the social network of

Table 3
Means, standard deviations and intervention effects of NP (N = 26) vs. CAU (N = 35), parent reports.

	Pre-test			Post-test (3 months)				Post-test (3 months)			
	M	*SD*	*t*	*M*	*SD*	*F* for group[a]	Cohen's *d* (95% CI)	*M*	*SD*	*F* for group[a]	Cohen's *d* (95% CI)
Parenting behavior						0.795	0.23 (− 0.28, 0.74)			0.405	0.16 (− 0.34, 0.67)
Support (PBQ)			− 0.524								
NP	3.676	0.652		3.564	0.428			3.485	0.512		
CAU	3.600	0.492		3.535	0.419			3.518	0.458		
Authoritative control (PBQ)			0.447								
NP	3.673	0.372		3.519	0.325			3.609	0.491		
CAU	3.721	0.447		3.632	0.402			3.575	0.365		
Authoritarian control (PBQ)			− 0.146								
NP	3.267	0.361		3.149	0.325			3.304	0.426		
CAU	3.250	0.512		3.131	0.483			3.211	0.360		
Monitoring			0.753								
NP	3.034	0.566		3.029	0.414			3.069	0.468		
CAU	3.132	0.456		3.006	0.405			3.005	0.497		
Externalizing problems						1.600	0.33 (− 0.18, 0.84)			1.561	0.32 (− 0.19, 0.83)
Hyperactivity-Impulsivity[b]			0.234								
NP	20.481	13.749		15.841	6.373			17.453	9.970		
CAU	21.308	13.544		15.442	9.583			15.083	9.365		
Social Behavior Problems[c]			0.785								
NP	21.622	14.860		19.710	7.986			20.019	11.028		
CAU	24.898	16.973		17.152	14.332			16.388	11.977		
Internalizing Problems						1.299	0.30 (− 0.22, 0.81)			0.279	0.14 (− 0.37, 0.64)
General Anxiety			0.196								
NP	2.881	2.469		3.075	1.561			2.341	1.863		
CAU	3.033	3.315		2.391	2.420			2.369	2.678		
Social-Anxiety			0.390								
NP	2.998	2.935		3.471	2.803			3.555	2.897		
CAU	3.325	3.436		3.173	2.985			3.126	3.172		
Depression			0.909								
NP	2.982	3.833		3.640	1.960			3.262	2.353		
CAU	3.905	3.989		2.969	2.333			3.293	3.015		

[a] *F* test statistics are based on multivariate analyses of covariance.

[b] *Hyperactivity-Impulsivity* consists of attention deficit disorder, hyperactivity, and impulsivity (three subscales).

[c] *Social Behavior Problems* consist of oppositional defiant behavior, aggression, and antisocial behavior (three subscales).

NP-clients was not involved in the treatment process (De Vries et al., 2014a). To conclude, not carrying out all standard methods and components could be an additional explanation for not finding positive effects of NP (see also Lipsey, 2009).

Finally, no moderator effects were found, indicating that in both boys and girls, different age groups, and ethnic groups, similar effects were found for NP and CAU on primary, secondary and other outcomes. This is in line with findings of previous meta-analytic studies (De Vries et al., 2015; Wilson, Lipsey, & Soydan, 2003; Zahn, Day, Mihalic, & Tichavsky, 2009). NP is developed for youth at risk for delinquent behavior or for those who conduct minor delinquent acts, but are at risk for engaging in more serious criminal behavior. NP is not designed to focus on specific gender, age or ethnic groups, which explains that the effectiveness of NP is relatively similar for these different groups of adolescents at risk. Further, NP follows the responsivity principle of the RNR model, stating that the program is adapted to the individual needs and backgrounds of the participants. For example, the social workers of NP have diverse ethnic backgrounds themselves, and if possible the adolescent is assigned to a social worker with a similar ethnic background before the start of NP. This could also explain that no moderating effect of ethnicity was found.

