Crossing Barriers

Evaluation of a New Compulsory Residential Treatment Program for Youth

Karin Nijhof
CROSSING BARRIERS

EVALUATION OF A NEW COMPULSORY
RESIDENTIAL TREATMENT PROGRAM FOR YOUTH

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Life holds no promises, as to what will come your way - Dena Dilacconi
CHAPTER 1

General Introduction
In 2007, nearly 30,000 youths were in need of residential care in the Netherlands (Baecke, De Boer, Bremmer, Duenk, Kroon, et al., 2009; Van Dam & Veerman, 2011). Residential care has a comprehensive definition and, in general, means a 24-hour stay in a group home or institution. In the Netherlands, four areas of residential youth care can be distinguished, i.e., child welfare services, child psychiatric services, youth care for the intellectual disabled, and juvenile detention centers (Loeffen, 2007). Residential care varies widely in size, populations served, duration of treatment, and restrictiveness (Boendermaker, Van Rooijen, & Berg, 2010; Curtis, Alexander, & Lunghofer, 2001). Until 2008, Dutch residential care could not offer adequate, compulsory treatment for adolescents with severe behavioral problems often combined with psychiatric disorders and/or intellectual disability. Therefore, these adolescents, also referred to as ‘behaviorally disturbed adolescents,’ ended up in juvenile detention centers, which are actually meant for adolescents who were convicted for (serious) criminal activities. Between 2005 and 2009, approximately 50% of the total population in juvenile detention centers consisted of behaviorally disturbed adolescents who were not there due to a conviction. Especially girls were placed in these centers because of behavioral problems (Valstar & Afman, 2010). While the total distribution of boys and girls in juvenile detention centers varies between 79 and 83% for boys and between 17 and 21% for girls (Valstar & Afman, 2010), the distribution of behaviorally disturbed boys and girls in juvenile detention centers was 49% and 51%, respectively (Van der Veldt & Van Leeuwen, 2004). In 2004, the Netherlands Youth Institute (NJI) conducted a study to examine the behaviorally disturbed adolescents in juvenile detention centers (Boendermaker, Eijgenraam, & Geurts, 2004). According to this study, aggregating behaviorally disturbed adolescents with convicted criminal adolescents was undesirable. They concluded that instead of placing behaviorally disturbed adolescents in juvenile detention centers, a new residential program should be developed to address the problem behavior of the behaviorally disturbed adolescents. Based on the suggestions of Boendermaker et al. (2004), a new compulsory residential treatment program was developed in 2005. Adolescents are admitted to the compulsory residential treatment program because they need to be protected against themselves (e.g., because of their self-destructive behavior) or against others who may pose a threat to their development (e.g., abusive parents, pimps). The new compulsory residential treatment program has been implemented the past few years. The present thesis is the first to examine the new residential treatment program. More specifically, this thesis focuses on population characteristics, treatment improvement, as well as post-treatment functioning of the adolescents admitted to this residential treatment program.

Characteristics of adolescents in residential care

Concerning residential care in general, adolescents are often confronted with multiple risk factors. According to Deković (1999), risk factors can be distinguished at the individual, family, and environmental level. The individual level includes characteristics of adolescents in terms of prior placements, emotional and behavioral problems, internalizing problems, aggressive behavior, delinquency, substance use, running away or being homeless, school or learning problems, physical and sexual abuse, (cumulative) traumatic experiences, and promiscuous behavior (Baker, Kurland, Curtis, Papa-Lentini, & Alexander, 2007; Connor, Doerfler, Toscano, Volungis, & Steingard, 2004; Dale, Baker, Anastasio, & Purcell, 2007; Gorske, Srebalus, & Walls, 2003; Griffith, Ingram, Barth, Trout, Duppong Hurley, Thompson, & Epstein, 2009a; Hukkanen, Sourander, Bergroth, & Piha, 1999; James, Leslie, Hurlburt, Slymen, Landsverk, Davis, Mathiesen et al., 2006; Park, Jordan, Epstein, Mandell, & Lyons, 2009; Scholte, 1997; Whitaker,
The families of adolescents admitted to residential care are characterized by family conflict, parental criminality, social malfunctioning, inadequate parenting, parental substance abuse, psychological or physical problems of parents, child abuse, financial problems, and domestic violence (Griffith et al., 2009a; Hukkanen et al., 1999; Park et al., 2009; Roy, Rutter, & Pickles, 2000; Zoccolillo & Rogers, 1991). Regarding environmental factors, adolescents admitted to residential care show poor interaction with peers (Scholte, 1997) and are more likely to experience sexual abuse outside the family (Hukkanen et al., 1999).

Significant sex differences have been reported with respect to the characteristics of adolescents in residential care (Connor et al., 2004). Compared to boys, girls are more likely to show affective or anxiety disorders, experience higher levels of both internalizing and externalizing problems, use alcohol and drugs, have aggressive tendencies, have more than five out of home placements, and experience physical and sexual victimization or abuse more often. Girls are also more likely to have parents who abuse alcohol. Boys and girls did not differ on parental arrests and history of violence in the family.

Overall, adolescents in residential care show a combination of risk factors in several domains with significant sex differences. Research emphasizes the importance of focusing on the accumulation of risk factors rather than considering multiple risk factors separately. A higher number of risk factors relates to a more problematic development leading to higher rates of admittance to residential care (Rutter, 1979; Sameroff, 1998).

Parental criminality (e.g., Farrington, 1995; 2000) and being involved with deviant peers (e.g., Fergusson & Horwood, 1996; Garnier & Stein, 2002) can be seen as two of the important, some even state the most important, risk factors influencing the adolescents' own deviant behavior. Parents who exhibit criminal behavior are more likely to have positive attitudes towards delinquency (Gorman-Smith, Tolan, Loeber, & Henry, 1998) and engage in inept parenting (Farrington, 1995). These attitudes, i.e., disruptive socialization, and inadequate parenting practices, reinforce the maintenance of a child’s deviant behavior and the affiliation with peers (e.g., Ary, Duncan, Duncan, & Hops, 1999). Our thesis focuses explicitly on the association of both these risk factors with adolescents' criminal behavior.

Somewhat different samples than the residential sample were used to examine the influence of parents and peers. The influence of parental criminality on their child’s offending was examined in a delinquent sample of young adolescents. We decided to include a young age group because of the increasing involvement of young adolescents/children with the criminal justice system. These younger adolescents are at a higher risk of developing a longer and more violent criminal career (Kruize & Gruter, 2003; Moffitt, 1993). We examined the influence of peers in a normative sample because we expected that the adolescents admitted to the new treatment program are highly involved with deviant peers. Using a normative sample that included also non-delinquents allowed us to examine the influence of peers better.

The compulsory residential treatment program
Boendermaker et al. (2004) provided two reasons for stopping the aggregation of behaviorally disturbed adolescents and criminal adolescents in juvenile detention centers, and suggestions for developing a new compulsory residential treatment program. First, they pointed out that behaviorally disturbed adolescents did not receive the appropriate treatment in the juvenile detention centers. Second, behaviorally disturbed adolescents were at risk of becoming more deviant because of deviancy training.
Deviancy training is the process through which peers positively reinforce each other’s deviant behavior in social conversations and activities, while undermining prosocial behavior (Dishion, Spracklen, Andrews, & Patterson, 1996). However, while one of the reasons to develop the new treatment program was to stop the aggregation of behaviorally disturbed with criminal adolescents, the compulsory residential treatment program also involves living in a treatment group. These treatment groups comprise approximately 10 to 12 adolescents 12 to 18 years of age. Concerning sex, both mixed as well as non-mixed groups exist. Adolescents are assigned to the treatment program based on their problem behavior, age, and vulnerability. Dishion and some other researchers pointed out the possible harmful, iatrogenic effects of deviancy training within treatment groups (e.g., Dishion, McCord, & Poulin, 1999; Dishion, Poulin, Barrasso, 2001). On the other hand, some researchers did not find iatrogenic effects of group interventions (e.g., Huefner, Handwerk, Ringle, & Field, 2009; Weiss, Caron, Ball, Tapp, Johnson, & Weiss, 2005). One of the aims of the present thesis is to examine the role of deviancy training within the new compulsory residential treatment program. Because most studies focused on boys, we will focus explicitly on girls’ treatment groups.

Before an adolescent can be admitted to the new treatment program, a judicial approval for compulsory placement is necessary, which can only be given to adolescents who already have a supervision order, or those who are placed under custody. Adolescents who are in need of compulsory treatment can be categorized based on the seriousness and urgency of placement. That is, adolescents meet the criteria for the compulsory residential treatment program if:

- They are victims of (forced) prostitution,
- They are victims of sexual crimes,
- They are victims of physical or psychological abuse,
- Police involvement was necessary to prevent further escalation of violence against their immediate surroundings,
- They are vulnerable to become victim in one of the aforementioned situations,
- They have to be protected from themselves to prevent further escalation
- They need protection to prevent further escalation in their own environment.

One important characteristic of the new residential treatment program is that it works in stages, implying that adolescents move from more to less restrictive care gradually. The first stage focuses on diagnostics, adjustment and future orientation. The second stage involves behavioral change in which pro social behavioral is encouraged and antisocial behavior is discouraged using operant conditioning, social learning theory, and the cognitive behavioral approach (Van der Poel, Rutten, Sondeijker, 2008). In the third stage, the adolescent is preparing for discharge. In the final stage, the adolescent is accompanied to his or her new living situation. Each stage is characterized by an increase in opportunities and autonomy (such as more time for telephone conversations, time spend on the internet, longer leaves). Nevertheless, restrictions can be imposed in each stage when the adolescent is a danger to him/herself or the environment or because of a high escape risk. These restrictions include a restraining order, a time out, temporarily transfer, physical holding, forced medical treatment, and specific communication limitations. In addition to these restrictions, the institutions can also inspect body and clothes, require a urine check for drugs and/or alcohol use, or inspect the room or postal items (Van der Poel, Rutten, & Sondeijker, 2008).

The residential program is based on two main principles of the social competence model (Slot,
1988; Slot & Spanjaard, 1999) and the ecological model (Bronfenbrenner, 1979; 1994). Competence requires a balance between developmental tasks and skills necessary to complete these tasks, which depends on the age stage. Developmental tasks for adolescents include for example starting and maintaining friendships. Risk factors can disrupt the balance between developmental tasks and the skills that are necessary to complete them. In addition, the more risk factors are present, the more the adolescents’ development is disturbed. This can lead to incompetent functioning, which is in turn expressed through problem behavior. Intervention programs should focus on removing the risk factors and introducing protective factors (Masten, 1994). Adolescents admitted to residential care, as well as their families, are confronted with multiple risk factors. Concerning one of the What Works principles (i.e., principles that the treatment must fulfill to be effective; Andrews, 1989), all risk factors have to be considered and the more risk factors are present, the more intensive the treatment has to be. The treatment has to be directed specifically at the dynamic risk factors, i.e., risk factors that are directly related to the problem behavior and can be changed. Consequently, the compulsory residential treatment program includes a multidimensional approach. Prior research confirmed the effectiveness of a multi-modal approach. Family interventions appear to be important, as they improve the effectiveness of residential treatment. The outcomes are more positive especially when individual interventions are combined with family interventions to improve parenting skills, (Behan & Carr, 2000; Boendermaker & Van den Berg, 2005; Frensch & Cameron, 2002; Harder, Knorth, & Zandberg, 2006; Kazdin, Siegel, & Bass, 1992). Harder et al. (2006) provided an overview of residential care and reported that the most effective residential treatment should include a supporting environment, intensive individual treatment, family interventions, a behavioral approach, and after care (see also Knorth, Harder, Zandberg, & Kendrick, 2008).

Outcomes of residential treatment
Reviews on outcomes of residential treatment concluded that it improves adolescents’ functioning (e.g., Bettman & Jasperson, 2009; Boendermaker, Van der Veldt, & Booy, 2003; Frensch & Cameron, 2002; Hair, 2005; Knorth et al., 2008; Little, Kohn, & Thompson, 2005), with the effect sizes between .45 and .60 (Knorth et al., 2008). This indicates that adolescents show a medium to large improvement in their problem behavior after undergoing residential treatment. More specifically, studies examining the improvement during placement found a decrease in problem behavior (Larzelere, Dinges, Schmidt, Spellman, Criste, & Connell, 2001; Lyons, Terry, Martinovich, Peterson, & Bouska, 2001; Lyons, Woltman, Martinovich, & Hancock, 2009) and risky behavior (Lyons et al., 2001; 2009) and an increase in life and social functioning (Larzelere et al., 2001; Lyons et al., 2009; Preyde, Adams, Cameron, & Frensch, 2009). However, Lyons et al. (2001) found that adolescents also became more anxious and hyperactive during treatment. Although the improvement was achieved, individual problem behaviors as well as problems within the parenting environment were still present after discharge (Harder et al., 2006). Some studies state that the adolescents’ behavior improves during treatment but that maintaining this improvement after the treatment is much more difficult (e.g., Epstein, 2004; Leichtman & Leichtman, 2001). Some studies found that the improvement observed during treatment was maintained after treatment (e.g., Larzelere, et al., 2001) while some studied did not find this effect (e.g., Curry, 1991). Moreover, Bates, English, and Koudou-Giles (1997) concluded that the post-treatment environment rather than the improvement during treatment is predictive of post-treatment functioning. Researchers
<table>
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<th>Measured concepts</th>
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<td></td>
<td>At time of entry</td>
<td>Treatment files</td>
<td>After treatment</td>
<td>Individual, adolescent, parent, social environment, behavior problems, delinquency, family characteristics</td>
</tr>
<tr>
<td></td>
<td>At time of entry</td>
<td>Treatment files</td>
<td>During treatment</td>
<td>Externalizing problems, internalizing problems, delinquent behavior, rule break, drug use, psychopathic traits, coping strategies</td>
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<td></td>
<td>Before treatment</td>
<td>Questionnaires</td>
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<td>Substance use, substance abuse, sexual behavior, negative life events, self-image</td>
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<td>Six months after discharge</td>
<td>Observations</td>
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<td>Family characteristics, parental functioning, parental stress, environmental characteristics</td>
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<td>Nine months after discharge</td>
<td>At time of discharge</td>
<td>During treatment</td>
<td>Teenage drug use, family contact, social network, mental disorders, anxiety, delinquency, treatment refusal, treatment compliance</td>
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**Table 1**

Data collection time points and measures concerning the new compulsory residential treatment program

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<tr>
<th>Time point</th>
<th>Informants</th>
<th>Period</th>
<th>Measured concepts</th>
</tr>
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<tr>
<td>Before treatment</td>
<td>Adolescents</td>
<td>At time of entry</td>
<td>Individual, adolescent, parent, social environment, behavior problems, delinquency, family characteristics</td>
</tr>
<tr>
<td>During treatment</td>
<td>Adolescents</td>
<td>After treatment</td>
<td>Externalizing problems, internalizing problems, delinquent behavior, rule break, drug use, psychopathic traits, coping strategies</td>
</tr>
<tr>
<td>During treatment</td>
<td>Adolescents</td>
<td>Before treatment</td>
<td>Substance use, substance abuse, sexual behavior, negative life events, self-image</td>
</tr>
<tr>
<td>During treatment</td>
<td>Parents</td>
<td>Before treatment</td>
<td>Family characteristics, parental functioning, parental stress, environmental characteristics</td>
</tr>
<tr>
<td>During treatment</td>
<td>Mentors</td>
<td>Before treatment</td>
<td>Teenage drug use, family contact, social network, mental disorders, anxiety, delinquency, treatment refusal, treatment compliance</td>
</tr>
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**Note 1.** Studies 7 and 8 were not included in this overview, because the participants in these two studies were not part of the data collection concerning the compulsory residential treatment program. Note 2. A total of 339 adolescents entered the institutions between May 2007 and December 2008 and were asked to complete questionnaires during treatment. Not all of these adolescents, however, participated due to a lack of organization, lack of willingness to participate, or their parents did not allow them to participate. The treatment checklist was introduced later in the study and as a result, some group care workers could fill in the questionnaire. A total of 420 adolescents were eligible for the follow-up study, of which 301 (72%) participated, 11% did not want to participate, 12% could not be reached, and regarding additional 13%, the researchers were not informed in time about the adolescents' discharge.
did not find sex differences in treatment outcomes at time of discharge (Griffith et al., 2009b).

The effects of the content of the treatment itself are still unclear. Some studies attempted to examine the influence of treatment on residential outcomes. Variables related to treatment outcomes are length of stay (e.g., Hair, 2005), involvement of parents (e.g., Frensch & Cameron, 2002; Hair, 2005; Harder et al., 2006; Knorth et al., 2008), organizational climate (e.g., Boendermaker et al., 2010; Jordan, Leon, Epstein, Durkin, Helgerson, & Lakin-Starr, 2009), the relationship with the treatment provider (Dishion, Poulin, & Burraston, 2001; Handwerk, Field, & Friman, 2001), and the attitude of the adolescent towards treatment (Handwerk et al., 2001), and after care (e.g., Hair, 2005). The present thesis will try to contribute to this area of research by examining structural treatment characteristics, parental involvement, and the group care workers’ behavior.

Often, one major issue in the evaluation of interventions or treatment programs is the unavailability of a control group. Veerman and Van Yperen (2007) presented a four-stage model for the development of effective interventions or treatment programs. The first stage is called the descriptive stage. It includes essential descriptions of the treatment program (potential effectiveness). Interventions in the second, theoretical, stage are also theoretically grounded, and they indicate possible outcomes of a treatment program. The third, indicative, stage shows whether the treatment relates to positive outcomes. The fourth stage provides causal evidence, indicating whether the outcomes are caused by the treatment. The authors state that each stage provides additional information for treatment programs (Veerman & Van Yperen, 2007).

THE PRESENT THESIS

Study characteristics
The main aim of the present thesis is to study different aspects of the new compulsory residential treatment program offered in six large Dutch residential institutions. The majority of the studies presented in this thesis, chapters 1 to 3 and 6 to 11, include adolescents admitted to the residential treatment program, whereas chapters 4 and 5 include adolescents from both delinquent and normative samples (see Table 1). At the time of admittance, the treatment files (including for example youth care services reports, judicial documents) of the adolescents were analyzed concerning the individual’s history before admittance. In addition, the national police systems were used to examine official police contacts one year before entering treatment facility. At time of entry, halfway through the treatment, and at time of discharge the adolescent, one of the parents and the mentor were asked to complete standardized questionnaires. At time of discharge, the mentor also answered questions about treatment variables. Six months after discharge, the adolescents were asked to participate in a telephone interview they inquired about how they were doing. One year after discharge, official police records were examined using national police systems. Because data was obtained before, during, and after the treatment, the data enables us to examine the development of the adolescents over time.

All adolescents who entered the participating institutions between May 2007 and December 2008 were included in our study (n = 339). We analyzed adolescents’ treatment files, administered the questionnaires, traced official police records, and asked the participants to participate in the follow-up study. To extend our sample, also 175 adolescents, who were admitted before May 2007, were included. Of this latter group treatment files were analyzed and official police records were traced.
Because these 175 were admitted before the start of our study, some adolescents could not participate in our follow-up study (54%). This means that of the total sample of 514 adolescents, 420 adolescents could participate in the follow-up study.

Overview of this thesis
The present thesis is divided into three parts. The first part describes the population characteristics of the adolescents admitted to the new compulsory residential treatment program and their surroundings. Chapter 2 provides an elaborated description of why, when, and for whom the new compulsory residential treatment program was developed. This chapter also compares the characteristics of the actual sample admitted to the new residential program and the sample that Boendermaker et al. (2004) suggested should be admitted. Considering the new residential program, specific characteristics of the sample are considered at the individual, family, as well as the environmental levels. Chapter 3 describes specifically the presence of psychopathic traits within the admitted sample. It has been suggested that since the start of the new residential program, adolescents with psychopathic traits are also more often sent to this program instead of juvenile detention centers. In Chapter 3, the factor structure of the Youth Psychopathic traits Inventory (YPI) was tested. Moreover, subgroups of adolescents with psychopathic traits were identified and it was examined whether problem behavior of the adolescents (externalizing problem behavior, internalizing problem behavior, self-reported delinquent behavior, and substance use) at time of entry characterized any of these subgroups. Because adolescents admitted to the new residential program often come from problematic families and are involved in deviant peer groups, we were also interested in the role of the family and friends in the adolescents' problem behavior. While criminal behavior was not the primary reason for admittance to the new treatment program, it is suggested that a number of the adolescents are involved in criminal activities. Chapter 4 aims to examine the longitudinal associations between parental delinquent behavior and delinquent behavior of their children. The sample used in this study included young delinquent adolescents (aged 8-14 years). For these adolescents, we assessed the influence of the frequency and seriousness of parental offending on their offending. The reason to include these young adolescents not admitted to the new treatment program was that, at this young age, they have already encountered official police contacts. The peer group also plays an important role in the development and maintenance of adolescents' problem behavior. Therefore, Chapter 5 examined the moderating role of social preference as well as reciprocity of friendships on delinquent behavior in a normative sample. A normative sample was used to include both delinquent and non-delinquent adolescents, which enables us to examine also the influence of delinquent adolescents on non-delinquent adolescents.

The second part of the present thesis examines the time spent in the new compulsory residential treatment program. The treatment improvement was examined in Chapter 6. We examined both the improvement at the individual and family levels. Because victims of forced prostitution are prioritized in the admission process, Chapter 7 specifically examined the treatment progress of victims of forced prostitution compared to other admitted girls. Chapter 8 deals with specific behavior of group care workers towards the adolescents and the association of this behavior with treatment improvement. According to Dishion and other researchers, deviancy training is a dangerous phenomenon in residential treatment. In Chapter 9, we examined deviancy training within the new residential program in non-mixed girls' treatment groups. This is especially innovative because less is known about deviancy training...
among girls in residential care.

The last part of this thesis describes a six-month period after the treatment. Chapter 10 examines whether the characteristics of the admitted adolescents relate to post-treatment functioning. Chapter 11 examines the longitudinal associations between structural treatment characteristics (duration of treatment, mixed/non-mixed groups, regular and non-regular discharge) and post-treatment functioning. In Chapter 12, all findings of the present thesis are summarized and discussed. Moreover, limitations and implications for practice and further research are described.