7.1. Strengths and limitations

The present study is one of the pioneer studies outside the USA that examined the effectiveness of prevention programs for adolescents at risk for persistent delinquency by using an RCT design. This effectiveness study is conducted in a naturalistic setting, which contributes to high levels of external validity. Other strengths of the present study include application of multiple measurements (pre-test, two post-tests), multiple informants and sources (youth and parent reports), the assessment of different types of antisocial behavior (delinquency, aggression), and measurement of various (delinquency-related) outcomes (individual and social factors). Multiple measurements of important outcomes provides a broad coverage of concepts, such as parenting behavior (Rossi, Lipsey, & Freeman, 2003). Finally, we assessed non-targeted (by NP) delinquency-related factors, such as substance use (D'Amico et al., 2008), which provides information on possible side effects of the intervention (Clingempeel & Henggeler, 2002).

Several limitations of present study must be kept in mind. First of all, only short term effects were tested in the present study. Since sleeper effects are not uncommon (Leijten, Overbeek, & Janssens, 2012), one might expect more pronounced effects on adolescents' behaviors at follow-up. In the future, conducting follow-up assessments will shed light on the long term (and sustainability of) effects.

Second, a possible selection bias cannot be ruled out in the present study. Despite extensive efforts to include all adolescents and parents in our study, we had relatively high drop-out rates (37% of the juveniles and 62% of the parents). Selection is considered as a common methodological problem in experimental (RCT) designs (Asscher, Deković, Manders, van der Laan, & Prins, 2007). On one of the outcome variables, we found a difference between participants and non-participants at post-test. However, on all other outcome variables and demographic factors no pre-existing differences between participants and non-participants were found.

Third, we were not able to test the influence of program integrity on program effectiveness. As there was no standardized, valid, and reliable evaluation system of treatment adherence implemented in the (clinical) practice of NP, we were not able to include all NP-adolescents of the present effectiveness study into the study of program integrity. Consequently, we could not assess the influence of program integrity on program effects. Furthermore, we were not able to examine the influence of (static and dynamic criminogenic) risk levels on program effectiveness, because risk profiles were not available for all participants in the present study (only for participants in the NP group). Referral agencies did not use valid risk assessment instruments. Therefore, it would be valuable for research and clinical practice purposes to implement standardized assessments of (changeable) risk and protective factors in the practice of youth care.

A final limitation is the relatively small sample sizes of adolescents and parents (resp., $N = 101$; $N = 61$). Even though the present study has sufficient power to conduct moderator analyses, a larger sample size would increase possibilities to further differentiate between the effects of NP for different types of adolescents, such as adolescents with various ethnic backgrounds. Although the sample size of our study is comparable to other RCTs examining possible intervention effects on delinquency and externalizing problem behavior (e.g., Berry et al., 2009; Leijten et al., 2012; Stickle, Connell, Wilson, & Gottfredson, 2008), larger samples are needed to examine mediator and moderator effects.

7.2. Conclusion and recommendations

Evidence-based prevention programs are crucial in order to prevent adolescents from developing persistent criminal behavior. The modest impact of prevention urges clinical practice and research to enhance the effectiveness of youth crime prevention programs. The aim of the present study was to examine whether NP was effective in preventing and reducing (persistent) delinquency and in improving individual and social functioning of adolescents. Although the success of multimodal programs, comparable to NP, has been repeatedly proven by empirical research (e.g., Lipsey, 1992, 1995), these positive effects are not confirmed by the present study. The NP program did not outperform CAU.

Despite the overall null-effects of NP, there are starting points for improvement on the basis of previous research. Prior evaluation studies of prevention programs targeting at risk juveniles concluded that clear descriptions of intervention techniques (Alexander & Parsons, 1973) and involving the entire family, including siblings (Augimeri, Farrington, Koegl, & Day, 2007), can contribute to program effectiveness. Given that the NP program showed lower program integrity levels during the aftercare phase, a clear description of program components (incl. activities) could enhance its effectiveness. Moreover, since NP has been primary designed as an individual program, more family involvement (including siblings) may also enhance the effects.

In addition, more specialized effective techniques may be needed to prevent and reduce a persistent criminal behavior pattern among adolescents. A meta-analytic study (De Vries et al., 2015) demonstrated that the most effective prevention programs that target juveniles at the onset of a criminal career were family-based and included training parenting skills. These behavior-oriented programs contributed to a reduction in offending of 30% compared to care as usual or no treatment. Consequently, the effectiveness could be enhanced if prevention programs (such as NP) integrate specific effective components of behavior-oriented techniques.