In sum, the specific research questions are:

**Part 1 Population characteristics**
- What characterizes the population admitted to the new residential program?
- Can subgroups be distinguished based on psychopathic traits and if so, what is the extent of self-reported problem behavior among these subgroups at time of entry?
- What is the relation between the psychopathic subgroups and post-treatment official offending?
- To what extent does the frequency and seriousness of parental criminality influence their child’s criminal behavior?
- Does social preference and reciprocity of friendships influence the relationship between criminal behavior of peers and the adolescents’ own criminality?

**Part 2 Treatment**
- Does the adolescents’ problem behavior and family functioning improve during treatment?
- Does the highest urgency group, according to the admittance criteria (i.e., victims of forced prostitution), show different risk factors and treatment progress compared to other admitted girls?
- To what extent does the behavior of group care workers towards the adolescents relate to the adolescents’ improvement in problem behavior?
- Does deviancy training occur in girls’ treatment groups within the new residential program?

**Part 3 Post-treatment functioning**
- To what extent does the number of individual, family, and environmental risk factors relate to post-treatment functioning?
- Do structural treatment characteristics, i.e., duration of treatment, discharge status, group composition, influence post-treatment functioning?
PART 1

POPULATION CHARACTERISTICS
CHAPTER 2

Compulsory residential youth care for adolescents with severe behavior problems

Published as:
Until recently, a growing number of adolescents with severe behavior problems were placed in juvenile detention centers. These adolescents were not placed because they committed any crime, rather because there were serious concerns about the domestic situation in which they were raised and protection against their environment or themselves was warranted. Boendermaker et al. (2004) examined this group of behaviorally disturbed adolescents in juvenile detention centers, which resulted in the development of guidelines for a new compulsory residential treatment. The present study examined the characteristics of the actual sample admitted to the new residential treatment and, moreover, compared this sample with the intended sample from the study by Boendermaker et al. The present study involved 317 adolescents (63% boys) with a mean age of 15.68 (SD = 1.32). When comparing the groups in both studies, the results showed a wide variety of problems in several domains (e.g., individual, family, and environment). More specifically, adolescents admitted to the new residential treatment program demonstrated significantly more externalizing and internalizing problems, police contacts, suicide and/or automutilation, and violence within the family compared to the expected group. Additionally, rates of substance use were higher. In general, it was found that the present sample appeared to be more problematic than was expected based on Boendermaker et al.’s work.

Under Dutch law, adolescents with severe problem behaviors could, until recently, be placed in a juvenile detention center based on authorization obtained from a juvenile court justice. These adolescents, in the present study referred to as behaviorally disturbed adolescents, were not placed because of criminal activities, rather because of their worrisome development for which protection against themselves or against the influences of the environment was required. According to Dorelijers (2004, p. 42), the adolescents involved ‘...often go too far, resulting in the desperate family supervisor to apply for a placement.’ Since 2005, a new compulsory residential treatment has been available especially for these adolescents showing severe behavior problems. The aim of the present study was to obtain insight into the characteristics of adolescents being admitted to this new compulsory youth care and compare this actual sample with the intended sample as suggested by Boendermaker, Eligenraam and Geurts (2004).

The preliminary convention designed by the Ministry of Justice in 2001, enabled placement of behaviorally disturbed adolescents in juvenile detention centers. The goal of this convention was to quickly confine adolescents who had to be protected against themselves or against the influences of their environment. However, more behaviorally disturbed adolescents entered than available placements; therefore, only adolescents who met the following urgency criteria were administered: (1) victims of (forced) prostitution, (2) victims of sexual offenses, (3) victims of psychological or physical abuse, (4) adolescents for whom police involvement was necessary to prevent further escalation, (5) adolescents vulnerable to becoming victim in one of the aforementioned situations, (6) adolescents who have to be protected against themselves to prevent further escalation, and (7) adolescents who need protection to prevent further escalation in their own environment.

In 2002, the preliminary convention became final and the maximum duration of six months for
placement of behaviorally disturbed adolescents was established. This final convention resulted in an enormous increase of behaviorally disturbed adolescents admitted into juvenile detention centers. In 2003, approximately 2,000 adolescents were admitted in a juvenile detention center due to civil sentence. This was approximately half the total number of adolescents serving in juvenile detention centers (Boendermaker et al., 2004). In 2004, Boendermaker et al. showed that the placement of behaviorally disturbed adolescents in a juvenile detention center was undesirable for two reasons. First, these adolescents did not obtain the care they needed, resulting in too lengthy periods of admittance in the institutions. Second, the aggregation of behaviorally disturbed adolescents with criminally convicted adolescents was regarded as unacceptable due to the risk of imitation of deviant behavior. As a result of the Boendermaker et al. (2004) study, it was concluded that an alternative form of care was needed for these behaviorally disturbed adolescents. Additionally, the advice was given to terminate placement of these adolescents in juvenile detention centers, which further resulted in the development of an alternative compulsory residential treatment program in 2005, for adolescents with severe behavior problems. This project involved new residential treatment at the following institutions: De Juiste Hulp, Paljas Plus, Hand in Hand, and De Koppeling (see Table 1).

Since Dutch law did not permit compulsory placement of adolescents within regular youth care (parents had to consent first), in January 2008, the Law of Youth Care was amended and a new sector of youth care was created: Compulsory residential youth care. This new residential treatment program offered insufficient capacity to receive all behaviorally disturbed adolescents from the juvenile detention centers; therefore, together with the amendment, the decision was made to convert some juvenile detention centers into compulsory residential centers. As of January 1, 2010, no behaviorally disturbed adolescents were allowed to reside in the juvenile detention centers under Dutch civil law. Table 1 shows the juvenile detention centers that converted their institutions to participate in the compulsory residential treatment program. The development of the new residential treatment program was primarily based on the study by Boendermaker et al. (2004). Specifically, based on the analyses of the treatment files of a representative sample of 110 adolescents, Boendermaker et al. (2004) characterized the behaviorally disturbed adolescents admitted to juvenile detention centers into four levels: History of youth care, problem behavior of the adolescent, environmental risk factors, and parental problems.

History of youth care
Many adolescents had a history of prior placements (77%), of which 73% had been previously admitted in a residential institution, 62% had previously had ambulant care, 6% had day care in the past, and 14% had been in a foster family for some time. Some adolescents had received a combination of several forms of care.

Problem behavior
Concerning externalizing behaviors, 86% of the adolescents showed characteristics of oppositional, antisocial behavior, or aggressive behavior. Furthermore, 45% of adolescents appeared to have had contact with the police as a result of delinquent behavior. Concerning internalizing problems, Boendermaker et al. (2004) found that 36% of adolescents had (symptoms of) depression and 26% had suicidal thoughts or has attempted suicide or tried automutilation. Additionally, 56% of the adolescents seemed to display comorbidity of externalizing and internalizing problem behaviors. Another frequently
Table 1
Overview of institutions offering compulsory residential youth care in the Netherlands in 2008

<table>
<thead>
<tr>
<th>Projects</th>
<th>Age</th>
<th>Capacity</th>
<th>Start data</th>
<th>City</th>
<th>Locations</th>
<th>Number of groups</th>
<th>Mixed and non-mixed groups based on sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>De Juiste Hulp</td>
<td>12 - 18</td>
<td>50</td>
<td>November 2005</td>
<td>Hoenderloo</td>
<td>De Hoenderloogroep</td>
<td>6</td>
<td>Non-mixed</td>
</tr>
<tr>
<td></td>
<td>12 - 18</td>
<td></td>
<td></td>
<td>Wezep</td>
<td>De Sprint</td>
<td>2</td>
<td>Only boys</td>
</tr>
<tr>
<td>Hand in Hand</td>
<td>12 - 18</td>
<td>26</td>
<td>December 2005</td>
<td>Harreveld</td>
<td>Harreveld</td>
<td>1</td>
<td>Only boys</td>
</tr>
<tr>
<td></td>
<td>12 - 18</td>
<td></td>
<td></td>
<td>Alphen a/d Rijn</td>
<td>Rijnhove</td>
<td>3</td>
<td>Only boys</td>
</tr>
<tr>
<td>Paljas Plus</td>
<td>12 - 18</td>
<td>58</td>
<td>December 2005</td>
<td>Deurne</td>
<td>BJ Brabant</td>
<td>4</td>
<td>Mixed/non-mixed</td>
</tr>
<tr>
<td></td>
<td>12 - 18</td>
<td></td>
<td></td>
<td>Oosterhout</td>
<td>Lievenshove</td>
<td>3</td>
<td>Mixed</td>
</tr>
<tr>
<td>De Koppeling</td>
<td>12 - 18</td>
<td>64</td>
<td>April 2007</td>
<td>Amsterdam</td>
<td>Not applicable</td>
<td>8^</td>
<td>Mixed/non-mixed</td>
</tr>
<tr>
<td>Harreveld Alexandra^2</td>
<td>12 - 18</td>
<td>72</td>
<td>January 2008</td>
<td>Almelo</td>
<td>Not applicable</td>
<td>8</td>
<td>Mixed/non-mixed</td>
</tr>
<tr>
<td>Horizon 13-^4</td>
<td>6 - 13</td>
<td></td>
<td>2005</td>
<td>Rotterdam</td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Icarus^4</td>
<td>12 - 18</td>
<td>50</td>
<td>January 2008</td>
<td>Cadier en Keer</td>
<td>Not applicable</td>
<td>5</td>
<td>Only boys</td>
</tr>
<tr>
<td>Wilster^1</td>
<td>12 - 18</td>
<td>136</td>
<td>2006^6 / 2008</td>
<td>Groningen</td>
<td>Not applicable</td>
<td>12</td>
<td>Mixed/non-mixed</td>
</tr>
<tr>
<td>OGH^3</td>
<td>12 - 18</td>
<td>151</td>
<td>January 2008</td>
<td>Zetten</td>
<td>Not applicable</td>
<td>13</td>
<td>Mixed/non-mixed</td>
</tr>
<tr>
<td>De Heuvelrug^2</td>
<td>12 - 21</td>
<td>54</td>
<td>January 2009</td>
<td>Lindevorst</td>
<td>Not applicable</td>
<td>6^</td>
<td>Only girls</td>
</tr>
<tr>
<td>Almata^1</td>
<td>12 - 18</td>
<td>96</td>
<td>January 2009</td>
<td>Den Dolder</td>
<td>Den Dolder</td>
<td>10 group homes</td>
<td>Only boys</td>
</tr>
<tr>
<td></td>
<td>12 - 18</td>
<td>90</td>
<td>January 2009</td>
<td>Osseendrecht</td>
<td>Osseendrecht</td>
<td>2 educational ships</td>
<td>Only boys</td>
</tr>
<tr>
<td>JJC</td>
<td>12 - 18</td>
<td>50</td>
<td>2007 / 2010^7</td>
<td>Den Haag</td>
<td>Not applicable</td>
<td>6</td>
<td>Mixed/non-mixed</td>
</tr>
<tr>
<td>Transferium</td>
<td>12 - 18</td>
<td>80</td>
<td>July 2010</td>
<td>Heerhugowaard</td>
<td>Not applicable</td>
<td>10</td>
<td>Mixed</td>
</tr>
<tr>
<td>Mother and childhome (Rentray)</td>
<td>14 - 23</td>
<td>22^2</td>
<td>2006</td>
<td>Zutphen</td>
<td>Not applicable</td>
<td></td>
<td>Only girls</td>
</tr>
<tr>
<td>Rentray^4</td>
<td>12 - 18</td>
<td>119</td>
<td>January 2008</td>
<td>Eerde</td>
<td>Not applicable</td>
<td>12</td>
<td>Non-mixed</td>
</tr>
</tbody>
</table>

Notes: ^1 Juvenile detention centers that have been transformed into compulsory residential youth care. ^2 De Koppeling has two psychiatric groups and six youth care groups. ^3 One part started offering compulsory youth care sooner than the other. ^4 Two of the eight groups help youth with serious psychiatric problems (called the FOLBA). In these two groups, a maximum of six adolescents are admitted, in which boy and girls are mixed. The other six groups only help girls and have a maximum of 10 adolescents per group. ^5 Of the 22 available places, WVS bought 5 places, the others belong to the AWBZ or province. ^6 Two of the six groups are meant for mentally disabled girls. In 2010, the groups for mentally disabled youth with psychiatric problems began. ^7 All groups offer care to mentally disabled boys. For more information and recent updates visit www.veugd/zorgplus.nl.
Chapter 2

occurring problem behavior within the sample was the use of drug. Of the 110 adolescents, 11% appeared to use soft drugs, 8% hard drugs, and 6% used soft and hard drugs. Moreover, 4% showed problematic alcohol use and 11% used both alcohol and drugs.

Environmental risk factors
Of the behaviorally disturbed adolescents, 15% had been exposed to serious rows in the family and 21% of the adolescents had been physically abused. In 14% of families, the adolescents had abused his parents or siblings. Further, almost 17% of the adolescents were involved in prostitution or were alleged to be so.

Parental problems
Not only did the adolescents exhibit problem behaviors, but often the parents did as well. It was found that 15% of adolescents had a parent who was addicted to either alcohol or drugs.

Boendermaker et al.'s (2004) investigation was a preliminary study to examine the characteristics of behaviorally disturbed adolescents in juvenile detention centers. Overall, Boendermaker et al. concluded that these adolescents demonstrated severe behavior problems and over 50% also displayed internalizing problems. These adolescents also came from problematic family situations and were often associated with a risky peer group. In conclusion, it was found that this group was not only a difficult target group, but also a very vulnerable group of adolescents. As such, based on Boendermaker et al.'s study, the new compulsory residential treatment was developed. Further, the present study investigated to what extent the actual group within the new residential treatment program resembled the described target group of Boendermaker et al. (2004).

Method

Procedure and measure
All treatment files of adolescents admitted into the new treatment program (e.g., judicial reports, diagnostic reports, information from youth care services), were analyzed to gain insight into the population characteristics prior to admittance. To analyze the files, a new scoring scheme was developed based on an existing scoring scheme (SDI; Flipse, 2000; Veerman & Tates, 1989). Since the SDI lacked questions on specific problem behaviors, a number of additional items were added from a questionnaire by Orobio de Castro, Veerman, Bons, and De Beer (2002) as well as from the results of Boendermaker et al. (2004). The final scoring scheme was an instrument that asked for demographic data of children, adolescents and families who had applied for youth care. The new scheme scored information from the treatment files in the following areas: General information, history of youth care, daily activities, diagnostic information of the adolescent, problem behaviors of the adolescent, and additional information about the parents and parenting environment.

To ensure the scheme's reliability, two researchers scored the same five files by the first concept. This first scoring resulted in some adaptations. Following this process, the same two researchers rescored the five files. This resulted in the final adaptations, which involved simplification of some questions and the addition of more options for each answer. Subsequently, the two researchers read
ten files independently and scored them with the final version of the scoring scheme. Afterwards, agreement was reached for each file on all variables. Over 80% of the scored variables were scored similarly, which meant the scoring was sufficiently reliable. Student assistants were then trained to reliably score files; their reliability was high, indicated by over 80% agreement on ten files scored by the student assistants.

Participants
The sample for the present study consisted of all adolescents admitted into the four projects between the start (2005) of the new treatment program and January 2008. A total of 317 adolescents had a mean age of 15.68 (SD = 1.32), of which 63% were boys and 37% were girls. Of the 317 adolescents, 22% were admitted into De Juiste Hulp, 39% into Paljas Plus, 13% into Hand in Hand, and 27% into De Koppeling. When considering country of birth, it appeared that 87% of the adolescents were born in the Netherlands. Concerning birth country of the parents, 58% of the mothers and 45% of the fathers were born in the Netherlands. Concerning the relationship of the parents, 51% had no relationship or were divorced, 29% were married or living together, and the remaining 5% had some other form of relationship (e.g., LAT-relation). The number of children in the families of these adolescents was, on average, 2.04 (SD = 1.45). In 85% of the families, the biological mother was present and in 54% the biological father was present.

Statistical analyses
All variables in the scoring scheme were dichotomized into present and not present. Problem behaviors that were perhaps or present were scored as present, while those indicated as not in the file and not present were scored as not present. This scoring method was preferred since it could be assumed that if a specific problem behavior was not mentioned in the file it was absent or had no great impact on the family or personal life of the adolescent. To test significant differences between Boendermaker et al.'s (2004) sample and the sample of the new treatment program $\chi^2$-tests were executed.

Results
Based on the analyses of treatment files, characteristics of adolescents admitted into the new compulsory residential treatment program were measured. The characteristics were classified into four levels: History of youth care, problem behaviors of the adolescent, environmental risk factors, and parental problems.

History of youth care
The living situation of the 317 adolescents before placement into the new treatment program was as follows: 79% had a residential or judicial form of care, 16% came from their home situation, 4% were homeless, and 1% were in some other form of care. Figure 1 illustrates the specific forms of care for the 79% of adolescents who had either a residential or judicial form of care.

Problem behavior
Adolescents are admitted into the new residential treatment due to their problem behaviors. The files
revealed that 98% of the adolescents showed externalizing problem behaviors such as aggression and oppositional behavior. In addition, 70% appeared to have had police contacts and 42% used physical violence against family members. Table 2 shows which types of criminal offenses these adolescents committed before admittance. In addition to externalizing problem behaviors, 67% of adolescents showed internalizing problems such as depression, and anxiety. The majority (62%) had been diagnosed according to the DSM-IV classification. The most prevalent diagnoses were oppositional defiant disorder (37%), conduct disorder (30%), and ADHD (28%). Other disorders included parent-child relational problems (15%), attachment problems (12%), depression (8%), autism related problems (7%), adaptation problems (5%), and cannabis abuse (3%). Moreover, adolescents also showed risky behaviors; specifically, 41% smoked cigarettes, 18% exhibited problematic alcohol use, 59% used soft drugs, and 17% used hard drugs.

Table 2
Committed offences according to the treatment files

<table>
<thead>
<tr>
<th>Type of offences</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property offences</td>
<td>80%</td>
</tr>
<tr>
<td>Violent offences</td>
<td>71%</td>
</tr>
<tr>
<td>Vandalism</td>
<td>30%</td>
</tr>
<tr>
<td>Sexual offences</td>
<td>4%</td>
</tr>
<tr>
<td>Other offences</td>
<td>14%</td>
</tr>
<tr>
<td>No offences</td>
<td>30%</td>
</tr>
</tbody>
</table>

Environmental risk factors
Adolescents admitted into residential care were also often exposed to environmental risk factors. First, within the family risk factors existed; over 30% of the adolescents appeared to be victims of abuse (mental, physical, or sexual) by parents, brothers, or sisters. Second, the stability and quality of the parenting environment was low. Stability of the parenting environment involves the frequency of changing caretakers and living situations. A total of 23% of the adolescents experienced a stable
parenting environment, 39% had a rather unstable (changing caretakers or living situations) parenting environment, and 35% had a very unstable (changing caretakers and living situations) environment. Quality of the parenting environment indicates to what extent the parenting situation is a hazard to an adolescent’s development (e.g., long lasting unemployment of a family member, differences in parenting styles, serious parental violence, neglect, disorientation after a divorce, parental alcoholism, psychiatric disorders). The files indicated that 5% of the adolescents lived in a non-hazardous environment; whereas 17% came from a slightly threatening, 34% from a moderately threatening, 35% from a seriously threatening, and 6% from a very seriously threatening parenting environment.

Forty-two (42%) percent of the adolescents experienced (serious) traumatic events, 22% had witnessed violence between parents, and 12% were sexually abused by a third person (person outside the family). In addition, over 60% of the adolescents were associated with a high-risk peer group; that is, for example, their friends were involved in criminal activities. It is striking that, relatively, many adolescents (20%), especially girls, were victims of (forced) prostitution, had contacts with pimps, or showed a potential risk for becoming a victim of prostitution. Moreover, 50% of all adolescents demonstrated promiscuous behaviors.

Parental problems
While these adolescents exhibited various problems behaviors, their parents also displayed a variety of problems. Results indicate that 13% of mothers suffered from mild psychological or physical problems (anxiety, diabetes, asthma, etc.) and 36% suffered from serious psychiatric or physical problems (borderline, suicidal behaviors, depression, brain tumor, burnout, etc.). For fathers, these percentages were 6% and 17%, respectively. Of the mothers, 5% displayed alcohol abuse, 3% drug abuse, and 2% of mothers were addicted to both alcohol and drugs. Among fathers, 4% were addicted to alcohol, 4% to drugs, and 3% to both.

In sum, according to the files, adolescents admitted to the new residential treatment displayed a variety of problems in several areas. However, it was not only the adolescents in this sample that suffer from multiple problems but also their parents and peer group displayed similar problems.

A comparison between both studies
The results of Boendermaker et al. (2004) and the new residential treatment program can be compared in four categories: History of youth care, problem behaviors of the adolescent, environmental risk factors, and parental problems. The primary aim of the present study was to examine to what extent the intended sample was similar to the actual sample admitted to the new residential treatment program. The results showed significant differences in the areas of externalizing and internalizing problem behaviors, suicide and automutilation, domestic violence, police contacts, and use of soft drug. The adolescents admitted into the new residential treatment program scored significantly higher on all these problem areas (see Table 3). However, on five variables (history of youth care, the use of hard drugs, alcohol misuse, prostitution, and parental addictions), no significant differences appeared.

Discussion
Boendermaker et al. (2004) described characteristics of a group of behaviorally disturbed adolescents
### Table 3
Comparison samples of the study of Boendermaker (N = 110) and the new treatment program (N = 317)

<table>
<thead>
<tr>
<th>Categories</th>
<th>Variables</th>
<th>Boendermaker</th>
<th>New treatment program</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth care history</td>
<td></td>
<td>77%</td>
<td>79%</td>
<td>.12</td>
</tr>
<tr>
<td>Problem behavior</td>
<td>Externalizing problems</td>
<td>86%</td>
<td>98%</td>
<td>24.09***</td>
</tr>
<tr>
<td></td>
<td>Police contacts</td>
<td>45%</td>
<td>70%</td>
<td>21.33***</td>
</tr>
<tr>
<td></td>
<td>Violence within the family</td>
<td>14%</td>
<td>42%</td>
<td>29.92***</td>
</tr>
<tr>
<td></td>
<td>Comorbidity of internalizing and</td>
<td>56%</td>
<td>67%</td>
<td>3.93**</td>
</tr>
<tr>
<td></td>
<td>externalizing problems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suicide/automutilation</td>
<td>26%</td>
<td>36%</td>
<td>3.38*</td>
</tr>
<tr>
<td></td>
<td>Use of softdrugs</td>
<td>17%</td>
<td>59%</td>
<td>56.92***</td>
</tr>
<tr>
<td></td>
<td>Use of harddrugs</td>
<td>14%</td>
<td>17%</td>
<td>.70</td>
</tr>
<tr>
<td></td>
<td>Alcohol abuse</td>
<td>15%</td>
<td>18%</td>
<td>.68</td>
</tr>
<tr>
<td>Risk factors environment</td>
<td>Abuse</td>
<td>21%</td>
<td>30%</td>
<td>3.35*</td>
</tr>
<tr>
<td></td>
<td>Prostitution</td>
<td>17%</td>
<td>20%</td>
<td>.36</td>
</tr>
<tr>
<td>Parental problems</td>
<td>Addictions</td>
<td>15%</td>
<td>22%</td>
<td>2.21</td>
</tr>
</tbody>
</table>

Note. $\chi^2$-tests were applied based on the frequencies and measures whether a significant difference was found between characteristics of the samples of both studies.

A striking finding of the present study was that not every adolescent (20%) had youth care before this instance. The question arises why a severe sentence such as compulsory treatment was implemented and why no alternative, less severe option was offered first. A comparison between adolescents who received youth care in the past and those who has never received youth care revealed two significant differences. Youth who had never received youth care more often used violence against family members; moreover, the mothers of this group did not show any problems of their own. It is possible that merely an escalation of domestic violence within the family resulted in their admittance to the new compulsory treatment program. This is in line with the findings of Boendermaker, Van der Steege, Van den Berg, and Van den Berg (2005) when they examined so-called conversion cases (adolescents in pre-trial detention whom the juvenile court judge decides to turn the case from a criminal case into a civil case). Boendermaker et al. found that, for domestic violence, the juvenile court judges often chose a civil settlement rather than a criminal sentence, for their priority was dealing with domestic problems. These adolescents were put in a juvenile detention center as behaviorally disturbed adolescents. Since it was no longer allowed to place these behaviorally disturbed adolescents in juvenile detention centers, they were placed in compulsory treatment programs.
The sample admitted to the new residential treatment program exceeded the Boendermaker et al. (2004) sample in more serious behavior problems. This is remarkable because, in the placement protocol, the most vulnerable adolescents have first priority of placement. This placement protocol involves priority for adolescents in categories 1-3 (victims of forced prostitution, victims of sexual offenses, victims of psychological or physical abuse), over those in categories 4-7 (adolescents who have to be protected against themselves to prevent further escalation, adolescents vulnerable to becoming victims in categories 1-3, adolescents who need protection to prevent further escalation in their own environment, and adolescents for whom police involvement is necessary to prevent further escalation of violence against their immediate surroundings) where externalizing problems prevail. Adolescents admitted into the new residential treatment program showed severe externalizing problems, suggesting that categories 1-3 occur less frequently and adolescents from categories 4-7 may take the available places. On the other hand, it could also be the case that the proper group was not placed or that differences between the categories of the placement protocol were too indistinct and not feasible enough to use in practice.

The differences found between Boendermaker et al.’s (2004) sample and the present study can be explained in several ways. For instance, both studies used different measures to analyze the treatment files. The way of executing the analyses was similar, that is scoring problem behaviors present in the treatment files. Additionally, the treatment files from the juvenile detention centers (Boendermaker et al., 2004) and those from residential institutions (present study) were composed and designed in the same way. Specifically, the files contained psychological reports, reports of youth care service, and judicial documents. However, it is common knowledge that researchers largely depend on the degree of precision and impartiality of the persons who provide this information (e.g., social workers and parents). The differences in level of precision and impartiality between these files can possibly explain the remarkable finding that there was diagnostic information registered in the files of only 62% of the adolescents.

In addition to these possible methodological explanations, there could also be various explanations regarding content. First, Boendermaker et al. (2004) included all behaviorally disturbed adolescents who were admitted into juvenile detention centers. According to Boendermaker et al., some of these adolescents did not need to be placed in a detention center at all, or just needed placement for a short period. It is possible that, with the initiation of the compulsory residential treatment program, for the ‘less severe cases’ some other solution was found (such as ambulant, regular residential), and that adolescents with severe problems were primarily admitted into the new treatment program.

Moreover, in the Netherlands, there are two kinds of juvenile detention centers. Detention centers were adolescents serve their sentence or pre-trial detention (detention centers) and detention centers where adolescents receive (intensive) treatment (treatment centers). The group admitted into the new residential treatment came from both detention and treatment centers, while the adolescents from the Boendermaker et al. (2004) study only came from detention centers. Plausibly, adolescents admitted into treatment centers displayed more severe problem behaviors compared to those from detention centers, which explains the more serious problem behaviors the group admitted into the new treatment program.

Furthermore, Boendermaker et al. (2004) examined the group of behaviorally disturbed adolescents before the compulsory residential treatment program existed and, at that time, no other option
was available within youth care. Possibly, as soon as the option of the compulsory residential treatment program appeared, the group that was otherwise overlooked was now admitted, whereas before they would not have been admitted into a juvenile detention center. Admittance into a juvenile detention center could have been considered too severe a placement; however, admittance into compulsory residential treatment, once developed, was appropriate. These factors may also explain why the target group, examined by Boendermaker et al. (2004), and the target group of the new treatment program differed on a couple aspects.

The discussion concerning the aggregation of behaviorally disturbed adolescents and criminally convicted adolescents led to political and societal concerns, which was the reason to separate these groups. Several studies found more crucial similarities than differences in problem behaviors and severity of offenses in adolescents placed under civil and criminal law (e.g., Bullens, Oostervink & Brand, 2006). Indeed, our study also showed that the majority (70%) of adolescents committed some offense or another; however, these were not the reasons for admittance. Next to this, adolescents admitted into the treatment centers on a criminal sentence seemed not to differ regarding problem behaviors compared to adolescents admitted into the new residential treatment program (Brand & van den Hurk, 2008; Bullens et al., 2006).

By separating the civil and criminal adolescents, a relatively new target group emerges. The adolescents of the new treatment program had severe behavioral and parental problems. This has consequences for treatment and external conditions of treatment (e.g., staff, environment). Our findings, that the adolescents admitted into the new residential treatment program showed more severe behavioral problems, indicate that the content and organization of treatment must be carefully considered. This is especially the case concerning the high rate of comorbidity of problems (externalizing and internalizing), which demands extensive expertise from professionals concerning the psychopathology of these issues. Further, the severe externalizing problems calls for an environment capable enough to set boundaries and provide protection and safety for its youths. The departments of judicial youth care and psychiatric youth care do have the experience in treating the most severely problematic adolescents in our society. However, the recently published evaluation on the Law on Youth Care (Baecke et al., 2009) disclosed that cooperation between the different departments is scarce, thus, youth care suffers from this segregation and disintegration. Further, it is not impossible that the separation of civil and criminal adolescents will eventually cause even more disintegration within the youth care system. From this perspective, it is a great leap forward to see that different departments are sharing their knowledge in the development of the new residential treatment program. Currently, the adolescents of the present study are involved in a follow-up study, in which several characteristics of treatment and post-treatment functioning are being measured. Based on these data, we will be able to measure improvement, over time, in the functioning of the adolescents both during and after treatment.
CHAPTER 3

Psychopathic traits of Dutch adolescents in residential care: Identifying subgroups

Published as:
Psychopathic traits of Dutch institutionalized adolescents

Abstract

The present study examined whether a sample of 214 (52.8% male, M age = 15.76, SD = 1.29) institutionalized adolescents could be classified into subgroups based on psychopathic traits. Confirmatory Factor Analyses revealed a relationship between the subscales of the Youth Psychopathic traits Inventory (YPI) and the three latent constructs of the original model on which it is based. Latent Class Analyses showed that adolescents showing psychopathic traits could be classified into three subgroups. The first group showed low scores on the grandiose/manipulative dimension, the callous/unemotional dimension, and the impulsive/irresponsible dimension (normal group). The second group scored moderate on the grandiose/manipulative dimension and the callous/unemotional dimension and high on the impulsive/irresponsible dimension (impulsive, non-psychopathic-like group). The third group scored high on all three dimensions (psychopathy-like group). The findings revealed that the impulsive, non-psychopathic like group scored significantly higher on internalizing problem behavior compared to the normal group, while the psychopathy-like and the impulsive, non-psychopathic-like group both scored higher on externalizing problem behavior compared to the normal group. Based on a self-report delinquency measure, it appeared that the psychopathy-like group had the highest delinquency rates, except for vandalism. Both the impulsive and psychopathy-like group had the highest scores on the use of soft drugs.

Introduction

In the Netherlands, about 2,000 adolescents exhibiting severe behavior problems are treated in compulsory residential youth care. Although officially these adolescents were not admitted because of criminal activities, 70% had contacts with the police (Nijhof, Van Dam, Veerman, Engels, & Scholte, 2010). Generally, psychopathy is found to be more prevalent within adolescents than in childhood (Hare, 2003) and we also would expect it to be present in a residential sample. However, the extent of psychopathic traits among adolescents in residential settings is unknown, as studies in these settings are currently lacking. In the present study, we examined whether a residential sample of adolescents can be classified into subgroups based on psychopathic traits and to what extent differences in internalizing behaviors, externalizing behaviors, and drug use characterize these subgroups.

A psychopathic personality involves an arrogant and deceitful interpersonal style, a defective emotional experience (e.g., shallow emotions and a lack of remorse, empathy, and responsibility for one’s own actions), and impulsive, irresponsible, and sensation-seeking behavior (Hare, 1991). Studies examining psychopathy mostly identify interpersonal, affective and behavioral dimensions of the construct, although some studies also include a fourth antisocial dimension. Like all personality disorders, a psychopathic personality cannot be diagnosed before the age of 18 (American Psychiatric Association, 1994); however, individuals can show psychopathic traits before this age. The prevalence rates of psychopathic traits in a normal adolescent population were found to range between 5 and 6% (Andershed, Gustafson, Kerr, & Stattin, 2002; Gustafson, 2000). The prevalence of psychopathy is higher in boys than in girls (e.g., Bolt, Hare, Vitale, & Newman, 2004; Salekin, Rogers, & Sewell, 1998; Sevecke, Lehmkuhl, & Krischer, 2009b).

Psychopathic traits seem to be relatively stable over time (Forsman, Lichtenstein, Larsson, &
Chapter 3

Andershed, 2008; Loney, Taylor, Butler, & Iacono, 2007; Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007). Genetic and environmental factors were found to be associated with psychopathic traits (Forsman et al., 2008). Larsson, Lichtenstein, and Andershed (2006) showed that common genetic influences explained between 43 and 56% of the variance in the three psychopathic dimensions, which is similar to other studies (Blonigen, Carlson, Krueger, & Patrick, 2003; Taylor, Loney, Bobadilla, Iacono, & McGue, 2003). Larsson et al. (2006) also revealed that non-shared environmental factors could explain 37% of variance in psychopathic traits, while shared environmental influences did not contribute.

The Youth Psychopathic traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2001) and the Psychopathy Checklist: Youth version (PCL: YV; Forth, Kosson, & Hare, 2003) are widely used instruments to measure psychopathic traits in adolescence. In contrast to the PCL: YV, the YPI does not require rigorous training prior to conducting the assessment (Hillege, Das, & De Ruiter, 2010). Moreover, it was found that self-report measures, such as the YPI, are useful in research on psychopathic traits (Andershed et al., 2002). Studies on the correlations between scores on the YPI and the PCL: YV report low to moderate correlations, suggesting that both instruments measure somewhat different constructs (Andershed, Hodgins & Tengström, 2007; Cauffman, Kimonis, Dmitrieva & Monahan, 2009; Dolan & Rennie, 2006; Skeem & Kaufman, 2003).

Although some studies include the antisocial dimension as a fourth dimension, the YPI assesses three dimensions: grandiose/manipulative (interpersonal), callous/unemotional (affective), and impulsive/irresponsible (behavioral) psychopathic personality dimensions (Hare, 1991). Using the YPI, Andershed et al. (2001) found that three subgroups of psychopathic adolescents could be identified within a normative sample. The first subgroup scored low on all three aspects, the second group showed average scores on the affective and interpersonal aspect and high scores on the behavioral aspect. The third group scored high on all three aspects. Using the PCL: YV, Andershed, Kohler, Louden, and Hinrichs (2008) reported similar findings when distinguishing subgroups in a sample of male offenders.

Psychopathic traits, externalizing and internalizing behavior

Most research examining the relationship between psychopathy and externalizing problems includes conduct problems and attention deficit hyperactivity disorder (ADHD) as measures of externalizing problems. Both are found to be strongly related to psychopathic traits (e.g., Johansson, Kerr, & Andershed, 2005; Forth et al., 2003; Sevecke et al., 2009b). More specifically, Abramowitz, Kosson, and Sedenberg (2004) found that conduct problems, as well as ADHD, were important predictors of the behavioral dimension of psychopathy in adults. In contrast, for adolescents, Mathias et al. (2007) found that only the behavioral factor, but not the other psychopathy factors, was related to symptoms of ADHD in partial correlation analyses. Colledge and Blair (2001) also found that the impulsivity of ADHD among children was related to the behavioral factor of psychopathy. Sevecke et al. reported that conduct disorder (2009a; 2009b) and ADHD (2009a) contributed to the behavioral dimension of psychopathy in boys. Moreover, conduct disorder was also related to the interpersonal, affective and antisocial dimension (2009a) in boys, while for ADHD these links were not found. In girls, conduct disorder was linked with the affective, behavioral and antisocial factors of psychopathy, while ADHD contributed to all four dimensions of psychopathy (Sevecke et al., 2009a). Sevecke et al. (2009b) also found that externalizing symptoms, measured using the Youth Self Report (YSR), were associated with the affective dimension of psychopathy in girls, whereas antisocial behavior was related to the behavioral
and interpersonal dimension. Using a two-factor model, Abramowitz et al. (2004) found that both ADHD and childhood conduct problems were stronger predictors for the antisocial lifestyle factor compared to the interpersonal affective factor. In sum, stronger relations were found between externalizing problems and the behavioral and antisocial factor scores than between externalizing problems and the affective and interpersonal factor scores, although some differences between boys and girls were found.

About 15 to 20% of the criminal population is diagnosed as having a psychopathic personality (Hart & Hare, 1997). In adolescence, the psychopathy-like group shows the most severe pattern of antisocial behavior compared to other offenders (e.g., Andershed et al., 2002; Lynam & Gudonis, 2005). Adolescents with psychopathic traits often engage in delinquent behaviors earlier, show more versatility in offending, commit more violent crimes, and show higher rates of recidivism than other offenders (Lynam & Gudonis, 2005; Skeem & Cauffman, 2003; Vincent, Vitacco, Grisso, & Corrado, 2003; Walters, 2003). Higher scores on psychopathy are related to a higher likelihood of delinquency in both boys and girls (Marsee, Silverthorn, & Frick, 2005). Regarding the relationships between the dimensions of psychopathy and delinquent behavior, Christian, Frick, Hill, Tyler and Frazer (1997) found that adolescents scoring high on the affective dimension, who also had childhood conduct disorder, showed a more serious criminal career than adolescents scoring lower on the affective dimension (see also Barry, et al., 2000; Loney, Frick, Clements, Ellis, & Kerlin, 2003). More recent studies, however, revealed that recidivism is more strongly related to the behavioral dimension than to the interpersonal and affective dimension (Douglas, Vincent & Edens, 2006; Edens, Campbell, & Weir, 2007). Salekin (2008) investigated the association between psychopathy using the PCLYV and both general as well as violent recidivism. Moderately positive correlations were found between the three dimensions of the factor model of psychopathy and general and violent offending, except for the interpersonal dimension and violent recidivism.

Additionally, drug use is positively related to psychopathic traits (Andershed et al., 2008, Murrie & Cornell, 2000; Poythress, Dembo, Wareham, & Greenbaum, 2006). Hillega et al. (2010) found that the interpersonal, affective as well as the behavioral dimension were related to drug use. However, for boys the impulsive/irresponsible dimension showed a stronger relationship with drug use than the other two dimensions, and for girls the affective dimension showed a stronger association with drug use. Poythress et al. (2006) found that the behavioral dimension was mainly related to drug use in the past. However, Poythress et al. also found a significant association between drug use and the interpersonal dimension. In sum, psychopathic traits are positively associated with both delinquent behavior and drug use. In addition, the combination of psychopathic traits and drug abuse is associated with higher levels of recidivism (Taylor & Lang, 2006). More specifically, prior studies suggest that the behavioral dimension is more strongly related to both drugs use and recidivism than the affective and interpersonal dimensions.

Concerning internalizing problems, Poythress et al. (2006) found a positive direct relation between psychopathic traits and internalizing problems (self-esteem, withdrawal, anxiety, worrisome recurring thoughts, depression, fatigue or loss of interest). Salekin, Leistico, Neumann, DiCicco, and Duros (2004) confirmed this finding. Moreover, several studies investigated anxiety and the link with psychopathy (e.g., Kosson, Cyterski, Steuerwald, Neumann, & Walker-Matthews, 2002; Kubak & Salekin, 2009; Skeem & Cauffman, 2003). In general it was found that anxiety was positively related to psychopathic traits in adolescence. In addition, sex differences emerged in the relationship between psychopathic traits and
internalizing problems. Sevecke et al. (2009b) found that a significant relationship between internalizing symptoms measured by the Youth Self Report (YSR) and the affective dimension of psychopathy existed only for boys. On the other hand, psychopathic traits are also associated with low levels of internalizing problems (Brandt, Kennedy, Patrick, & Curtin, 1997; Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999; Lynam, 1997). The relationship between internalizing behavior and psychopathy might be an indirect one because conduct problems are strongly associated with both psychopathic traits and internalizing problems. Moreover, internalizing problems are common in adolescents diagnosed with conduct problems (Lambert, Wahler, Andrade, & Bickman, 2001). For example, within clinical samples, between 60 to 75% of the children with a conduct disorder also showed anxiety disorders (Russo & Beidel, 1993). In sum, psychopathic traits are linked to internalizing problems, probably due to direct or indirect associations with conduct problems.

The present study
The present study will examine whether the three dimensions underlying the ten psychopathic traits of the YPI are present in a clinical adolescent sample referred to residential care. Most studies on psychopathic traits of adolescents included normative samples or samples consisting only of (male) offenders, while our study included males and females from residential settings. The first aim of the study was to test the validity of the YPI in a clinical sample, hypothesising the same factor structure as reported by Andershed et al. (2001). The next aim was to test whether the adolescents could be classified into different subgroups based on psychopathic traits. Further, it was examined whether these subgroups show different levels of problem behavior, delinquent behavior, and substance use. It was hypothesized, based on the study of Andershed et al. (2001), that three groups of adolescents with a psychopathic personality can be distinguished: 1) adolescents scoring low on the manipulative, unemotional, and irresponsible dimension ('relatively normal group'), 2) adolescents scoring moderately on the manipulative and unemotional dimension and high on the irresponsible dimension ('impulsive, non-psychopathic-like group'), and 3) adolescents scoring high on all three dimensions ('psychopathy-like group'). Differences between the three subgroups were expected on externalizing problems, delinquent behavior, and substance use, with the psychopathy-like group showing more externalizing problems, delinquency, and drugs use compared to both other groups. It is also expected that higher psychopathic traits are related to more externalizing problems, delinquency, and drugs use in boys as well as in girls. Concerning internalizing problems and psychopathic traits, the literature showed mixed findings, which makes it difficult to formulate hypotheses.

Method

Procedure and participants
Data for the current study were collected as part of a study examining the effects of a new residential treatment program for adolescents with severe behavior problems in the Netherlands. Six institutions participated in this study, all offering compulsory residential treatment to adolescents aged 12 to 18. None of the adolescents entered the program due to convictions for criminal activities. Adolescents who entered this residential treatment between May 2007 and December 2008 were asked to complete a battery of questionnaires. Because the sample consisted of under aged adolescents with severe
behavior problems, the research was reviewed and approved by the relevant medical ethics commission. The Dutch government demanded that these institutions participate in this study.

At time of admittance, both the parents as well as the adolescents were requested to sign a form in which they allowed us to use information for scientific purposes. Of all eligible participants, 65% (n = 214) agreed to complete the baseline questionnaire. Across the participating institutions the response rates were 79%, 70%, 75% and 57% respectively. Of the 35% of adolescents who did not participate, in one case the parent did not allow her child to participate (0.8%). The most important reason why adolescents did not participate reflected a lack of organizational structure in the institutions (96% of non-participating adolescents), such that adolescents admitted at the beginning of the new residential program were not given questionnaires to complete. Moreover, three adolescents (3%) refused to participate, because they did not like to answer personal questions or because they were afraid that the information would be used against them. One adolescent was transferred shortly after admittance, so he was not able to fill in a questionnaire (0.8%). Because the criteria for admittance were the same for all six institutions, there is no reason to assume that there is non-random attrition. The institutions sent the completed questionnaires back to the researchers. Each adolescent received 5 euros. Confidentiality was fully assured.

Table 1
Demographic information, means and standard deviations of problem behavior

<table>
<thead>
<tr>
<th></th>
<th>Boys (n = 113)</th>
<th>Girls (n = 101)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>15.74 SD 1.35</td>
<td>15.78 SD 1.23</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50.0%</td>
<td>46.8%</td>
</tr>
<tr>
<td>Internalizing behavior</td>
<td>10.32 SD 8.67</td>
<td>16.16 SD 11.13</td>
</tr>
<tr>
<td>Externalizing behavior</td>
<td>14.60 SD 9.25</td>
<td>16.13 SD 9.02</td>
</tr>
<tr>
<td>Delinquent behavior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vandalism</td>
<td>1.37 SD 1.00</td>
<td>1.04 SD .90</td>
</tr>
<tr>
<td>Property offences</td>
<td>1.00 SD 1.04</td>
<td>.59 SD .62</td>
</tr>
<tr>
<td>Violent offences</td>
<td>.88 SD .91</td>
<td>.60 SD .64</td>
</tr>
<tr>
<td>Drug use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft drug</td>
<td>3.65 SD 2.12</td>
<td>3.68 SD 2.02</td>
</tr>
<tr>
<td>Hard drug</td>
<td>1.17 SD .43</td>
<td>1.31 SD .62</td>
</tr>
</tbody>
</table>

Note. *Ethnicity was measured by the country of birth of the parents. The percentages reflect the youth having at least one parent born outside the Netherlands.