Finally, establishing a careful match between program intensity and risk levels of adolescents remains important to avoid negative program effects. In order to reach an appropriate reaction to delinquent behavior of adolescents, specifically tailored risk- and need assessment instruments are recommended to be implemented in clinical practice (see also Van der Put et al., 2011).

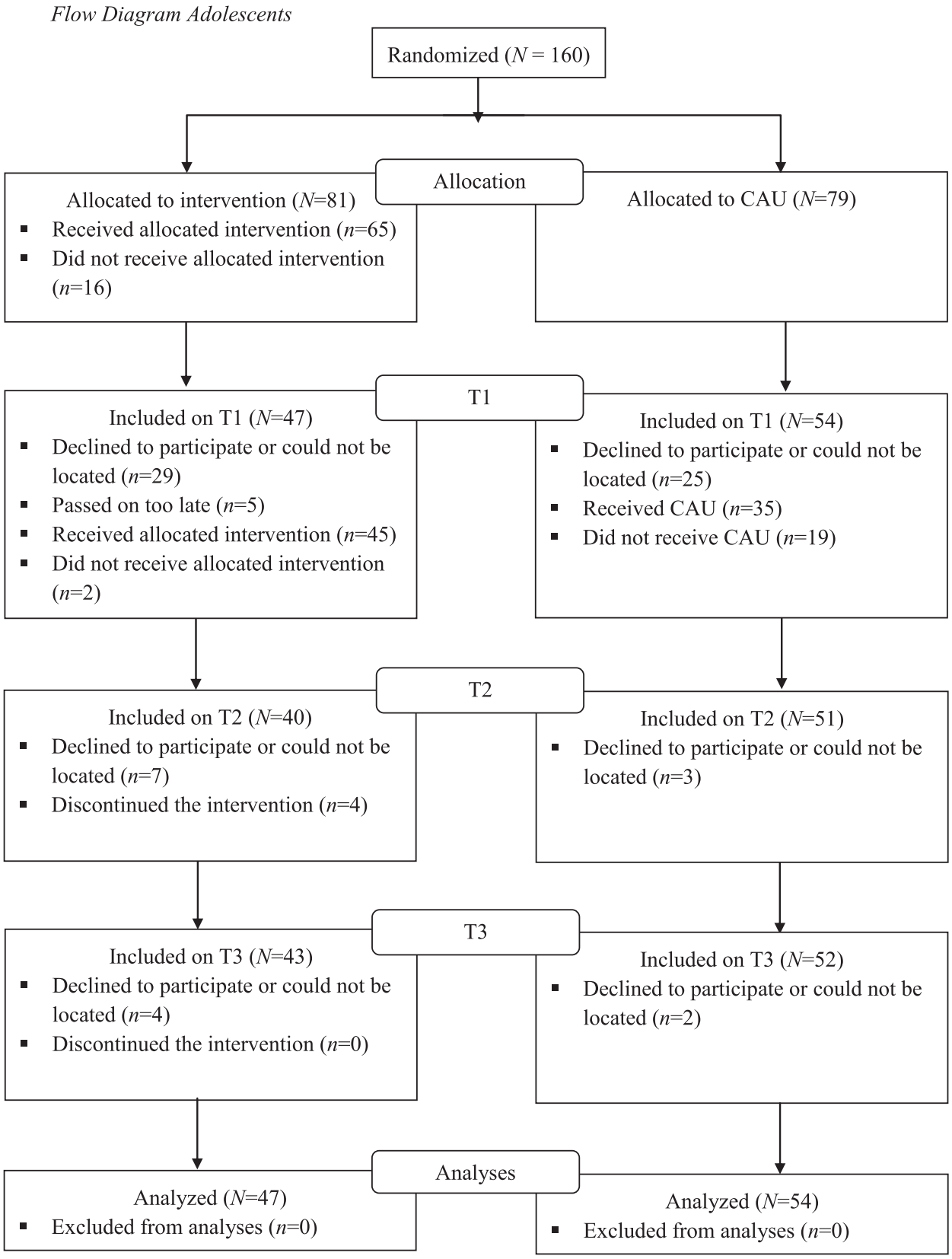
Informed consent

Informed consent was obtained from all individual participants included in the study.