**p < .01, *p < .05.

Of the 214 adolescents who participated in this study, the mean age of the adolescents was 15.76 (SD = 1.29, range 12-18). For the boys, 50% had at least one parent born outside the Netherlands, whereas this was 46.8% for the girls (see Table 1). Table 1 also shows the means and standard deviations of problem behavior, delinquency and drugs use of the adolescents. In addition, almost 70% of the adolescents showed both externalizing as well as internalizing problems. From Table 1 it appeared
that girls showed significantly more internalizing problems than boys, for externalizing problems no sex differences were found. Boys showed higher scores on each of the three delinquency dimensions than girls. For drugs no sex differences were found.

Measures

PSYCHOPATHIC TRAITS. The Dutch version of the Youth Psychopathic traits Inventory (YPI) was used to measure psychopathic traits (Andershed et al., 2001; Das & De Ruijter, 2002). The YPI is a self-report measure consisting of 50 items measured on a 4-point Likert scale ranging from 1 (does not apply at all) to 4 (applies very well). These 50 items measure ten core traits of a psychopathic personality. Each of the 10 subscales consists of five items. The ten subscales are dishonest charm, grandiosity, lying, manipulation, callousness, unemotionality, remorselessness, impulsiveness, thrill seeking, and irresponsibility. The subscales are designed to reflect three dimensions: (1) a grandiose/manipulative dimension, (2) a callous/emotional dimension, and (3) an impulsive/irresponsible dimension. The first dimension measures the interpersonal aspects of a psychopathic personality, the second dimension assesses the affective aspects, and the third dimension describes the behavioral aspects. Internal consistencies of the subscales in the present study were similar to those reported in Andershed et al. (2001), ranging from .65 to .80, with the exception of callousness (.52). Prior studies found a good validity of the YPI (e.g., Andershed, Hodgins, & Tengström, 2007; Campbell, Doucette, & French, 2009; Hillege et al, 2010; Van Baardewijk et al., 2008).

PROBLEM BEHAVIOR. The Youth Self Report (YSR; Achenbach, 1991; Verhulst, Van der Ende, & Koot, 1997) was used to assess adolescents’ problem behavior. All 112 items of the YSR are to be answered on a 3-point scale ranging from 0 (not at all) to 2 (often), with higher scores indicating more problems. The YSR consists of second order factors. The first second-order factor described as internalizing behavior consists of three factors, withdrawn behavior, somatic complaints, and anxious depressed behavior. The other second-order factor is externalizing behavior that consists of rule breaking and aggressive behavior. Cronbach’s alpha in the present study for internalizing behavior was .93 and for externalizing behavior .90. According to Achenbach and Rescorla (2001) the validity of the YSR is good. The same was found for the Dutch version of the YSR (De Groot, Koot & Verhulst, 1996).

DELINQUENCY. A 26-item questionnaire consists of three subscales, property offenses (e.g., shoplifting), violent offenses (e.g., participating in a serious physical fight) and vandalism (e.g., damaging property), which assess delinquent behavior within the last year (see Van der Laan & Blom, 2005). All items are measured on a 5-point scale with 1 indicating ‘never’ (0 incidents), 2 ‘one incident’, 3 ‘two incidents’, 4 ‘three to ten,’ and 5 ‘more than ten incidents.’ Cronbach’s alphas of the three subscales in the present study were .90 for property offenses (11 items), .80 for violent offenses (8 items), and .82 for vandalism (7 items). This delinquency self-report scale is considered to be valid (Van der Laan, Blom, Verwers, & Essers, 2006).

DRUG USE. To assess drugs use, adolescents self-reported the use of hash/marihuana, XTC, cocaine, magic mushrooms, uppers/pep/speed, or heroin within the last twelve months (Monshouwer, Verdurmen, Dorsselaer, Smit, Gorter, & Vollebergh, 2008; Van der Laan, & Blom, 2006). This variable
was measured on a 6-point scale with 1 ‘never’, 2 ‘seldom’, 3 ‘couple of times a month’, 4 ‘once a week’, 5 ‘couple of times a week’ to 6 ‘every day’. Hash and marihuana were classified as soft drugs, while XTC, cocaine, magic mushrooms, uppers, pep, speed and heroin were classified as hard drugs. Soft drugs and hard drugs were analyzed separately due to potentially different risk effects. Self-report measures concerning drugs use were found to be valid (O’Malley, Backman, & Johnston, 1983).

Statistical analyses
To test the dimensional factor structure of the 10 subscales of the YPI in a referred sample, Confirmatory Factor Analysis (CFA) was applied using Mplus 5.0 (Muthén & Muthén, 1998-2006). The goodness of fit of the model was assessed using chi-square and the p-value, the Comparative Fit Index (CFI: Bentler, 1989), and the Root Mean Square Error of Approximation (RMSEA: Steiger, 1990). In this study, CFI values above .90 indicate an acceptable fit, and values above .95 indicate an excellent fit to the data, according to the generally accepted cut-off criteria of model fit indices. In addition, RMSEA values below .08 suggest an acceptable fit between the model and the data, and values below .05 indicate a good fit (Hu & Bentler, 1999).

To test the relationships between the three factors of psychopathy and the dependent variables, Pearson correlations were calculated. Fisher’s Z-tests for two correlations from independent samples (Cohen, Cohen, West, & Aiken, 2003) were used to test differences between boys and girls in the correlations between the three factors and the dependent variables.

To identify different subgroups of adolescents with psychopathic traits, Latent Class Analyses (LCA; Muthén & Muthén, 1998-2006) were performed using standardized scores (z-scores). Several criteria were used to support the optimal number of classes. The Bayesian Information Criterion (BIC; Schwarz, 1978) with lower BIC-values indicating a better model fit was used to select the optimal model for these data. A second criterion was based on the classification quality of a model as determined by posterior probabilities. The latter expresses the degree to which participants belong to a specific class after the model is estimated. The higher these values the better the classification. A third criterion was based on the Likelihood Ratio Test (LRT). LRT tests whether a model with a k+1 class solution is significantly better than a model with a k-class solution. Three slightly different LRTs are available in Mplus, the LO-Mendel-Rubin adjusted LRT, the Vuong-Lo-Mendel-Rubin LRT, and the parametric bootstrapped LRT. The results of the three LRTs are often comparable. The final criterion was the usefulness of the classes based on theoretical and/or practical considerations. The first three criteria may suggest a 4-class solution; however, if one of these classes contained a very small group with a mean that would not deviate significantly from one of the other three classes, a 3-class solution would be chosen, consistent with our theoretical expectations. After making a decision concerning the number of groups of adolescents with psychopathic traits, the Wald chi-square test of mean equality of potential latent class predictors (Asparouhouv & Muthén, 2007) was performed, followed by post hoc tests, to test group differences in problem behavior, delinquent behavior, and substance use. With this test, the probabilistic nature of class membership is taken into account, leading to more unbiased mean estimates and their standard errors.
Chapter 3

Results

Confirmatory Factor Analysis (CFA)

To verify the original factor model of Andershed et al. (2001), dishonest charm, lying, grandiosity, and manipulation subscales were included to describe the first factor called grandiose/manipulative. Remorselessness, unemotionality, and callousness subscales were included to describe the second factor denoted as callous/unemotional. Thrill seeking, impulsiveness, and irresponsibility subscales were included to describe the third factor defined as impulsive/irresponsible. CFA revealed that the 10 subscales adequately fitted the three-factor model, \( \chi^2(32, N = 214) = 103.34, p < 0.001, \text{CFI} = .91, \text{RMSEA} = .10 \). However, the failure of the RMSEA to reach the usual cut-off must be viewed within the context of the CFA criteria possibly being overly restrictive. In line with Marsh et al. (2009) who noted that the usual cut-off scores of fit measures in CFA can be too restrictive as a consequence of constraining cross loadings to zero, we considered RSMEA-values of .10 acceptable. We conclude that the 10 subscales fit the three-factor model moderately well. Moreover, other studies (Andershed et al., 2001; Hillege et al., 2010; Van Baardewijk et al., 2008) also used this three-factor model. The factor loadings of the 10 subscales varied between .41 and .91 (see Figure 1). The internal consistencies of the three factors were .90, .78, and .86, respectively1.

Correlations between YPI factors and the dependent variables

Sex differences indicated that the correlation between the grandiose/manipulative and the impulsive/irresponsible factor and internalizing problems were significantly higher for girls than for boys. For boys, however, the correlation between the callous/unemotional factor and externalizing problem behavior was higher than for girls. Also, both the grandiose/manipulative and the callous/unemotional factor were higher correlated with drug use for boys than for girls (see Table 2).

Table 2
Pearson correlations between the YPI factors, problem behavior, delinquent behavior and drug use

<table>
<thead>
<tr>
<th>YPI factors</th>
<th>INT</th>
<th>EXT</th>
<th>Vandalism</th>
<th>Property offences</th>
<th>Violent offences</th>
<th>Use of hard drug</th>
<th>Use of soft drug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys (n=113)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grandiose/manipulative</td>
<td>.01</td>
<td>.58**</td>
<td>.37**</td>
<td>.39**</td>
<td>.47**</td>
<td>.13</td>
<td>.42**</td>
</tr>
<tr>
<td>Callous/unemotional</td>
<td>-.05</td>
<td>.53**</td>
<td>.33**</td>
<td>.31**</td>
<td>.46**</td>
<td>.06</td>
<td>.35**</td>
</tr>
<tr>
<td>Impulsive/irresponsible</td>
<td>.24*</td>
<td>.78**</td>
<td>.57**</td>
<td>.54**</td>
<td>.54**</td>
<td>.32**</td>
<td>.45**</td>
</tr>
<tr>
<td>Girls (n=101)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grandiose/manipulative</td>
<td>.44**</td>
<td>.60**</td>
<td>.31**</td>
<td>.39**</td>
<td>.37**</td>
<td>.10</td>
<td>.09</td>
</tr>
<tr>
<td>Callous/unemotional</td>
<td>.04</td>
<td>.22*</td>
<td>.24*</td>
<td>.12</td>
<td>.16</td>
<td>.22*</td>
<td>.01</td>
</tr>
<tr>
<td>Impulsive/irresponsible</td>
<td>.50**</td>
<td>.74**</td>
<td>.46**</td>
<td>.46**</td>
<td>.57**</td>
<td>.23**</td>
<td>.35**</td>
</tr>
</tbody>
</table>

Note. INT = internalizing problems. EXT = externalizing problems. correlations that are bold were significantly different by sex. **p < .01, *p < .05.

1Sex was also included as a predictor of the latent variables in a so called MIMIC-model (Jöreskog & Goldberger, 1975). Sex differences were only found for the callous/unemotional factor. The callousness indicator, on which boys scored higher compared to girls, seemed to influence the correlation. Is has to be kept in mind, however, that the sample size of the groups of boys and girls was rather small (girls n = 101 and boys n = 113); therefore, the results for boys and girls are not presented separately.
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Figure 1
Factor loadings and correlations between the subscales and the latent constructs of the YPI

Latent Class Analyses (LCA)
The three factor scores were entered into the LCA. Five models were estimated specifying the number of latent classes between one and five. The BIC-values were successively 1845 (1 class), 1723 (2 classes), 1678 (3 classes), 1671 (4 classes) and 1677 (5 classes). The biggest drop in BIC-value was from a one-class model to a two-class model (122) and from a two-class model to a three-class model (45). The drop from a three-class model to a four-class model was minor (7). A five-class model showed an increase (6). These results suggested that a three-class model or a four-class model were candidates for the final solution. The LRT indicated that a five-class model was not significantly better than a four-class model (p > .05). A four-class model was significantly better than a three-class model (p < .001), suggesting that a four-class model would be better than a three-class model. The classification quality of both models was good with posterior probabilities varying from .87 to .97 for the three-class solution and from .89 to .96 for the four-class solution. To make a final decision, we compared both models. The three-class model included one group of 110 adolescents with mean z-scores (using z-scores the mean is zero) of -.69, -.41, and -.65 on grandiose/manipulative, callous/unemotional, and impulsive/irresponsible dimensions respectively, one group of 82 adolescents with mean z-scores of .36, .32, and .64 on the same dimensions, and another group of 22 adolescents with mean z-scores of 2.11, .91, and 1.05 on the same dimensions. The four-class model included one group of 109 adolescents with mean
z-scores of -.69, -.43 and -.68 on the grandiose/manipulative, callous/unemotional, and impulsive/irresponsible dimensions respectively, one group of 76 adolescents with mean z-scores of .30, .35 and .64, one group of 22 adolescents with mean z-scores of 1.92, .26 and .70 and a final group of 6 adolescents with mean z-scores of 2.30, 2.67 and 1.97. Because the latter group was small, we decided to accept the three-class solution (see Figure 2).

Figure 2
Three Subgroups of Adolescents with Psychopathic Traits (N = 214)

Considering the characteristics of these three subgroups, it seems that one subgroup in our sample scored low on all three dimensions measuring psychopathic traits. Another group had moderate to average scores on the first two dimensions but relatively high scores on the impulsive/irresponsible dimension. Lastly, the third subgroup scored high on all three dimensions of psychopathic traits. We label these three groups, in accordance with Andershed et al. (2001), as a relatively normal group, an impulsive, non-psychopathic-like group, and a psychopathy-like group, respectively.

Problem behavior
Scores on the Youth Self Report (YSR) for the three psychopathy-like groups are presented in Table 3. For externalizing problem behavior it was found that the psychopathy-like group and the impulsive, non-psychopathic-like group differed from the normal group. The psychopathy-like and the impulsive, non-psychopathic-like group scored significantly higher on externalizing behavior compared to the normal group. The psychopathy-like group did not differ on internalizing behavior problems compared to the normal and the impulsive, non-psychopathic like group. However, the impulsive, non-psychopathic-like group showed higher scores on internalizing problems than the normal group (see Table 3).

Delinquent behavior
The normal group showed significantly less vandalism compared to the impulsive, non-psychopathic
and psychopathy-like group. The impulsive, non-psychopathic-like group did not show less vandalism than the psychopathy-like group. Concerning property offences, the normal group showed less property offences compared to the impulsive, non-psychopathic and psychopathy-like group. The impulsive, non-psychopathic-like group scored lower than the psychopathy-like group. Looking at violent offences, the normal group committed fewer violent offences compared to the impulsive, non-psychopathic and psychopathy-like group. Again, the impulsive, non-psychopathic-like group reported fewer violent offences compared to the psychopathy-like group (see Table 3).

Substance use
With respect to substance use, the impulsive, non-psychopathic-like group and the psychopathy-like group used soft drugs more often compared to the normal group. No differences were found between the impulsive and psychopathy-like groups. Concerning the use of hard drugs, no statistical differences were found between the three subgroups (see Table 3).

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Group differences on problem behavior, delinquency and drug use (N = 214)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal</td>
</tr>
<tr>
<td>Problem behavior</td>
<td></td>
</tr>
<tr>
<td>Internalizing behavior</td>
<td>10.32$^a$</td>
</tr>
<tr>
<td>Externalizing behavior</td>
<td>9.94$^a$</td>
</tr>
<tr>
<td>Delinquent behavior</td>
<td></td>
</tr>
<tr>
<td>Vandalism</td>
<td>.92$^a$</td>
</tr>
<tr>
<td>Property offences</td>
<td>.55$^a$</td>
</tr>
<tr>
<td>Violent offences</td>
<td>.47$^a$</td>
</tr>
<tr>
<td>Drug use</td>
<td></td>
</tr>
<tr>
<td>Soft drugs</td>
<td>3.09$^a$</td>
</tr>
<tr>
<td>Hard drugs</td>
<td>1.15</td>
</tr>
</tbody>
</table>

Note. Means with the different superscripts are significantly different from each other.

Discussion
The present study examined the presence of psychopathic traits within a residential sample of adolescents and their relationship with problem behavior. Confirmatory Factor Analyses (CFA) showed that the variance of the YPI subscales could be explained by the three latent constructs, the grandiose/manipulative dimension (interpersonal), the callous/unemotional dimension (affective), and the impulsive/irresponsible dimension (behavioral), replicating the findings of Andershed et al. (2002). Poythress et al. (2006) also partly confirmed this finding. These authors found a satisfactory fit when the subscale lying was excluded and when the error terms for callousness and thrill seeking with unemotionality were correlated.

As hypothesized, three meaningful subgroups within the psychopathic personality could be distinguished. One subgroup of adolescents scored low on all three dimensions (normal group), one subgroup had moderate scores on the first two dimensions and relatively higher scores on the impulsive/
irresponsible dimension (impulsive, non-psychopathic-like group), and the third subgroup scored high on all three dimensions (psychopathy-like group).

In the next step, statistical differences between the three subgroups on problem behavior were tested, more specifically on internalizing behavior, externalizing behavior, delinquency, and drug use. Our findings showed, as expected, that the normal group showed significant lower levels of problem behavior compared to the impulsive, non-psychopathic-like group and the psychopathy-like group. No differences between the impulsive, non-psychopathic-like and psychopathy-like group were found for externalizing and internalizing problem behavior.

As said earlier, an indirect relationship might be expected because internalizing problems are associated with externalizing problems, which have been found to be related to psychopathic traits. This suggests a correlation between internalizing problems and the behavioral factor of psychopathy. For boys the results indeed revealed a significant correlation between the behavioral factor and internalizing problems and not between the affective and interpersonal factors of psychopathy and internalizing problems. For girls, there was a significant correlation between the behavioral as well as the interpersonal factor of psychopathy and internalizing problems and no significant correlation between the affective factor and internalizing behavior problems. For boys only, these findings suggest that the link between psychopathic traits and internalizing problems is mediated by externalizing problems. For girls this indirect link is partially confirmed. However, these findings are not consistent with the findings of Sevecke et al. (2009b), who found an association between the affective factor and internalizing problems for boys. Possible explanations for this difference in results between the current study and the study of Sevecke et al. (2009b) can be found in the different samples; Sevecke et al. (2009b) included incarcerated adolescents, while the current study included adolescents admitted to residential care because they needed protection against themselves or their environment. It is also likely that the comorbidity rate between internalizing and externalizing problems in the current study (67%) is higher than that in the Sevecke study of offenders. In this study we did not have longitudinal data and therefore our data did not allow the test of mediation. Further research should use longitudinal data to test a mediation model.

Other explanations for the different findings between Sevecke et al (2009b) and the current study might include the different instruments used to measure psychopathic traits. Sevecke et al. (2009b) used the PCL: YV to measure psychopathic traits, while in this study the YPI was used. Based on previous studies showing only low to moderate correlations between the YPI and the PCL:YV, it is obvious that these two instruments do not measure exactly the same concept. Also the mean ages of the samples differed; the mean age of the sample used by Sevecke et al. (2009b) was 17.73 years of age for boys and 17.76 years of age for girls, while the mean age of the current study was 15.74 for boys and 15.78 for girls. Further research is needed to obtain a better insight into the associations between psychopathy and externalizing and internalizing problems, and possible moderation of these associations by age and sex.

Concerning delinquent behavior, our study found that the psychopathy-like group showed the highest levels of property and violent offences. Andershed et al. (2001) also found the highest delinquency rates among male adolescents scoring high on psychopathic traits. Furthermore, in the present study, both the impulsive, non-psychopathic-like and psychopathy-like group showed higher scores on drugs use compared to the normal group. Overall, our study showed that the psychopathy-like
group did not substantially differ from the impulsive, non-psychopathic-like group. It is sometimes suggested that individuals with psychopathic personality traits consist of two groups that can be differentiated based on genetic and environmental influences (Skeem, Kerr, Johansson, Andershed, & Louden, 2007). The ‘primary psychopaths’ have a genetic basis for their psychopathy while the ‘secondary psychopaths’ have an environmental basis. This distinction is based on the extent of anxiety, in which the primary psychopaths experience lower anxiety compared to the secondary psychopath. These authors also found that secondary psychopaths appeared to show behavior that is more withdrawn and emotionally more unstable compared to a non-psychopathic, violent control group. Based on this theory about subgroups of psychopaths, Wareham, Dembo, Poythress, Childs, and Schmeidler (2009) examined subgroups of youth with psychopathic traits including indicators of anxiety. They found four subtypes, of which two types differed in the extent of anxiety, low versus high. The first subgroup is called the impulsive, non-psychopathic like group and the second group is called the impulsive-anxious group. The other two groups (the non-psychopathic group and the psychopath-like group) showed low levels of anxiety. Wareham et al. (2009) concluded that the psychopathy-like group reflects the primary psychopaths. Concerning the secondary psychopaths, they stated that it is more difficult to conclude which group they can be compared to, but individuals classified into the impulsive classes seem to have some characteristics of the secondary psychopaths. Looking at the indirect link between internalizing problems and psychopathic traits and the differences found between the study of Sevecke et al. (2009b) and our study, it might be possible that our sample reflect the secondary psychopaths showing especially reactive aggression and the study of Sevecke et al. reflect the primary psychopaths showing proactive aggression.

The strong association between psychopathic traits and externalizing behavior provides a solid foundation for future research and contributes to the existing literature (Forsman, Larsson, Andershed, & Lichtenstein, 2007; Hart & Hare, 1997; Lynam & Gudonis, 2005). Our findings suggest that youth with psychopathic traits and youths showing impulsive behavior do not differ on externalizing problems. Consistent with the literature (e.g., Douglas et al., 2006; Forth et al., 2003; Hillege et al., 2010; Poythress et al., 2006), especially the impulsive/irresponsible dimension of psychopathy showed the strongest correlations with all measured problem behavior (internalizing, externalizing, substance use and delinquent behavior), which might explain the few differences found between both subgroups. This is also consistent with prior studies (Abramowitz et al., 2004; Colledge & Blair, 2001; Mathias et al., 2007; Sevecke et al., 2009b), who found that externalizing problems are strongly related to the antisocial and behavioral dimensions of psychopathy. This suggests that the differences between the two groups are based on the interpersonal and affective dimensions of psychopathy. The support for the association between internalizing behavior and psychopathic traits is less straightforward. Prior studies (e.g. Brandt et al., 1997; Frick et al., 1999; Lambert et al., 2001; Lynam, 1997; Poythress et al., 2006; Salekin et al., 2004) reported contradictory findings. Frick et al. (1999) stated that utilizing different measures or different concepts of a psychopathic personality (a single dimension versus separate dimensions) to test the relationships could explain the mixed findings in the literature.

Limitations
One of the shortcomings of the current study is that exclusively self-reports were used to examine psychopathic traits. Although self-reports can be seen as valid and reliable measures (Loeber,
Stouthamer-Loeber, Van Kammen, & Farrington, 1989), and some even say that they give a better insight into the subjective aspects of psychopathic traits (Andershed et al., 2002), still the risk of underreporting as a consequence of vulnerability to social desirability is present. Another shortcoming is that only 65% of the adolescents entering one of the participating institutions participated in the current study. The number and nature of the identified latent classes are specific to the sample used. Still, there were no indications that the drop out was not at random because the populations of the participating institutions did not differ from each other according to the later data assessments.

**Implications**

To our knowledge, most studies using the YPI to examine psychopathic traits are conducted on samples of male offenders, or normative samples. Our study extends these studies and overcomes this eminent shortcoming in this area of research by including males and females admitted to compulsory residential treatment. The findings of this study are consistent with previous findings, supporting the existence of the same three subgroups among different populations. Being able to distinguish subgroups within a residential sample showing severe problem behavior is important for prevention as well as intervention. Some scholars state that adolescents may benefit more from treatment because of their young age (Forth & Burke, 1998). Our findings imply that the main treatment goals should be different based on the psychopathic traits of adolescents. For this reason, it is pivotal that further research includes follow-up data. One of the main questions then has to be whether the psychopathy-like group shows more negative outcomes in other areas, for example, living situation, school/work, contacts with the family, and behavior problems. Further research should also link core elements of this treatment to follow-up data as well as psychopathic traits. This would give more insight into the role of psychopathic traits as a moderator of treatment.
APPENDIX I

Adolescent psychopathic subgroups and official police contacts
**INTRODUCTION**

The aim of the study described in Chapter 3 was to examine whether subgroups of adolescents could be distinguished based on their psychopathic traits. Consistent with Andershed, Kerr, Stattin, and Levander (2001), our results indeed identified three subgroups, 1) a normal, 2) a non-psychopathic impulsive, and 3) a psychopathy-like subgroup. Based on a self-report measure, the psychopathy-like group revealed the highest level of property and violent offending. The goal of this appendix is to show findings regarding the relationship between the same three psychopathic subgroups and official police data. There is a 72% overlap in the adolescents included in the chapter and described here, in that the same adolescents participated in both studies. The difference between the samples can be explained by the fact that some adolescents were unknown in the official police systems and were subsequently excluded from the present analyses. Second, for some adolescents, data regarding psychopathic traits were not available in the prior study because the data collection was not finished at the time of the prior study. Identical analyses were used to assess the adolescents participating in the present study and distinguish the three psychopathic subgroups. The frequency of official police contacts was evaluated before and after the treatment for the duration of data collection (see Chapter 1). Combining the frequency of official police contacts of the adolescents with the three psychopathic subgroups resulted in groups that might have been too small to analyze reliably with respect to official police contacts. To still provide this information, we decided to include this appendix concerning the association between the three psychopathic subgroups and official offending.

**METHOD**

**Participants**

At the time of admittance to the new compulsory residential treatment program, all adolescents entering between May 2007 and December 2008 were asked to complete a questionnaire, receiving 5 euros as an incentive for the completion. Of all 339 participants, 226 (67%) finally completed the questionnaire. Of the other participants, 32% did not complete the questionnaire due to a lack of organizational structure, 9% refused to participate, and 3% of participants did not complete the survey because their parent(s) did not allow them to participate. Full confidentiality was guaranteed.

After receiving approval from the Ministry of Justice, all participants were traced in the official police systems to see whether they had police contacts. When adolescents were unknown to the police systems, we did not automatically assume that they did not have any police contacts. Instead, we checked the adolescent in the population register to check that his or her name was written correctly. Of the 226 adolescents who completed the questionnaires, 217 (96%) could be traced in the police systems and the population register. Of the 217 eligible participants, 53% were male. The mean age was 15.67 (SD = 1.24). The mean duration of treatment was 9.81 months (SD = 4.21).

**Measures**

YOUTH PSYCHOPATHIC TRAITS INVENTORY. The Dutch version of the Youth Psychopathic traits Inventory (YPI) was used to measure psychopathic traits of the adolescents (Andershed et al., 2001; Das & De Ruijter, 2002). The YPI is a self-report measure consisting of 50 items measured on a 4-point Likert
scale ranging from 1 (does not apply at all) to 4 (applies very well). These 50 items measure ten core 
traits of a psychopathic personality. Each of the 10 subscales consists of five items. The subscales are 
designed to reflect three dimensions: (1) a grandiose/manipulative dimension, (2) a callous/emotional 
dimension, and (3) an impulsive/irresponsible dimension. Cronbach’s alphas for the three dimensions 
were .90, .61, and .86 respectively.

OFFICIAL POLICE RECORDS. Two national police systems (HKS and Blue View) were used to retrieve 
data concerning the frequency of the adolescents’ official offending. The frequency of offending was 
divided into the frequency of offending the year before admittance to the new treatment program and 
the frequency of offending within one year after discharge.

RESULTS

Of all 217 adolescents, the findings indicated that the “normal” group comprised 117 adolescents 
(53.9%), the impulsive non-psychopathic group comprised 80 (36.9%) adolescents, and the psychopathy­like group comprised 20 (9.2%) adolescents. Based on the official police contacts, 47.5% of participants 
committed at least one offence before the treatment and 23.5% of participants committed at least 
one offence after the treatment. Table 1 shows the means and standard deviations of the frequency 
of official offending for all three psychopathic subgroups. It appeared that the three psychopathic 
subgroups did not differ in the frequency of offending both before treatment (F(2,214) = .75, p = .47) 
and after treatment (F(2, 214) = .04, p = .96). Paired sample t-tests examined offending over time, 
indicating that the frequency of offending decreased significantly for all three subgroups. Univariate 
analysis of covariance (ANCOVA) revealed no significant differences between the three psychopathic 
subgroups concerning the frequency (F(2, 103) = .24, p = .09) of offending over time when controlled 
for offending at time T1. Effect sizes were calculated using Cohen’s d, which describes the improvement 
over time. Effect sizes less than .20 are marginal, effect sizes between .20 and .49 indicate small 
effects, effect sizes between .50 and .79 indicate medium effects, and effect sizes of .80 and higher 
indicate large effects (Cohen, 1992). For the frequency of offending, effect sizes ranged from .49 to .82 
(see Table 1). The non-psychopathic impulsive group showed small effects, the normal group showed 
medium effects, and the psychopathy-like group showed high effect sizes. This means that the highest 
 improvement over time was found for the psychopathy-like group.

<table>
<thead>
<tr>
<th>Psychopathic subgroups</th>
<th>n</th>
<th>Offending</th>
<th>Before treatment</th>
<th>After treatment</th>
<th>t-tests</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>117</td>
<td>Frequency</td>
<td>1.51</td>
<td>1.24</td>
<td>4.33**</td>
<td>.51</td>
</tr>
<tr>
<td>Non-psychopathic, impulsive</td>
<td>80</td>
<td>Frequency</td>
<td>1.15</td>
<td>0.93</td>
<td>3.37**</td>
<td>.49</td>
</tr>
<tr>
<td>Psychopathy-like</td>
<td>20</td>
<td>Frequency</td>
<td>1.65</td>
<td>0.75</td>
<td>2.63*</td>
<td>.82</td>
</tr>
</tbody>
</table>

Note. While the paired samples t-test is dependent of the N, Cohen’s d is not. **p < .01, *p < .05.

Criminal subgroups were distinguished based on whether or not the adolescents committed an offence 
before and after treatment. Concerning the delinquent activities of the adolescents over time, 34.6%
appeared to stop their criminal activities after treatment (i.e., ‘desisters’), 10.6% did not commit any crimes before admittance but did after discharge (i.e., ‘starters’). Almost 42% did not commit any crimes before or after treatment (i.e., ‘non-delinquents’) and 12.9% of the sample committed offences both before as well as after treatment (i.e., ‘persisters’). The psychopathic subgroups were distinguished based on the scores on the three dimensions of the YPI (grandiose/manipulative, callous/unemotional, impulsive/irresponsible). ANOVA’s were applied to test whether the four criminal subgroups differed significantly on these three dimensions. No significant differences were found between the four criminal subgroups for the grandiose/manipulative ($F(3, 215) = 1.55, p = .20$) and impulsive/irresponsible ($F(3, 216) = .55, p = .65$) dimension. An overall significant difference was found for the callous/unemotional dimension, $F(3, 215) = 2.71, p = .05$, but post hoc tests did not reveal significant differences between the four subgroups. It seems that sample sizes were too small to detect meaningful (significant) statistical difference.

No differences were found combining the criminal and psychopathic subgroups. Figure 1 shows the distribution of psychopathic subgroups over criminal subgroups, $\chi^2(2, 217) = 7.86, p = .25$.

<table>
<thead>
<tr>
<th>non-delinquents</th>
<th>desisters</th>
<th>starters</th>
<th>persisters</th>
</tr>
</thead>
</table>

**Discussion**

Although the psychopathy-like group showed the highest self-reported property and violent offending before treatment, the psychopathy-like group did not differ from two other subgroups concerning the frequency of official police contacts before treatment. A possible explanation is that adolescents scoring high on psychopathic traits are also more intelligent (e.g., Cleckley, 1976; Salekin, Naumann, Leistico, & Zalot, 2004) and therefore might be less likely to be caught by the police, even when they commit more criminal acts compared to the average adolescent. Another explanation might be that the psychopathy-like group overestimated their offending in the self-reports.

The psychopathic subgroups did not differ from the other two subgroups in frequency of police contacts at time of entrance to the residential treatment program, and they did not show a more or
less decrease in offending over time (before and after treatment). The same results were found before and after treatment when comparing four criminal subgroups on offending frequency. Contrary to our expectations, the psychopathic subgroups were almost equally distributed over the criminal subgroups. That all psychopathic subgroups showed an improvement in criminal behavior, i.e., significant decrease in official offending, might have been caused by successful effects of treatment. It is also possible, however, that adolescents scoring high on psychopathic traits have learned more about offending during treatment, and therefore, decreases their chances of being caught, i.e., they become cleverer in not being caught. That the psychopathic subgroups showed the highest improvement can be confirmed by Forth and Burke (1998). They stated that psychopathic adolescents might benefit more from treatment, especially when they successfully complete the treatment (Gretton, McBride, Hare, & O'Shaughnessy, 2000). Overall, the three psychopathic subgroups did not differ in the frequency of offending at the time of entry and over time. Further research including larger samples is needed.
CHAPTER 4

Frequency and seriousness of parental offending and their impact on juvenile offending

Published as:
Abstract

The present study investigated to what extent the frequency and seriousness of parental offending were related to their offspring offending. Police officers in one Dutch province completed a form to register risk factors and the actions undertaken when they came into contact with offenders aged 8 to 14 years. These juveniles were followed for 18 months to establish whether or not they committed more crimes. In addition, the parents of these children were traced in the police criminal record systems. Data were gathered from 577 children and their parents. Of these children, 34% were exposed to parental criminality, of which 33 delinquents had two criminal parents and 163 had one criminal parent. If both parents were criminal, the child had the highest frequency of offending. Further, the frequency of parental offending was positively related to the frequency of the child’s offending. Concerning the seriousness of juvenile crimes, the seriousness of the committed offences of the father showed a positive relation with the seriousness of his child’s offending. Unexpectedly, a negative association was found between the seriousness of maternal offending and the seriousness of her child offending. These results offered a better understanding of the influence that parents with a criminal history have on their children. Further research is needed to identify mechanisms underlying this relationship in order to provide appropriate prevention and intervention strategies.

Introduction

Parental criminality is considered as one of the risk factors behind the development of criminality in children and adolescents. Several studies indicated positive relationships between parental criminality and criminal behaviors of children (e.g., Farrington, 1995; Farrington, 2002; Ferwerda, Jacobs & Beke, 1996), which can be referred to as intergenerational continuity. Some conclude that parental criminality is one of the most important factors within the family environment to predict juvenile delinquency, independent of other risk factors such as drug abuse and low intelligence (Farrington, 2000; Loeber & Stouthamer-Loeber, 1986). Particularly, persistent offenders come from families in which parents exhibit criminal behavior. These parents often have relatively positive attitudes toward criminality, i.e., the criminal behavior of their offspring is not be discouraged by them, or at least is not in conflict with parental norms and values (Gorman-Smith, Tolan, Loeber & Henry, 1998).

Despite knowing that parental criminality is related to the child’s offending, few studies explored the relationships between parental and children’s offending. Therefore, the current study investigates the parental criminal backgrounds of early adolescents and children who are engaged in delinquent activities. Several studies that examined criminal parents as risk factors will be described and also theoretical explanations will be given explaining the relations between parental and children’s delinquency.

Criminal parents as a risk factor

Surprisingly, only few studies explored the familial criminal backgrounds of juvenile offenders. Results of the Cambridge Study (Farrington, 1995), focusing on a sample of 411 South-London boys, revealed that parental criminality is especially a risk factor for children aged 8 to 10. They found that of all boys with a criminal father, 49% already had a police record compared to 18% of the boys without a criminal
father. If both parents were criminal, about 63% of all boys had a police record compared to 41% with one criminal parent. Thus, the higher the level of criminality in a child’s family background, the greater the risk of its criminal behavior. It also appeared that criminal mothers had a stronger influence on girls, and fathers on boys. In addition, Farrington, Jolliffe, Loeber, Stouthamer-Loeber and Kalb (2001) found that similarities in delinquency were stronger for same sex familial relationships than for opposite sex relationships. They investigated the offending concentration in families (including parents, siblings, grandparents, aunts, and uncles) to predict delinquent behavior in a sample of 1395 boys. Arrests, court petitions, and self-reports were used to gain insight into the delinquent activities of boys. They found that 25.1% of the boys with an arrested father were arrested themselves compared to 6.7% of the boys without an arrested father. Court petitions of the boys were primarily predicted by the arrests of fathers and brothers, and reported male delinquency was predicted by the arrests of fathers as well as mothers. They concluded that, despite the fact that arrests of virtually all family members were a risk factor for a boy’s delinquency, arrests of the father constituted the strongest predictor, independent of the arrests of other family members. Similarly, Farrington (2000) concluded that having a criminal father doubled the risk that the son would be convicted as well. Having a criminal father also increased the risk of persistent offending. Finally, having criminal parents affected the type of crimes committed by the child. It appears that sons act more aggressively in committing crimes if they have a criminal father compared to children with a non-criminal father (Baker & Mednick, 1984). McCord (1979) found that children with aggressive parents committed more crimes against persons. But how can the relation between parental offending and offending of the child be explained?

Theoretical background

Research that examines the differences and similarities between criminal behaviors of parents and children is called intergenerational development. The influence of parental criminal behavior on the offending of the child can be explained by different criminological explanations. First, Gottfredson and Hirschi (1990) stated that criminal behavior can be explained by a lack of self-control. Parents, who are not able to recognize, control, and punish deviant behaviors of their children, are very likely to have children with low self-control. Criminal parents often show a lack of self-control themselves, resulting in poor parenting practices, which in turn causes low self-control of their offspring. As a consequence of this low self-control, the child is unable to resist satisfying its needs in the short term, resulting in criminal behavior. Also Laub and Sampson (1988) stated that criminality of parents operates through parenting practices. Criminal parents are more likely to show inadequate parenting styles, including neglectful, harsh, and authoritarian parenting (Farrington, 1995). Harsh (Becker, Stuewig, Herrera, & McCloskey, 2004; Chang, Dodge, Schwartz, & McBride-Chang, 2003) and authoritarian parenting (Bronte-Tinkew, Moore, & Carrano, 2006; Smith & Farrington, 2004), and poor supervision (Beyers, Bates, Pettit, & Dodge, 2003) have been shown to increase the risk of engaging in delinquent activities. Another theory by which the influence parents have on their children can be explained is called the social learning theory (Burgess & Akers, 1966). The social learning theory states that behavior will be learned by interactions with the environment. Behavior will be repeated when it is rewarded or encouraged. Also, imitation plays an important role within this theory. In terms of criminality, from this perspective children will imitate their parents’ behaviors. When a parent shows criminal behavior, the child is likely to imitate this behavior. When this behavior is also encouraged by the parents or not punished, the
child will be more likely to repeat this behavior. Children will learn to believe that offending is not illegal. Third, Shaw (1930) explained that criminal youths are not necessarily different than their non-criminal peers, except that they were influenced by environmental factors, such as unfavourable neighborhoods, single-parent families, and poverty. It appeared that these environmental factors can be predictors of delinquent activities (Juby & Farrington, 2001; Loeber & Farrington, 2000). Parents who experience structural adversity are more likely to show poor parenting practices, which in turn leads to a higher risk for delinquent activities. Fourth, the influence of parental criminality on the criminal career of their children can also be explained by the strain theory (Merton, 1938). Like Shaw, the strain theory states that it is the environment leading to criminality. Strain means that people’s needs and wishes cannot be realized by their opportunities and capacities. Most delinquents come from families with low socioeconomic status. These parents often lack the educational backgrounds and social skills to provide better living circumstances, thereby increasing the risk of criminal activities. Hence, these children often will not have the optimal future perspectives, and are more likely to end up in criminal activities. Criminality is then often seen as the only way to achieve certain goals. These above mentioned theories all give different explanations for the relation between parental criminality and criminal behaviors of their children. In the present study we by and large examined to what extent parents would influence the criminal activities of their children.

The present study
In the Netherlands, little is known about the impacts of the frequency and the seriousness of parental offending on the frequency and seriousness of the offences committed by their children (Van de Rakt, Nieuwbeerta, & De Graaf, 2006). Therefore, the present study examined the influence of having criminal parents on the criminal behavior of children. The research questions were: 1) Is the criminal behavior of the parent related to the criminal behavior of the child, and 2) Do the frequency and seriousness of offending by the parents influence the frequency and seriousness of offending of their children? We hypothesized that a positive relationship exists between criminal parents and the criminal behaviors of their children. We also expected to find correlations between the frequencies and the seriousness of the offences committed by the parents and their offspring.

It is important to note that our study was not a general population study. Our sample existed exclusively of criminal children with their criminal and non-criminal parent(s). But where most other studies included only boys in their sample, we also included girls. Nowadays, girls appear to commit more crimes (Ministry of Justice, 2003). Excluding girls from the sample would not give us a representative sample of children who come in contact with the police. Moreover, we used a younger age group. A new development in criminality is that more and more children have their first police contact under the age of twelve (Ministry of Justice, 2003). According to Moffitt’s theory, these children are called the life course persistent delinquents, who have a higher risk to show long and serious criminal careers. A last strength of our study is that the data were collected from the police registration system, by which we avoided the well-known drawback of using self reports (Maxfield, Weiler & Widom, 2000; Myers, Smarsh, Amlund-Hagen & Kennon, 1999). The main drawback of self-reports on delinquency is social desirability. It appeared that especially females with a registration in the police system are less likely to report about their arrests (Maxfield, Weiler & Widom, 2000).
Method

Procedure
Data for the present study were collected as part of a study on the effects of risk factors on future delinquent behaviors of young offenders. In the period April 2003 to January 2005 police officers in the province of Gelderland filled out a form every time they came in contact with children aged 8 to 14, who were suspected of having committed a crime. All children who had contact with the police during this period in this area were involved in the present study. The form allows police officers to record risk factors of the child and the actions taken by them after the crime, as well as the child’s home address, sex, living situation, and any earlier police contacts. Each time the form was completed, any prior arrests of that juvenile were traced in the regional police system. Each offender was followed for 18 months to establish whether (or not) more crimes were committed. It is important to emphasize that the participants did not know that they participated in this study, which made using self-reports difficult. The Ministry of Justice as well as the regional police department gave permission to look into the police records of both children and parents. Before they gave permission, the background of the first author was checked by the internal intelligence service. The first author also had to sign an agreement of confidentiality.

A total of 738 children for whom such a form was filled out represented the participants in this study. The addresses of the children were used to track the criminal behaviors of their parents. Information on parents could be found for 577 children. For the remaining 161 no information was found for reasons such as: the child/family had moved away, the family was not legally registered, the child lived in a psychiatric setting, or more than two adults were registered at the same address. These 161 children were excluded from further analyses. Then, to check for possible parental criminality, we were allowed to search out the national police registration system. This system records the dates and types of crimes, thus enabling us to retrieve the total frequency and seriousness of the crimes committed by parents. Depending on the seriousness of the crime its duration was recorded in the registration system. The less serious crimes were removed from the system if the person did not have any contacts with the police during the last five years. The more serious crimes were kept in the system for a longer period, depending on the seriousness of the crimes. We included all registered crimes committed by parents, which means that possibly less serious crimes had been removed already from the system.

Participants
Of the 577 children whose parents could be retrieved from the system, 79.9% were male and 20.1% were female. The mean age on which the children started to commit crimes was 12.51 (SD = 2.01). Of these children, 126 fathers had committed one or more crimes and 306 had no criminal record. Of the mothers, 103 showed criminal behavior and 446 did not. Most of the children (60.5%) were living with both parents, others were living with the mother only (25.3%), with the father only (4.3%), with the mother and stepfather (5.9%), with the father and stepmother (2.4%), with another family member (0.5%), in a psychiatric setting/home (0.2%), and in a foster home (0.7%). For 0.2% of the children the living situation was unknown. Most of the parents committed crimes (57.3%) after the birth of their child. Of the 568 children still living with their parent(s), 38.6% lived in broken families of which the
biological fathers were absent (82.2%).