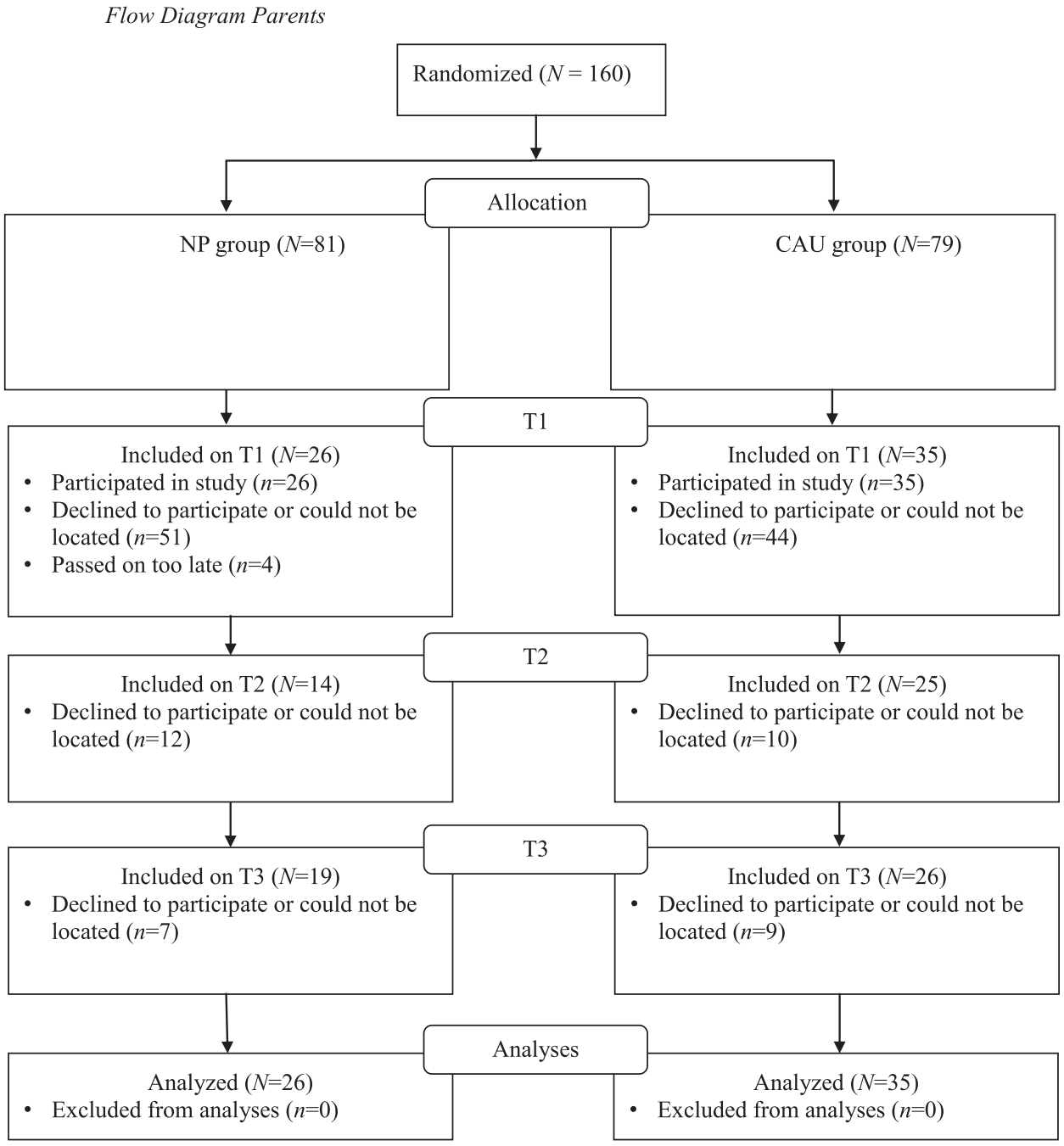
Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Appendix A. Flow diagram adolescents



Appendix B. Flow diagram parents



Appendix C. Adolescent behavior and family characteristics, adolescents with and without parent data

	Pre-intervention scores				
	Adolescents without parent data (n = 40)		Adolescents with parent data (n = 61)		t
	M	*SD*	*M*	*SD*	
Delinquency	1.275	2.207	1.000	1.932	0.661
Parental support (PBQ)	3.393	0.981	3.462	0.871	− 0.375
Authoritative control	3.545	0.756	3.813	0.604	− 1.973
Authoritarian control	2.675	0.683	2.830	0.741	− 1.056

Monitoring	2.808	0.709	2.896	0.542	− 0.704
Communication (IPPA)	2.556	0.688	2.650	0.609	− 0.721
Trust	2.650	0.506	2.656	0.502	− 0.056
Alienation	3.250	0.707	3.234	0.605	0.124
Deviant peers	1.545	0.623	1.749	0.840	− 1.317
Prosocial peers	3.379	0.691	3.419	0.665	− 0.296
Contact intensity	2.200	0.484	2.312	0.427	− 1.218
Self-centered (HIT)	2.332	0.629	2.330	0.771	0.015
Blaming	2.204	0.604	2.273	0.758	− 0.485
Mislabeling	2.325	0.723	2.366	0.882	− 0.242
Assuming the worst	2.446	0.504	2.454	0.784	− 0.068
Prosocial behavior	2.691	0.444	2.740	0.448	− 0.538
Self-esteem	3.155	0.539	2.976	0.679	1.398
Direct aggression	0.608	0.202	0.620	0.229	− 0.280
Indirect aggression	0.433	0.199	0.466	0.237	− 0.720
Substance use	0.987	1.627	0.820	1.565	0.517
Depression	10.249	6.408	10.590	6.440	− 0.261
Anxiety	58.046	10.732	56.853	12.334	0.500

Appendix D. Youth care services (pre-test to post-test, 6 months), NP and CAU

Treatment type	Specific care service/setting	Percent (%) NP	Percent (%) CAU
Youth Probation Service	Supervision, Child Protection	18	20
Individual Counseling	Monitoring and supervision, Child Protection	22	17
Family and Individual	Monitoring and supervision, Child Protection	8	9
Individual Coaching	Influencing cognition and behavior	3	13
Academic Service Coaching	Social work, school-based	7	10
School Counseling	Tutoring, instructing	1	2
Social skills training	Social skills training	4	2
Special education	Education and coaching	4	3
Clinical group care	Residential care	6	2
Crisis intervention	Residential care	4	1
Family-based therapy	Ambulant/community-based	9	2
Other[a]	Ambulant/community-based	14	19

[a] Other programs included for example 'Real Justice group conferencing' and substance use treatment.

Appendix E. NP elements and RNR principles

NP elements	Activities	RNR
Intake	Introduction of intervention, contact with referral agency, controlling indication criteria, risk assessment	Risk principle
Social environment analysis	Assessment of risk- and protective factors, analysis of the social network	Need- and responsivity principle
Involving the social network	Assessment and involvement of Very Important Persons	Need principle
Action Plan	Setting goals based on the assessment of criminogenic needs	Need principle
Motivational interviewing	Applying motivational interviewing techniques of Miller and Rollnick (2002) focusing on client and parents	Responsivity principle
Selecting interventions/ strategies	Referring to (additional) interventions based on the criminogenic needs	Need principle
Individual and family counseling	Observation of social skills, behavior, and emotions, positive/negative feedback, organizing/ giving directions, social-emotional support, coaching, confronting, convincing	Responsivity principle
Cognitive restructuring	Assessment, analysis and cognitive restructuring of cognitive distortions	Need principle
Psychoeducation	Improving parenting/communications skills	Need principle
Empowerment	Improving problem solving skills of parents	Need principle
Evaluation	Evaluating goals/intervention after intensive and after aftercare phase involving client and members of the social network	

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