Measures

PARENTAL OFFENDING. The national police system was used to retrieve data on the frequency and seriousness of the offences committed by the parents. We coded each committed offense as (1) less serious, (2) moderately serious, and (3) serious, such that for all committed crimes a mean score on seriousness could be calculated. This classification was based on research from the Scientific Research Documentation Centre in the Netherlands (Wartna, Blom & Tollenaar, 2004). More specifically, the crimes were coded based on the opinions of two great experts in this field. Both are highly qualified police officers that have been experts on criminality for many years. If children come in contact with the police, these two decide what the consequences will be. They have to make these decisions every day, based on the type and seriousness of the committed crimes, and have proven their expertise when classifying crimes. To allow comparison, two experts were chosen to categorize the crimes. Although some crimes were categorized differently, most crimes were in agreement (75%). The crimes categorized differently by the experts were discussed again and only if they reached total agreement they were categorized. A list of all categorized offences can be obtained from the first author. Examples of less serious crimes committed by parents were: ‘driving while intoxicated’, ‘perjury’, and ‘handling stolen goods’. Moderately serious offences were, for example, ‘swindle’, ‘theft’, and ‘burglary’. Examples of serious offences were: ‘manslaughter’, ‘rape’, and ‘grievous bodily harm’. A list of all offences divided into the three categories can be obtained from the first author. When both parents of a child were criminal, the mean number of committed crimes and the mean seriousness score of the crimes were calculated.

OFFENDING OF THE CHILDREN. The children in this study were followed in the regional police system for 18 months after the form had been completed by the police officer. In addition, any earlier offences of the child were also retrieved from this system. This provides full insight into all crimes committed by one child during a period of at least 18 months, including age of onset and types of committed offences. Similar to their parents, the offences of the children were also coded as less serious, moderately serious, or serious, and a mean score for seriousness was calculated. When categorizing the crimes, the age of the children (between 8 and 14) was taken into account. The percentage of agreement between both experts was 80%. Examples of less serious crimes committed by children were ‘graffiti’, ‘causing inconvenience to person(s) by firework’ and ‘vandalism’. Examples of moderately serious offences were ‘stealing from school’, ‘stealing from car’ and ‘swindle’. Examples of serious offences were ‘rape’, ‘violence causing injury with or without a weapon’ and ‘robbery’.

Statistical analyses

The analyses reported here are based on a sample of 577 children (aged 8 to 14), whose parents were traced in the national police system to establish whether or not they had been engaged in criminal activities. We applied t-tests to examine differences in the frequencies of offences between children with a criminal father or mother and children with a non-criminal father or mother. To examine differences between children with one, two or no criminal parents, an ANOVA was conducted. The relations between the frequencies of the father’s offences and the frequencies of the mother’s offences were calculated with Pearson correlations.
To examine how the frequency and seriousness of the child's offences were associated with the number and seriousness of the father and mother's offences, structural equation modelling (SEM) was performed using the program Amos 5 (Arbuckle, 2003). SEM was used, since we had two dependent variables (frequency and seriousness of offending of the children) that we had to test in one model (to control for the covariation between these variables) and SEM gives the opportunity to test models with multiple dependent variables. The other advantage was the statistical control for associations between independent variables, and the opportunity to look at specific links, for instance, maternal seriousness of delinquency and child seriousness, while controlling for the link with this variable and the other dependent variable (child frequency of delinquency). The chi-square and the p-value were calculated; however, the chi-square and p-value rely on the sample size of the study (Kaplan, 2000). Since the present study has a large sample (N = 577), the chi-square and accompanying p-value are not reliable enough to use for interpretation of goodness of fit. Therefore, the goodness of fit of the model was also assessed using the Comparative Fit Index (CFI: Bentler, 1989), and the Root Mean Square Error of Approximation (RMSEA: Steiger, 1990). Concerning the CFI, values above .90 suggest an acceptable fit and values above .95 indicate an excellent fit to the data. RMSEA values below .08 suggest an acceptable fit between the model and the data, and values below .05 indicate a good fit.

We estimated four models using SEM that specified the hypothesized associations between the father or the mother's criminal backgrounds and the child's offences. Two figures illustrate these four models, in which each figure includes information on both males and females. Figure 2 illustrates one model based on a sample of criminal and non-criminal fathers (n = 432) and the other model based on a sample of criminal and non-criminal mothers (n = 549). Figure 3 also illustrates one model for fathers and one model for mothers. In this figure the non-criminal fathers and mothers were excluded from the analyses, yielding subsamples of criminal fathers (n = 126) and criminal mothers (n = 103). Separate analyses for parents with a criminal history were conducted, since it is possible that the sample of parents who are offenders are more likely to have children who are offenders as well. In the models two control variables, sex and age of onset, were included. Sex was included, for boys, on average, commit more crimes compared to girls (Hay, 2003; Junger-Tas, Ribeaud & Cruyff, 2007; Piquero & Chung, 2001). Parents often respond more harshly to males than to females, which will increase the risks for boys of being engaged in criminal activities (Hay, 2003). It also appears that as a reaction on stress within the family, boys more often experience anger, while girls experience feelings of guilt. Anger can be seen as a predictor of delinquency (Hay, 2003). Another reason that can explain the sex gap concerning delinquency is that social control seems to be higher for girls than for boys (Junger-Tas, Ribeaud & Cruyff, 2007). Also, age of onset appears to influence criminal behavior. The younger the child at his first police contact, the higher the risk of a longer, serious criminal career (Kruize & Gruter, 2003; Moffitt, 1993; Van Dam, 2004) and the more opportunities this child has for offending.

All direct paths between the independent variables (frequency of father's/mother's offences, mean seriousness of father's/mother's offences, sex and age of onset of the child's criminal behavior) and dependent variables (frequency and seriousness of the child's offences) were estimated (see Figure 1).
Results

Descriptive analyses
The number of children with two criminal parents was 33, while 163 children had one criminal parent, and 381 children had parents who showed no criminal activities. In 91.1% of the cases the biological father was involved, in 8.0% a stepfather, and 1.0% a foster father. Concerning criminal mothers, 97.1% was the biological mother, 1.0% stepmother, and 1.0% an aunt. All the children in our sample had committed one or more offences, with a mean of 2.92 (SD = 3.68) ranging from 1 to 31. The mean seriousness of the committed offences was 1.53 (SD = .54). After following the children in the police system for at least 18 months, 47.6% can still be considered a first offender and 52.4% can be categorized as persistent offender. The mean number of offences of the persistent offenders was 4.64 (SD = 4.11) with a mean seriousness of 1.57 (SD = .42). A t-test showed that children with a criminal father (M = 4.00, SD = 5.34) committed more crimes compared to children with a non-criminal father (M = 2.16, SD = 1.96) (t(432) = 41.77, p < .001). The same applies to mothers (t(549) = 18.11, p < .001); children with a criminal mother (M = 3.95, SD = 5.26) committed more crimes compared to children with a non-criminal mother (M = 2.59, SD = 2.78).

The criminal parents (n = 229) committed a total of 1824 offences with a mean seriousness of 1.74 (SD = .50) ranging from 1 (less serious) to 3 (serious). Fathers with a history of offending (n = 126) committed on average 9.07 crimes (SD = 15.70), ranging from 1 to 83. The average seriousness of these crimes was 1.68 (SD = .49), mothers (n = 103), on the other hand, committed on average 6.61

Figure 1
Conceptual framework of the relation between parental offending and offending of the child
Chapter 4

offences (SD = 11.32), ranging from 1 to 53. The mean seriousness of these crimes was 1.82 (SD = .52). A cross-tabulation showed a significant positive relation between the frequency of offences of the mother (n = 549) and that of the father (n = 432) ($\chi^2$ (577) = 3695.49, $p < .001$). A Pearson correlation showed significant relations between the frequency of offences of the parents and the frequency of offences of the children ($r = .37$, $p < .01$).

Further, an ANOVA showed that children with two criminal parents committed more offences compared to children with one or no criminal parents ($F(2, 574) = 18.74$, $p < .001$). Post-hoc tests showed that children with two criminal parents ($M = 6.24$, $SD = 8.10$) committed a significantly higher number of crimes compared to children with one criminal parent ($M = 3.06$, $SD = 3.25$) or no criminal parents ($M = 2.53$, $SD = 2.66$). No differences were found between children with one criminal parent and children with non-criminal parents.

Table 1
The correlations between the independent variables and the correlations between the error terms of the dependent variables

<table>
<thead>
<tr>
<th></th>
<th>Model 1&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Model 2&lt;sup&gt;1&lt;/sup&gt;</th>
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<tbody>
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<td></td>
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<td>Mothers</td>
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<tr>
<td>Seriousness parental offending - frequency parental offending</td>
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<td>.48***</td>
</tr>
<tr>
<td>Seriousness parental offending - age of onset of the child</td>
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<td>-.22***</td>
</tr>
<tr>
<td>Frequency parental offending - age of onset of the child</td>
<td>-.34***</td>
<td>-.37***</td>
</tr>
<tr>
<td>Sex child - age of onset of the child</td>
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<td>-.15***</td>
</tr>
<tr>
<td>Seriousness offending child - frequency offending child</td>
<td>.04</td>
<td>.08</td>
</tr>
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<sup>1</sup>Model 1 is based on criminal and non-criminal parents, model 2 is based only on criminal parents.

Structural equation models

Criminal and non-criminal fathers

Figure 2 shows separate models including the frequency and seriousness of offending of criminal as well as non-criminal fathers (n = 432) and mothers (n = 549). The model for fathers provided an excellent fit to the data, as was indicated by the fit indices ($\chi^2(2) = .95$, $p = .62$; CFI was 1.00, RMSEA was .00). The correlations between the independent variables and the correlations between the error terms of the dependent variables are presented in Table 1. The model explained 28% of the variance in the frequency of the child’s offences and 3% in the mean seriousness of the child’s offences. Moreover, a high number of offences of the child were significantly related to a high number of paternal offences, a lower age of onset, and being male. The older age of onset of the child’s criminal behavior and being male were associated with more serious offending.

Criminal and non-criminal mothers

The similar pattern emerged in the model for mothers (n = 549). This model provided a satisfactory fit to the data ($\chi^2(2) = 6.20$, $p < .05$; CFI was .99, RMSEA was .06). Table 1 presents the correlations between the independent variables and the correlations between the error terms of the dependent variables. The model explained 23% of the variance of the number of the child’s offences and 2% of the seriousness of the child’s offences (see Figure 2).
Parental criminality

Figure 2
Structural equation modeling of a sample of children with criminal as well as non-criminal fathers (n = 432) and mothers (n = 549)

Note. The standardized regression coefficients given first are those who pertain to fathers, the coefficients between parentheses pertain to mothers. Sex: 0 = girl, 1 = boy. *p < .05, **p < .01, ***p < .001.

Criminal fathers
Figure 3 shows the models for children with a criminal father (n = 126) and/or a criminal mother (n = 103). The model for criminal fathers provided an excellent fit to the data, as was indicated by the fit indices ($\chi^2(2) = 0.83$, $p = 0.66$; CFI was 1.00, RMSEA was 0.00). Table 1 presents the correlations between the independent variables and the correlations between the error terms of the dependent variables. The model explained 34% of the variance of the frequency of the child’s offences, and 7% of the variance of the mean seriousness of the child’s offences. The high frequency of the child’s offences was significantly related to the frequency of the father’s offences and the lower age of onset. Seriousness of the child’s offences was significantly associated with the seriousness of the father’s offences and the lower age of onset of the child. This implies that the more serious the crimes committed by the child, the more serious the crimes of the fathers, and the younger the age that the child started to commit crimes.

Criminal mothers
The model including data on criminal mothers reveals a different picture (see Figure 3). The model\(^2\) provided an acceptable fit ($\chi^2(3) = 4.57$, $p = 0.21$; CFI was 0.984, RMSEA was 0.07). The correlations between the independent variables and the correlations between the error terms of the dependent variables were significant, indicating a relationship between the variables. The model further explains 24% of the variance of the frequency of the child’s offences, and 5% of the variance of the mean seriousness of the child’s offences. This suggests that the more serious the crimes committed by the child, the more serious the crimes of the mothers, and the younger the age that the child started to commit crimes.

\(^2\)In this model, the near zero association path ‘sex – seriousness of the child’s offences’ was omitted. The fit was acceptable only after omitting this path.
variables are presented in Table 1. This model explained 21% of the variance of the seriousness of the child’s offences and 34% of the variance of the frequency of the child’s offences. This model showed that for children with a criminal mother the frequency of the child’s offences was significantly related to the frequency of the mother’s offences and the lower age of onset. Furthermore, boys were found to conduct more offences than girls. Remarkably, less seriousness of the child’s offences was significantly related to more seriousness of the mother’s offences.

Figure 3
Structural equation modeling of a sample of children with only fathers (n = 126) and mothers (n = 103) with a criminal offense history

Discussion

This study examined the features of parental criminality, more specifically the seriousness and frequency of offending, and their effects on the criminal behaviors of offenders aged between 8 and 14. Of all juvenile delinquents in our sample, 34% had at least one criminal parent, and 17% had two criminal parents. Our results revealed that children who had a criminal father or a criminal mother committed more crimes compared to children who did not have a criminal parent. This finding is consistent with the literature (Farrington, 1995; Farrington, 2000; Farrington et al., 2001). Further, children who lived with two criminal parents showed a significantly higher frequency of offending compared to children with one or no criminal parents. As we assume that factors such as family background, social learning processes, and poor parenting practices can explain the strong links between parental criminality and
PARENTAL CRIMINALITY

child offences, future research should focus on elucidating these mechanisms.

Criminal and non-criminal parents and offending of the child

Confirming our hypothesis, the results showed that the frequency of parental offending is directly related to the child’s offending, even after controlling for the severity of parental offending. From the social learning theory it can be assumed that modelling processes are at work. Farrington (1995) found that criminal parents are antisocial models for their children, in which aggression and/or antisocial attitudes are central elements. As a consequence of aggressive communication between parents and children, the children learn to react in an aggressive way to solve interaction problems with others (Deković, Janssens, & Van As, 2001). According to Crick and Dodge (1994), children’s mental structures (e.g., ‘working models’) are based on experiences of relationships with others and influence the way in which they encode, interpret and respond to social situations. Moreover, when a child is exposed to an ambiguous situation, the response of this child depends on how it sees others based on its mental structure, and whether it is aware of the motivations of the behavior that is showed (Dodge & Rabiner, 2004). Thus, if a child views others acting in a hostile manner and it misinterprets the motivations behind the behavior, it is more likely to react in an aggressive way. Consequently, because of their aggressive ways of problem solving, these children are often rejected by their peers, and are attracted to other aggressive children (Van Lieshout, Scholte, Haselager, & Cillessen, 2001). The child gradually becomes more involved in a life consisting of criminal activities. But how is this related to the frequency of offending? From the social learning theory it can be assumed that the more criminal the parents are, the more the life of the family is being influenced by criminality. If children are in an environment in which criminality plays an important role every day, it is more likely that the ‘working models’ of these children are characterized by criminality. The same conclusion can be drawn by the control theory. If both parents are criminal and commit crimes with a high frequency, the lives of their children will be more characterized by criminality. This may result in a lower self-control of the child, making it harder to resist criminal intentions. Criminal parents are also more likely to have weak social bonds and often live in bad neighborhoods, where the temptations to show criminal behavior are more present. Having more opportunities to commit crimes may result in a higher frequency of offending by both parents and children. Thereby, living in these neighborhoods is related to fewer opportunities of better living circumstances in the future. More studies are needed to examine these underlying mechanisms.

We also found that being male and having a lower age of onset are related to more frequent offending of the child, which confirms the studies by Alltucker, Bullis, Close and Yovanoff (2006) and Piquero and Chung (2001). In the study of Alltucker et al. (2006) it appeared that a child with a criminal family member was two times more likely to be an early starter than a child without a criminal family member. The earlier the child starts to show criminal behavior, the more likely he will become a serious criminal, committing crimes with a high frequency (Moffitt, 1993). To spot children who are more likely to become serious offenders will help practice and policy to prevent children from beginning a long criminal career.

Criminal parents and offending of the child

Although, within the model, the frequency of parental offending is a stronger predictor than the seriousness of parental offences, by analyzing the model for the children including only criminal fathers
and/or mothers, significant relations were found between the seriousness of offending of the child and the seriousness of offending of both parents. For fathers the relationship was positive, which means that the more serious the crimes committed by the child, the more serious the crimes were the father had committed. While the mother’s influence on criminal behavior seems to run through internal processes (e.g., fail to provide warmth and love), the father’s influence seems to run through external processes (e.g., stress at work or being unemployed) and a harsh, negative parenting style (Thornberry, 2005). Children, who experience harsh, negative parenting, are more likely to develop oppositional and aggressive behaviors and to commit more serious crimes.

Concerning mothers, the more serious the crimes of the mother, the less serious the crimes of the child. This is an unexpected result and in contrast to our hypothesis. A possible explanation can be that criminal mothers who commit serious crimes are more likely to be imprisoned, which separates the children from their (generally) primary caregiver. The Child Welfare League of America (2005) reported that in their study, after the imprisonment of the mother, the grandmother raised most children (55%), 20% went to the father, and the remainder went, for example, to a family friend or foster home. The adjustments to a new care-giving environment may be minimal, since the child already knew the person(s) it has to live with when the mother was incarcerated and may have a more positive relationship with the new primary caregiver. Moreover, Hairston (2003) suggests that the absence of an incarcerated person could prove beneficial, as before the imprisonment the family relationships and living circumstances were less optimal; this change of environment might lead to improved quality of care that might even prevent juvenile delinquency. Phillips (1996) stated that relative caregivers (by providing a stable environment) could help prevent children from being exposed to chaotic or neglectful living conditions that perpetuate the occurrence of problems later on. Another explanation for the finding that children would commit less serious crimes if the mother showed serious offending, is that another primary caregiver took responsibility for the child because the mother was unable to do so on her own. If this primary caregiver provided the child with a caring and stable environment, it would explain the less serious crimes committed in this group of children (Hanlon, Carswell, & Rose, 2007).

We found no relation between the frequency of parental offending and the seriousness of offending of the child. That the frequency of parental offending is related to the frequency of the child’s offending, may be because parents involved in regular criminality show poorer parenting practices, talk more about their criminal activities in front of their children, expose their offspring to antisocial norms, and condone the criminal activities of their children. In contrast, children of parents with a low frequency of offending are less exposed to the above factors. Parents who more frequently committed crimes appeared to commit less serious crimes. Whereas frequency is related to the amount of time spent on criminal activities, the impact on their child of crimes by parents depends more on the seriousness of the offence. It would be interesting to investigate the underlying mechanisms of the effects of the frequency of parental offending on the frequency of offending of the child.

Contributions of the present study
Most studies that examined the intergenerational development of delinquency investigated whether parents influence their children concerning criminal behavior, less is known about the frequency and seriousness of parental offending related to the offending of the child. We included both boys and girls in our sample and, also, we included a younger age group (8 to 14 years). This is especially interesting
since the crime rates in this age group are growing in the Netherlands. Thereby, less is known about the parental influence the number of crimes and the seriousness of the crimes have. Although it is well established that parental criminality is a risk factor for criminality in their children, it is interesting also to know if the number and seriousness of the crimes of both parents matter. This study adds to a better understanding of the influence parents can have on children between 8 and 14 years.

Limitations
Unfortunately, our data do not allow examining the influence of various background variables, such as timing and duration of parental imprisonment, ethnicity, neighborhood characteristics, socio-economic status, financial income, and sibling delinquency. Some other shortcomings of the study need to be addressed as well. First, all the children in our sample had already committed at least one crime according to the local police records. Therefore, we had no control group of non-criminal children (and their criminal or non-criminal parents) for comparison purposes. It is possible that selection biases play a role. Therefore, caution is warranted when generalising the results. Second, since possible imprisonment of a few parents of our sample was not taken into account some parents may not have been able to commit crimes during certain period(s), which might have artificially lowered the crime rates in the present study. Third, the total sample consisted of 577 children with criminal and non-criminal parents. Dividing this group into one with at least one criminal parent and another with non-criminal parents resulted in smaller sub-samples. It should, however, be stressed that also these sub samples provided sufficient statistical powers to yield significant estimates in structural equation models. A final limitation is that the data were based on official police records only. Obviously, this is also a strength since we avoided social desirability. On the other hand, in this area of study self-reported data – if reliably measured – are considered worthwhile as many offences may go undetected by the authorities. Future research might focus on collecting data based on both police records and self-reports to acquire more complete information on committed offences.

Implications for further research
Despite these limitations, the current study indicates that children with criminal parents are at higher risk to become involved in criminal activities, in which the frequency and seriousness of parental offending play important roles. Therefore, early interventions will be needed for the child and the entire family in order to prevent these vulnerable children from embarking on a criminal career. At this moment, interventions for the family become more important, and the number of interventions is growing (e.g. Multi System Therapy, see Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998; Functional Family Therapy, see Alexander, Pugh, Parsons & Sexton, 2000). This study again points to the importance of treating the entire family and not only the child. Further, more research is necessary to clarify the underlying mechanisms of why frequency and seriousness of parental offending is related to offending of the child.
CHAPTER 5

Friends and adolescents’ delinquency: The moderating role of social preference and reciprocity of friendships

Published as:
The current study examined the role of friends’ delinquency, in terms of violent and property offenses and vandalism. Data were collected among 1,025 adolescents and their best friends in 19 Dutch secondary schools. Concerning violent offenses, cross-sectional analyses showed that adolescents with a high-status friend were more likely to commit violent offenses themselves, whereas adolescents with a low-status friend engaging in vandalism had a greater likelihood of perpetrating vandalism than the adolescents with a high-status friend. Only when the friendship was reciprocal the adolescent’s violent delinquency and vandalism were positively related to the friends’ delinquency. Longitudinally, adolescents with a high-status friend perpetrating vandalism were more likely to engage in vandalism, while those with a low-status vandalistic friend showed a decrease. Finally, having a reciprocal friend who committed property offenses increased the risk of the adolescent committing similar offenses, while adolescents with a unilateral friend showed a decreased risk over time.

Introduction

Adolescence can be seen as a period of great change in which the growing up child experiences important physical, psychological as well as social transformations. One of these profound changes is the increasing interaction with and influence of friends. Friends function as a reference frame to help achieve independence from parents and autonomy and to develop an own identity (Brown, Mounts, Lamborn, & Steinberg, 1993; Finkenauer, Engels, Meeus, & Oosterwegel, 2002). Good bonding with friends also provides emotional support to cope with the transitions that come with adolescence. It is particularly important to fit in with the peer group (Brehm, Kassin, & Fein, 1999) as it are friends that now determine to which group an individual belongs. In the present study the role of friends in early adolescent delinquency is examined.

Delinquency shows an increase during the course of adolescence. More than 50% of Dutch adolescents commit at least one offense, albeit in most cases of a less serious nature. Boys commit more offenses than girls, but the contribution of girls in delinquent acts has increased in the past years (Central Bureau of Statistics (CBS), 2007). According to Moffitt (1993), one of the reasons that youngsters start with delinquent behavior in adolescence is due to a so called ‘maturity gap’, which refers to the phenomenon that youths want to be independent but the environment does not yet allow them to be so. Moffit termed the youths who thus engage in delinquent activities and consequently often show temporary criminal behavior ‘adolescent-limited offenders’. Affiliating with delinquent friends has been found to be one of the strongest risk factors to develop delinquent behaviors in adolescence (e.g., Fergusson & Horwood, 1996; Garnier & Stein, 2002; Haynie, 2001; Haynie & Osgood, 2005; Herrenkohl, Mahuin, Hill, Hawkins, Abbott, & Catalano, 2000). The processes through which friends exert their influence have been characterized as modeling or reinforcement processes (Boivin, Vitaro, & Poulin, 2005). Having friends who display criminal behavior increases the risk to adopt pro-deviant values that are related to their friends’ behavior (Dishion, Patterson, & Griesler, 1994; Garnier & Stein, 2002).

Adolescent delinquency generally comprises three types of misconduct, i.e., property, vandalism and violent offenses (Loeber, et al., 1993). All three types are equally prevalent among boys, while
teenage girls particularly commit property offenses such as theft (Central Bureau of Statistics (CBS), 2007). To our knowledge, most research examining the roles of friends on delinquency has focused on aggression and violence. In adolescence, however, offending is highly versatile (Piquero, Farrington, & Blumstein, 2003; Simon, 1997). Prior research on aggression and the roles of friends showed that adolescents who were aggressive and also had aggressive friends remained aggressive over time. In contrast, aggressive adolescents who had non-aggressive friends showed a decrease in their aggressive behavior, while adolescents low in aggression were not affected by aggressive friends (Adams, Bukowski, & Bagwell, 2005). Feeling rejected and having aggressive friends increased the risk of showing aggressive behavior over time even more (Kupersmidt, Burchinal, & Patterson, 1995). Werner and Crick (2004) found a higher level of friends' aggression to predict higher levels of both relational and physical aggression in the adolescent (see also Brendgen et al., 2008). Only few studies have focused on the role of friends in relation to other types of crimes. Weerman and Bijleveld (2007) found that especially delinquent boys who were involved in spraying graffiti, vandalism, and minor shoplifting scored higher on popularity. Also Bearveldt, van Rossum, and Vermande (2003) revealed that adolescents who were involved in minor delinquent acts such as vandalism, had positive relationships and that frequency of offending was unrelated to the quality of the relationships. From the literature it can be concluded that research on peer relations and specific types of delinquency is relatively scarce. Therefore, the aim of the present study was to examine the influence of friends on adolescents' delinquency in terms of property and violent offenses, and vandalism in particular. Since the impact friends have on the adolescents is likely to depend on personal characteristics as well as characteristics of the friendship, we additionally examined the moderating effects of social status and reciprocity of the friendship.

Social rejection by peers has been found to be related to several negative outcomes, among others, a higher vulnerability to affiliate with deviant friends (e.g., Bagwell, Coie, Terry, & Lochman, 2000; Coie, Lochman, Terry, & Hyman, 1992; Hay, Payne, & Chadwick, 2004). Especially aggressive children are more likely to be rejected, and have a lower status among peers due to their deviant behavior (Kerestes & Milanovic, 2006). Because of their shared experiences, the rejected peers often join groups in which delinquency is welcomed and even affords them a high social status within the group, which, in turn, provides them with better access to relationships and resources (Ellis & Zarbatany, 2007). Aggression may also be a way to maintain the achieved status (Cillessen & Mayeux, 2004). Bot, Engels, Knibbe, and Meeus (2005) pointed to the stronger influence of the higher-status friend. In such cases the adolescent is more willing to adapt his behavior to his or her best friend's behavior. Allen, Porter, McFarland, Marsh, and McElhaney (2005) found that the more popular adolescents showed an increase in minor delinquent activities, especially when their peers expressed positive views about such activities. In our study we will use social preference to determine sociometric status in terms of the position the adolescent takes up within the peer group, based on both acceptance and rejection by his/her peers (see Coie, Dodge, & Coppotelli, 1982).

The nature of the friendship, whether it is reciprocal, i.e., when both parties consider the other a friend, or unilateral, when only one of the dyad member sees the other as a friend, also tends to be of great relevance. When aggressive children have a unilateral friend aggression appears to remain stable over time (Adams, Bukowski, & Bagwell, 2005; Ciairano, Rabaglietti, Roggero, Bonino, & Beyers, 2007). Windle (1994) had found earlier that a low level of reciprocity was related to more delinquent activities. Possibly, unilateral friendships reflect poor social skills and, because the adolescent is unable to start
and maintain a relationship, social skills are not learned. Since reciprocal friendships tend to satisfy several essential human needs (e.g., emotional support, affection, understanding), adolescents that do not succeed in establishing such relationships will continue to show aggressive behavior. Examining the effects of reciprocity in friendships in relation to alcohol use, Bot, Engels, Knibbe, and Meeus (2005) observed that over time a unilateral friend seemed to have more influence on the drinking behavior of his/her peer than a reciprocal friend (see also Aloise-Young, Graham, & Hansen, 1994; Gaughan, 1999).

The conclusion that can be drawn, based on the above mentioned studies, is that having a unilateral friend is related to more negative outcomes. However, most studies focused on the relation with aggression among peers, since aggressive children are often disliked. Weerman and Bijleveld (2007) included several types of crimes and found that minor delinquents (vandalism, minor property offenses, simple assaults) were more popular. Since particularly in adolescence youths want to ‘fit’ in with the peer group, it is plausible that within reciprocal friendships the mechanism of deviancy training plays an important role, where friends/peers function as role models by reinforcing deviant behavior (Dishion, Eddy, Haas, Li, & Spracklen, 1997; Dishion, Poulin, & Burraston, 2001; Dishion, Spracklen, Andrews, & Patterson, 1996). These findings do suggest that for serious violent crimes a unilateral friend does increase the risk for delinquency, while for vandalism and property offenses a reciprocal friend exerts more influence.

The present study

With the present cross-sectional and longitudinal study we sought to determine to what extent the associations between adolescents and friends’ delinquency is influenced by the friends’ social status and reciprocity of the friendship. Previous studies have often not included unilateral friendships (Little & Card, 2005). However, since unilateral friendships might be related to delinquency (Windle, 1994), we tested whether reciprocity of the friendship moderated the associations between friends’ delinquency and adolescents’ delinquency. These associations were examined cross-sectionally as well as longitudinally. Delinquency was included using violent offenses, property offenses and vandalism. Based on the literature, we hypothesized that having a friend with a high social status, who reported having committed delinquent activities, would be more strongly associated with delinquency of the adolescent than a friend with a low social status and delinquent behavior. Concerning reciprocity of the friendship, it is hypothesized that for violent offenses a unilateral friend would have more influence on the adolescent’s own delinquency, while for property offenses and vandalism a reciprocal friend would have a stronger association with the adolescent’s own delinquency than a unilateral, delinquent friend.

Method

Participants

A total of 1,187 adolescents recruited from local high schools completed our study questionnaires in two waves. As 162 respondents at the first wave (T1) stated that they did not have any friends, they were excluded from our study. The resulting final sample thus comprised 1,025 adolescents. For whom their sex was known, 51.0% (n = 523) were female and 47.4% (n = 486) male, for 1.6% (n = 16) the sex was unknown. Their average age at T1 was 14.65 (SD = .91; range = 11 – 19 years), with 46.3% (n =
having completed primary and low secondary education and 53.6% (n = 549) intermediate or the highest level. At T1 most lived with both parents (87.1%, n = 893), while 4.9% (n = 50) lived with their mother only and 2.0% (n = 21) with their father; for 5.4% (n = 55) living conditions varied and for 0.6% (n = 6) the living situation was unknown. Of the parents the vast majority (92.7%, n = 950) were born in the Netherlands.

Procedure
The data for the current study were collected within the framework of SODA, a two-wave longitudinal study on the Social Development of Adolescents in the Netherlands. Twenty-eight high schools located within a one-hour traveling distance of our Nijmegen-based research institute were invited to participate and 23 (82%) consented. The researchers and school administration staff jointly decided how many and which classes would participate. All candidates and their parents were given information about the content and purpose of the study and passive parental consent was obtained from all eligible students. That is, parents received a letter asking them permission for their children to participate in the study. Parents were invited to contact the research team in case they did not want their child to participate. The children completed the questionnaires during a regular school period and all were assured that confidentiality and privacy would be maintained. A teacher was available to answer any questions the students might have. After the data collection each school was sent a short report comparing the details of their class with those obtained in all other classes in the study on a number of dimensions (e.g., social status, bullying, and victimization). Some of the respondents of the first wave did not participate in the second wave for three reasons: first, some respondents had already graduated and left the school. Second, some respondents had left school prematurely. Third, only students were included in the next wave if they moved into a next class together with at least six classmates.

Measures
BEST FRIEND. For the friend-nomination procedure all participants were handed a list containing all the names of their classmates. Each individual on the list had a unique number which the respondents were asked to use to ensure anonymity of the data. All respondents were asked to write down the numbers of the classmates that best fitted the peer-nomination questions and each then noted the numbers of their five closest friends, listing the best friend first. Since our focus was on the candidate’s relationship with his/her best friend, we used the data of this friend only for our statistical analyses.

SOCIAL PREFERENCE. Social preference as a measure of sociometric status was used for we wanted to assess both the positive and the negative effects of social status. Two items assessed social preference: “Which classmates do you like best?” and “Which classmates do you like least?” For each respondent the number of “best-liked” and “least-liked” nominations were calculated and standardized within classes to account for differences in class size. Social preference was calculated by subtracting the standardized numbers of “best-liked” nominations from the number of “least-liked” nominations for each respondent.

ADOLESCENTS’ DELINQUENCY. A 13-item questionnaire inquired about delinquency with its three subscales including property offenses (e.g., shoplifting, stealing), violent offenses (e.g., participating in
FRIENDS AND ADOLESCENTS' DELINQUENCY

a serious physical fight, injuring someone) and vandalism (e.g., damaging property, arson; see Scholte, Engels, De Kemp, Harakeh, & Overbeek, 2007), existing of 5, 3 and 5 items, respectively. All items were answered on a 5-point scale with 1 indicating “never” (0 incidents), 2 one to three incidents, 3 four to six, 4 seven to 12, and 5 more than 12 incidents. The Cronbach’s alphas of the three subscales at T1 were .60 for property offenses, .67 for violent offenses, and .65 for vandalism, and .78, .78, and .76, respectively at T2. This measurement was chosen, since this questionnaire is most widely used in the Netherlands, and because it includes the most frequent delinquent behaviors within this age group. Sexual offenses were not included, since only very few adolescents within a normative sample commit sexual offenses, and as a consequence there will be no variance in the data concerning this type of crime.

FRIENDS' DELINQUENCY. Delinquency of friends was measured in the same way as delinquency of participants. That is, we also distinguished violent offenses, property offenses and vandalism.

RECIPROCITY OF FRIENDSHIP. A friendship was classified as reciprocal if the best-friend nomination was identical for both respondents. Reciprocity of friendship was a dichotomous variable with 0 signifying no reciprocity and 1 reciprocity. Of all friendships, 46.8% were reciprocal (n = 556).

Since we tested friendships within high school classes, we obtained the self-reported data on delinquency for all respondents. The ‘MAKE DYAD’ software (Thissen-Pennings & Bendermacher, 2002) was used to create friendship dyads and analyze the data of the dyad partners.

Statistical analyses
The analyses were based on the longitudinal data of all 1,025 adolescents. Pearson correlations were calculated between all model variables (adolescents’ delinquency, friends’ delinquency, best friends’ social status, and reciprocity of friendship). Second, hierarchical regression analyses were conducted using the data on the three delinquency subscales (property offenses, violent offenses, and vandalism) to predict delinquent activities in the adolescents and to establish whether social status and reciprocity of friendship moderated this prediction. As previous studies had indicated that boys were more influenced by their friends than girls (Regnerus, 2002), and friendship may have a different meaning for girls and boys (Maccoby, 1998), we controlled for sex. We also controlled for age, since Moffitt (1993) found age differences in delinquency. First, cross-sectional analyses were conducted to test the associations between friends and adolescents’ delinquency at T1. Separate analyses were conducted for the three types of criminal behavior. In step 1 the control variables friends’ delinquency, reciprocity, and friends’ social status were entered. In step 2 two-way interactions between the variables, entered in step 1, were added to the analyses. The three-way interaction of friends’ delinquency, friends’ social status, and reciprocity was entered in step 3. Before the variables were used in the analyses they were centered. Second, longitudinal analyses were conducted using the three steps applied in the cross-sectional analyses, but now with adolescents’ delinquency at T2 as the dependent variable and friends’ delinquency at T1, friends’ social status, and reciprocity as predictors.

Following this procedure, the relation between friends’ delinquency and adolescents' delinquency was estimated in the form of an unstandardized β-coefficient at three levels (-1 SD, 0, and + 1 SD) of the moderator (social status). Interpretation of the interactions was based on comparison of the
Table 1
Pearson correlations between friends' delinquency, friends' social status, and reciprocity of friendships (N = 1,025)

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Note: T1 = first wave, T2 = second wave. *p < .05, **p < .01, ***p < .001.
slopes of the regression lines representing low social status (1 SD below the mean), mean, and high social status (1 SD above the mean). For reciprocity of friendship, the regression lines represented having a reciprocal friendship or not (Aiken & West, 1991). The independent variable (delinquency of the adolescent) was divided in two groups based on the mean (low and high offenses).

RESULTS

Correlations
The correlations between the model variables can be found in Table 1. As can be seen, all correlations between delinquency of the adolescents and delinquency of the friends at T1 and T2 were significant. This means that the adolescents who reported delinquent activities at T1 were more likely to show delinquent activities at T2 and were also more likely to have friends reporting delinquency at T1 and T2.

A lower social status of the respondent at T1 was related to more violent offenses and vandalism at T2. The adolescents with a higher sociometric status were more likely to affiliate with friends with a similar status. Reciprocity of friendship was significantly related to both the adolescents’ and the friends’ social status. Adolescents with a higher status were more likely to have reciprocal friendships, while for adolescents with high social friends the friendship was less likely to be reciprocal.

Cross-sectional results
Associations between friends and adolescents’ delinquency as derived from the stepwise hierarchical regression analyses are shown in Table 2. Step 1 revealed that at T1 sex and friends’ delinquency were significantly related to the adolescents’ delinquency for all three types of delinquency. Overall, the boys were more likely to engage in delinquent activities than the girls, as were the adolescents with a best friend showing criminal activities.

As to step 2, testing two-way interactions between all variables, no interaction effects were found for property offenses. For violent offenses and vandalism the analyses did yield a significant two-way interaction effect between friends’ delinquency and friends’ social status. Plotting the means to distinguish between the effects of the two variables, we found for violent delinquency that having a high-status friend reporting violent offenses was more strongly related to an increase in the adolescent’s violent behavior than in the adolescents with lower-status friends. Interestingly, for vandalism the results showed the reverse pattern. Adolescents with low-status friends reporting vandalistic tendencies were more likely to engage in vandalism themselves than adolescents with friends with a higher social status. Friends’ delinquency and reciprocity of the friendship also showed a two-way interaction for violent delinquency and vandalism. Plotting the means revealed that having a reciprocal friend committing violent offenses was associated with the adolescents’ violent delinquency. The same held for vandalism: adolescents with a reciprocal friend committing vandalism were more likely to engage in vandalism themselves than adolescents with a unilateral best friend.

The three-way interaction was only significant for violent offenses. Plotting the social status means for unilateral and reciprocal friendships separately, we found that for unilateral friendships the friends’ social status was not associated with an increase in violent delinquency of the adolescent (see Figure 1). For reciprocal friendships, on the other hand, the association between the adolescents’ violent delinquency and having a violent friend with a high social status was strongest compared to the asso-
Table 2
Results of the hierarchical regression analyses predicting delinquent activities cross-sectionally (N = 1,025)

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<th>Violent offenses respondent</th>
<th>Vandalism respondent</th>
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<td>R²</td>
<td>β</td>
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Note. *p < .05, **p < .01, ***p < .001.

Citations for friends with a medium or low social status. Still, independent of the friend’s social status, his/her reported violence was consistently related to an increase in the respondent’s violent delinquency. Overall, the role of friends in the presence of violent delinquency was stronger when respondents had a reciprocal friend with a high social status.

**Longitudinal results**

The longitudinal data demonstrated that the respondent’s delinquency at T1 was an important and direct predictor of his/her delinquency at T2, indicating stability of delinquent behavior over time. Also, the adolescent’s sex predicted delinquency at T2: being a boy increased the risk of engaging in criminal activities over time. Age mainly played a role in vandalism: the younger the respondent, the more likely his/her engagement in vandalism at T2.
As to the moderating effects of friends’ social status and reciprocity of the friendship on the adolescents’ delinquency, listed in Table 3, the analyses yielded a two-way interaction effect for property offenses. To discriminate between reciprocal and non-reciprocal friendships, the means were plotted: the adolescents who had a reciprocal friend reporting property offenses at T1 showed an increase in property offenses at T2, while the adolescents with a unilateral friend reporting such offenses at T1 showed a slight decrease at T2 (see Figure 2). We also found a two-way interaction for vandalism with friends’ delinquency and friends’ social status (see Figure 3). Plotting the means for social status, we found that at T1 the adolescents with a high-status friend showed a stronger increase in vandalism at T2 than the adolescents with a friend with a medium social status. Surprisingly, adolescents with a low-status friend reporting vandalism at T1 were less likely to commit vandalism at T2 than adolescents with a friend with a higher social status. No three-way interactions were found (see Table 3), which
meant that no effects of friends' delinquency on adolescents' delinquency were found if this relation was moderated by social status of the friend and reciprocity of the friendship.

Table 3
Results of the hierarchical regression analyses predicting delinquent activities longitudinally (N = 1,025)

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Note. *p < .05, **p < .01, ***p < .001.

Statistical dependence
Different classmates nominated some friends more than once and these friends’ data appeared more often in the analyses, resulting in statistical dependence in the data. To account for this statistical dependence we excluded the data of these multiply nominated friends, resulting in a dataset of 783 adolescents, and subsequently repeated all the analyses. We found that the cross-sectional interaction
effects for violent offenses were no longer significant, while friends’ sex and delinquency still showed a significant association with the delinquent activities of the adolescents. For property offenses and vandalism the interaction effects remained the same. Also the longitudinal interaction effects were unchanged, except for property offenses, where the effect between friends’ delinquency and reciprocity of the friendship disappeared. In sum, the cross-sectional and the longitudinal findings were only slightly affected by the fact that several classmates nominated some friends more than once.

Figure 2
Longitudinal, two-way interaction effects between friends’ property offenses and reciprocity of the friendship on adolescents’ property offenses

Figure 3
Longitudinal, two-way-interaction effect between friends’ vandalism and friends’ social status on adolescents’ vandalism

Longitudinal results including all types of crimes at T1
Since the three delinquency scales are correlated, it is statistically possible to test the multivariate associations while controlling for the other delinquent subtypes. We decided not to follow this strategy.
in the main analyses. To give a complete picture of the associations, we gave a short overview of the
differences in results by including the other delinquent subtypes. Consistent with the main analyses,
we again conducted three hierarchical regression analyses (property offenses, vandalism, and violent
offenses), now including all types of delinquent behavior of the adolescent in the three steps of the
analyses. Controlling for all subtypes of delinquent behavior yielded the conclusion that there were
hardly any differences, compared with the analyses in which we did not control for all three subtypes.
Concerning property offenses, the interactions between delinquency of the friend and reciprocity of the
relationship disappeared. Concerning violent offenses, there were no differences with the analyses
where we did not control for all subtypes of delinquent behavior. For vandalism, only the associations
between delinquency of the friend at T1 and delinquency of the respondent at T2 were found to be not
significant anymore.

Discussion

The aim of the present study was to examine the moderating roles of the friend’s social status and the
reciprocity of the friendship in friends’ delinquency and adolescents’ delinquency, more specifically
property and violent offenses and vandalism. The results showed that there were indeed some
moderating effects of social status of the friend and reciprocity of the friendship cross-sectionally as well
as longitudinally, but these effects appeared to depend on the types of offenses. Cross-sectionally, the
results showed that only for vandalism and violent offenses, social status of the friend and reciprocity of
the friendship moderated the relationship between friends’ delinquency and adolescents’ delinquency.
As to social status, having a friend with a higher social status who reported having committed violent
offenses was associated with a higher risk of the adolescent committing similar offenses. For vandalism
the opposite was true in that it were those adolescents with a vandalistic friend of a lower social
status that were more likely to engage in vandalism. As to reciprocity, we found that adolescents with
reciprocal friends who reported violent offenses and vandalism were more inclined to commit the same
type of offenses, which did not confirm our hypothesis. Thus, violent adolescents with a reciprocal,
high-status friend were more strongly affected by their friend’s violent delinquency than adolescents
with a reciprocal, lower-status friend. No moderating effects of social status were found for unilateral
friendships.

We were surprised by the differences in the cross-sectional findings for violent offenses and
vandalism in relation to friends’ social status. While we had predicted that for both types of offenses
the higher the friend’s social status, the greater the impact of his/her delinquency would be, this only
held for violent offenses. The adolescents who reported having been engaged in vandalism proved to be
more influenced by a low-status friend. Hierarchy might explain this apparent discrepancy: adolescents
committing violent offenses are mostly the aggressive ones and thereby possibly more likely higher in
hierarchy, while adolescents committing vandalism are possibly more often lower in hierarchy. It would
then be plausible for adolescents engaging in vandalism to more often have friends with a lower status,
with the influence of friends being still clearly present since vandalism is a group activity (Ferwerda, Van
Leiden, Arts, & Hauber, 2006).

The differential role of the friend’s social status may also be explained by the age of onset of
criminal behavior. Loeber et al., (1993) posited that vandalism could be seen as a less serious covert
problem. Vandalism is the most common crime committed by first offenders (Blom & Van der Laan, 2006). Adolescents who commit violent (aggressive) offenses often start at a young age with less serious criminal acts such as vandalism, and when growing older the offenses become more serious. Possibly, the adolescents showing violent behavior in the present study had already achieved status, while the vandals were still at the start of their criminal career and still striving for peer recognition.

Another possible explanation is that in childhood aggressive children are disliked by their peers, but that in adolescence aggression is seen as more popular behavior. Especially adolescents want to ‘fit’ in with the peer group and group norms have great influence. Adolescents want to be liked and delinquency is one way to increase popularity. When aggression, or other delinquent behavior, is seen as more popular behavior, it is possible that this behavior will be reinforced through deviancy training. Therefore, having a reciprocal friend and reinforcing delinquent behavior, the risk of showing delinquent behavior increases, since it increases popularity.

Cross-sectionally, reciprocity showed a moderating effect. Adolescents with reciprocal friends reporting violent offenses and vandalism were more likely to show the same delinquent behavior as adolescents with a unilateral friend. Moreover, and independent of the friend’s social status, having a violent unilateral friend did not increase the extent of delinquency of the adolescent, while adolescents with a violent, reciprocal, high-status friend were more likely to also show violent behavior, compared to adolescents with a reciprocal, low-status friend. This finding did not support our hypothesis in that adolescents with a unilateral, delinquent friend would show an increased risk of delinquency. A possible explanation can be found in the procedure we applied in the two data collection waves. As all data were collected within high school classes, respondents could only nominate friends within their respective class who, by default, also participated in the study. Friends outside the school were not considered. In short, only part of the respondent’s potential (best) friends were included, which could have affected our findings. For further research it would be very interesting to examine how the mechanism works of the effects of having a reciprocal versus a unilateral relationship to explain the contradictory results within this area of research.

While cross-sectionally no effect was found for property offenses, the longitudinal results showed that reciprocity of friendship did moderate the associations between friends and adolescents' property offenses. It is remarkable that for violent offenses interaction effects were restricted to cross-sectional outcomes, while for property offenses we only found moderating effects longitudinally. An explanation may be found in the specific development of aggression in adolescents. According to the literature, most of the adolescents showing aggressive behavior already showed behavioral disorders at a very young age and started their criminal careers early (Loeber, Slot, & Sergeant, 2001). Moffitt (1993) called this type of adolescents ‘life-course-persistent offenders’ in whom aggression is an important characteristic. The violent offenses our respondents reported were all of a serious nature, which may imply that these youths may fall in the category of life-course-persistent offenders, since they already showed serious criminal behavior at a young age. This might explain why we found no longitudinal effects for violent offenses: the aggressive behavior measured at T1 remained stable over time and showed no change in adolescence. This would even imply that delinquent friends would have a stronger influence on adolescence-limited offenders than on persistent offenders, which is confirmed by earlier studies (e.g., Moffitt & Caspi, 2001).

With regard to vandalism, the findings showed that over time adolescents with a high-status friend
with vandalsistic tendencies were more likely to become vandals themselves. This is in contrast with the cross-sectional findings, in which adolescents who reported having been engaged in vandalism were more strongly affected by behavior of a low-status friend. Vandalism is mostly committed in groups and can often be seen as an incident of rowdy behavior. Since vandalism is a group activity, by definition friends play an important role in inciting this behavior in others, which is consistent with our finding that having friends engaging in vandalism strongly affects the vandalism behavior in their peers. The direction of this effect has been found to be different in cross-sectional versus longitudinal analyses. A possible explanation can be that hierarchy is an important characteristic of criminality. At the time of the first wave, the participants of our study just entered a new school and hierarchy was not clear yet. Later, in the second wave, hierarchy was clearer, and adolescents knew which adolescents were higher in hierarchy and which were not.

Limitations of the study
Despite the fact that the influence of parents decreases during adolescence, their influence is still present. The relationship with parents, attachment to parents, and the extent of commitment of parents are some examples of important protectors against friendships with delinquent peers (Henry, Tolan, & Gorman-Smith, 2001; Zimmerman, Steinman, & Rowe, 1998). In the present study we did not include parental factors, such as attachment and commitment to parents and involvement of parents in their child’s daily life. This is important to note, for these effects can reduce or intensify the effects of friends. Adolescents, who have a good bond with parents, are better able to develop into an independent, autonomous individual. A second limitation is that only the very best friend of the adolescent was included in the analyses, while most adolescents have more than one best friend. According to Regnerus (2002), the number of friends also appeared to influence adolescents’ delinquency. A third limitation is that friend-related factors were not included in the present study, while prior studies found that factors such as attachment to peers and time spent with peers also affected the associations between friends and adolescents’ delinquency (Regnerus, 2002). A fourth limitation is that, while social status can also be measured using perceived popularity, we opted to measure this aspect using social preference scores, since we wished to study the effects of both the positive and negative aspects of status. As both methods have been found to yield different associations with aggression (Cillessen & Mayeux, 2004, 2007), it is important to realize that our findings depend on the conceptualization of the measurement.

Strengths of the study
The strong points of the current study also merit attention. First, it is innovative in that, unlike previous studies that assessed aggression or delinquency in general, we differentiated between three common types of delinquency (property and violent offenses, and vandalism). Knowing when friends exert their influence most, affords a better insight into delinquency and provides new ideas for prevention programs. Differentiating between types of offenses will enhance our ability to tailor new or existing prevention programs to the individual or the groups of adolescents, and may even bring out the need of a differential approach by the juvenile justice based on the different types of delinquent activities. Second, we also examined longitudinal effects in terms of the impact of influence of friends over time. And finally, because the respondents might perceive their friends’ delinquency differently than the friends themselves do, we used and compared the viewpoints of both parties rather than had the
respondents report on their own as well as their friends’ delinquency, as had been done in most other studies (Regnerus, 2002).

Numerous studies demonstrated that having delinquent friends is one of the most important predictors of potential delinquent activities in adolescence (e.g., Fergusson & Horwood, 1996; Garnier & Stein, 2002; Loeber & Farrington, 2000; Patterson, Dishion, & Yoerger, 2000; Scaramella, Conger, Spoth, & Simons, 2002). Our findings were not totally consistent with the findings in previous studies. Moreover, our findings point to a more indirect relationship, in which the type of offense, social status, and reciprocity indeed showed their influence. The current study also showed that adolescent friends exert a differential influence on their equals dependent on the type of offense involved, suggesting that different types of offenders may need a different correctional approach. It also suggests that offenders who engage in criminal acts in concert with friends may need a different approach than lone offenders, another interesting topic for further investigation. It would also be worthwhile to look for the mechanisms of the differential influence of friends in relation to the type of crime. In earlier studies Dishion and colleagues investigated peer influences in deviant peer groups. The team developed an observation task to measure the effects in interactions between adolescents (Dishion, Eddy, Haas, Li, & Spracklen, 1997; Dishion, Spracklen, Andrews, & Patterson, 1996) and termed the mechanism underlying the observed peer dynamics “deviancy training” (Dishion, Poulin, & Burraston, 2001; Patterson, Dishion, & Yoerger, 2000), implying that peers reinforce deviant or rule-breaking behavior in others. For future research in this domain, we recommend to use their observation technique to further assess the roles of friends while discriminating between different types of crimes.
CHAPTER 6

Compulsory residential care: An examination of treatment improvement of individual and family functioning

Published as:
Abstract

The aim of the present study was to examine the treatment progress of both adolescent and their families' functioning in a new compulsory residential treatment program. The sample consisted of 339 admitted adolescents (56.3% boys). The mean age at time of entry was 15.69 (SD = 1.30). Adolescents stayed on average 9.42 months (SD = 4.66) in a new residential treatment program. Data on adolescents' internalizing and externalizing problems were assessed using self-reports, parent reports, and group care worker reports. In addition, adolescents reported their substance use and delinquency and parents also reported family functioning and level of perceived parental stress. The findings revealed a significant decrease in adolescents' self-reported internalizing and externalizing problems, delinquency, and substance use. According to parent ratings, a significant improvement was found concerning adolescents' problem behaviors during treatment. However, according care worker ratings, adolescents showed no improvement on internalizing problems and showed an increase in externalizing problems. Concerning families, although there was no improvement in family functioning, parental stress significantly improved over time. Further research should examine whether improvements experienced during treatment are maintained after treatment.

Introduction

In the Netherlands, in 2005 a new compulsory residential treatment program was implemented for adolescents with severe problem behaviors. These adolescents are in need of protection against themselves (e.g., suicidal behavior) or against the environment (e.g., parental psychopathology, abuse, pimps). Before the availability of this new compulsory residential treatment program, adolescents with severe problem behaviors were placed in juvenile detention centres. This aggregation of behaviorally disturbed adolescents with criminal adolescents was considered undesirable because of the risk of peer contagion and because the behaviorally disturbed adolescents did not receive appropriate treatment in these facilities (Boendermaker, Eijgenraam, & Geurts, 2004). In combination with the political and social discussions concerning the placement of behaviorally disturbed adolescents in juvenile detention centres, the Dutch government developed a new residential treatment program specifically aimed at adolescents with severe problem behaviors. This new treatment program was divided in four stages ranging from more to less restrictive. The first stage includes future perspectives. The second stage focuses on behavioral change using theories such as operant conditioning, cognitive behavioral approach, and social learning theory (Van der Poel, Rutten, & Sondeijker, 2008). The third stage includes the preparation of the future perspective. Finally, the fourth stage concerns the transfer to a new living situation. Daily routine, leisure activities, school, and (intensive) individual interventions are other important aspects of this new treatment program. In addition to individual interventions, the new treatment program focuses intensively on adolescents' families to cope with adolescent problem behaviors and decrease the often high number of family risk factors. This is in accordance with the ecological model of Bronfenbrenner (1979; 1994) as one of the main principles on which the new treatment program is based, is that the multitude of problems experienced and demonstrated by adolescents requires a multidimensional approach to treatment. The expectation was that the new treatment program would significantly improve both adolescent and family functioning. The present
study is the first to examine the treatment improvement of adolescents admitted to the new compulsory residential treatment program and their families.

To examine the treatment improvement, adolescents, parents, and group care worker’s perceptions on the adolescent behavioral problems were measured. These different informants were included because parents and adolescents often disagree in their perceptions of the adolescents’ problem behaviors (e.g., Grills & Ollendick, 2003; Rey, Schrader, & Morris-Yates, 1992; Yeh & Weisz, 2001) as parents often perceive more problem behaviors than do adolescents (e.g., Ferdinand, Van der Ende, & Verhulst, 2006). Additionally, disagreement seemed to be higher for internalizing than for externalizing problems (Rey, et al., 1992; Yeh & Weisz, 2001; Youngstrom, Findling, & Calabrese, 2003). Next to the perceptions of adolescents and parents, it is also important to include the clinician’s ratings (Ferdinand et al., 2003) since clinicians’ ratings are more comparable to the parents’ perceptions than to the perception of the adolescents (e.g., Bastiaansen, Koot, Ferdinand, & Verhulst, 2004; Grills & Ollendick, 2003).

According to Mordock (1979), a successful residential treatment will result in an increase in the individuals and family’s level of functioning. Reviews have shown that this is the case for 60% to 80% of the adolescents who received residential treatment (Burns, Hoagwood, & Mrazek, 1999; Harder, Knorth, & Zandberg, 2006). Further, treatment improvement is found for problem behaviors according to both adolescents (Leichtman, Leichtman, Barber, & Neese, 2001; Lyons, Terry, Martinovich, Peterson, & Bouska, 2001) and parents (Larzelere et al., 2001; Leichtman et al., 2001; Preyde, Adams, Cameron, & Frensch, 2009), in terms of the strengths of the adolescents (Lyons, Woltman, Martinovich, & Hancock, 2009), life satisfaction (Gilman & Handwerk, 2001), and individual functioning (Bettmann & Jasperson, 2009; Larzelere et al., 2001; Leichtman et al., 2001; Lyons et al., 2009). Of note, Lyons et al. (2001) found a simultaneous increase in anxiety and hyperactivity.

Despite the general understanding that involvement of parents in residential treatment is important, relatively little research has examined the improvement of family functioning during treatment (see review of Bettmann & Jasperson, 2009). Increasing family functioning is related to a higher improvement of adolescents’ problem behaviors and functioning during treatment. In addition, improvement in family functioning is associated with a higher likelihood of the adolescent completing the treatment program and going to less restrictive settings following discharge (Sunseri, 2004). Parental stress has also been negatively related to parenting behaviors, in that parents who reported higher levels of stress and perceived their children as problematic showed more often harsh and inconsistent parenting and a lack of warmth and responsiveness (Crawford & Manassis, 2001; Creasey & Reese, 1996; Deater-Deckard & Scarr, 1996; Webster-Stratton, 1990). Although parental stress has been reported to be severe at time of entry into residential care, improvement in parental stress was also found for those parents of adolescents who completed residential care (Killeen & Brady, 2000).

Most studies on treatment improvement, including the current study, are non-experimental due to ethical, practical, and methodological reasons. However, these kinds of studies are necessary as they are first steps to gain insight into the effectiveness of a residential treatment program (Veerman & Van Yperen, 2007). These authors distinguished four levels of evidence concerning the effectiveness of youth care interventions: descriptive evidence, theoretical evidence, indicative evidence, and causal evidence. Of note, Van der Poel, Rutten, and Sondeijker (2008) provided the descriptive and theoretical evidence of the treatment program. The third level of evidence includes that the intervention is related
to positive outcomes. The present study is the first to evaluate the new compulsory treatment program and focused on indicative evidence. Additionally, our study will contribute to existing knowledge about, and even can add to, an optimization of the new residential treatment program.

**METHOD**

**Design**

Six Dutch residential institutions participated in the current study. All adolescents admitted to the new residential treatment program between May 2007 and December 2008, and their parents and group care workers were asked to participate. All informants were asked to complete questionnaires at three time points; time of entry (T1), halfway treatment (T2), and time of discharge (T3). At T2, the questionnaires were completed by adolescents on average of 6.22 months (SD = 1.61) after admittance. The parents completed the questionnaires on average of 6.58 months (SD = 1.50) after admittance and the care workers on average of 6.75 months (SD = 1.49) after entry. At T3, the questionnaires were completed on average of 11.72 months (SD = 3.59) after admittance by adolescents, 11.72 months (SD = 3.60) by parents, and 11.54 (SD = 3.73) months by care workers. Adolescents received 5 Euros for each completed questionnaire and parents received a 10 Euro check.

**Participants**

A total of 339 adolescents entered the residential program between May 2007 and December 2008. All adolescents demonstrated severe problem behaviors prior to admittance and family problems were common (Nijhof, Van Dam, Veerman, Engels, & Scholte, 2010). Of the 339 adolescents included in the present study, 56.3% were male. The mean age at time of entry was 15.69 (SD = 1.30). Concerning the ethnicity of the participants, 44% had at least one parent born in a non-western country\(^3\). Of 49%, both parents were born in a western country. For 7% of adolescents, the birth country of at least one of the parents, mostly the father, was unknown. The adolescents were either placed in mixed-sex or single-sex groups during treatment; 27% of the adolescents were admitted to a girls-only group, 40% to a boys-only group, and 34% to a mixed-sex group. The mean duration of treatment was 9.42 months (SD = 4.66).

Of the 339 adolescents, the response rates at the three time points were 67%, 47%, 33%, respectively. Of the parents, 38% participated at T1, 28% at T2 and 17% at T3. Some of the parents were not able to completed questionnaires because they were not capable (e.g., imprisonment, disorders, deceased), they did not speak Dutch, or because they were not involved in their child’s treatment. These total percentages were 7% at T1, 5% at T2, and 5% at T3. Of the group care workers the response rates were 54%, 45%, and 47%, respectively. The low response rates of all three informants can also be explained by a lack of organizational structure (partly due to start-up problems experienced at the beginning of a new residential treatment program), refusal, and not having the time because of a high workload. In addition, some adolescents left the institution prematurely and the informants were therefore, not able to participate over time.

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\(^3\) Non-western countries include Turkey, Morocco, Suriname, Netherlands Antilles and Aruba, Africa, Asia (excl. Indonesia, Japan), and Latin America. Western countries include Indonesia (incl. persons from former Dutch East Indies, European Union (26 countries), other European countries (excl. Turkey), other (non) European countries (Japan, North America, and Oceania).
Measures

PROBLEM BEHAVIOR. Problem behavior, based on adolescent self-report, was measured using the Youth Self Report ([YSR] Achenbach, 1991; Achenbach & Rescorla, 2001; Verhulst, Van der Ende, & Koot, 1997). The YSR can be divided in two dimensions: Internalizing and externalizing problems. A mean score of both internalizing and externalizing problems was calculated and transferred to t-scores. A t-score less than 60 indicated no problem behavior, a t-score between 60 and 63 indicated a borderline clinical range, and t-scores greater than 63 indicated within a clinical range. Cronbach’s alphas were .92 at T1, .91 at T2, and .92 at T3 for internalizing problems, and .92, .90, and .90, respectively for externalizing problems.

To measure the adolescents’ problem behaviors based on parent and group care worker’s reports, the Child Behavior Checklist ([CBCL] Achenbach, 1991; Achenbach & Rescorla, 2001; Verhulst et al., 1997) was used. The CBCL is constructed in almost the same way as the YSR. Although the CBCL is constructed for parents, research has shown that it can also be used for group care workers as well (Albrecht, Veerman, Damen, & Kroes, 2001). Cronbach’s alphas for the parents were .88 (T1), .91 (T2), and .90 (T3) for internalizing problems and .92 (T1), .95 (T2) and .93 (T3) for externalizing problems. For the group care workers, Cronbach’s alphas were .83 (T1), .87 (T2), and .87 (T3) for internalizing problems and .89 (T1), .93 (T2) and .93 (T3) for externalizing problems.

DELINQUENCY. A self-reported questionnaire consisting of 26 items was used to measure delinquency within the previous 12 months (Van der Laan & Blom, 2005). Examples of items were ‘Did you destroy something on a bus, metro, or tram on purpose?’, ‘Did you steal a bicycle or scooter?’, or ‘Have you wounded someone with a weapon on purpose?’. All items were answered on a 5-point scale with 1 = never (0 incidents), 2 = one incident, 3 = two incidents, 4 = three to ten, and 5 = more than ten incidents. A mean score was calculated with higher scores indicating a higher frequency of offending. Cronbach’s alphas at the three time points were .94, .89, and .93, respectively.

DRUG USE. The adolescents’ self-reported drugs use was measured by asking how often they used hash or marihuana, ecstasy (XTC), cocaine, magic mushrooms, uppers (pep or speed), or heroin in the previous 12 months (Monshouwer et al., Verdurmen, Dorselaer, Smit, Gorter, & Vollebergh, 2008; Van der Laan & Blom, 2006). Answers were given on a 6-point scale with 1 = never, 2 = seldom, 3 = couple of times a month, 4 = once a week, 5 = couple of times a week, and 6 = every day. This variable was dichotomized into 0 to indicate no problematic drugs use and 1 to indicate problematic drugs use. Higher scores indicated more problematic drugs use.

BINGE DRINKING. Participants were asked the question ‘How often did you have five or more alcoholic drinks in a row during the last four weeks?’ This was rated on a 6-point scale from 1 = never to 6 = every day, with higher scores pointing to more frequent binge drinking.

FAMILY FUNCTIONING. A 63-item questionnaire, specifically developed for multi-problem families, was used to assess family functioning from the parents’ perspective (VGFO; Janssen & Veerman, 2005). This questionnaire exists of five subscales including basic care, social network, parenting skills, parental youth experiences, and relationship with the partner. All items were rated on a 4-point scale with 1 =
applies not at all to 4 = totally applies. A total score was calculated with a higher score indicating better family functioning. Cronbach’s alphas were .90 at T1, .86 at T2, and .88 at T3.

PARENTAL STRESS. Parental stress was assessed using a 17-item questionnaire ([NOSIK] De Brock, Vermulst, Gerris, Veerman, & Abidin, 2004) rated on a 4-point scale from 1 = totally disagree to 4 = totally agree. The mean score was transferred to a deviation score, with higher scores indicating more parental stress. Cronbach’s alphas were .93 at T1, .96 at T2, and .95 at T3.

Procedure
When an adolescent was admitted to one of the participating institutions, the researchers were informed by the institution and provided with demographical information. The team leader was then asked by the researcher to help the adolescent in completing the questionnaires. The team also asked the adolescents’ parents and group care workers to complete the questionnaires. When completed, the team leader returned the questionnaires in an election envelop. The same procedure was followed halfway through treatment and at the time of discharge.

Statistical analyses
Before conducting the main analyses, attrition analyses were performed. To test whether there was selective attrition in our study, adolescents who participated (i.e., 67% completed questionnaires) were compared with non-participating adolescents (i.e., 33% had not completed questionnaires). The participating and non-participating adolescents were compared on background characteristics; specifically, the number of individual and family risk factors at time of entrance to participating institutions as this information was available for all 339 adolescents. The risk factors were measured based on analyzing the treatment files, which provided background information about the adolescents’ situation prior to admittance. The individual risk factors focused on externalizing and internalizing problems, substance use, negative life events, and inadequate sexual behaviors. The family risk factors included structural risk factors, risk factors related to the parenting situation, and parental problems. These risk factors were summed to obtain the total number of risk factors; the maximum number of individual risk factors was 13 and the maximum number of family risk factors was 14. Concerning parents and group care workers, the same analyses were applied. Results revealed that no selective attrition occurred when comparing participating informants with non-participating informants, except for parents at T1. It appeared that participating parents at T1 significantly showed a lower number of family risk factors (see Table 1). Overall, the participating informants did not have a more or less severe background than non-participating informants.

The second step was to calculate the improvement of problem behaviors over time. Latent Growth Curve Modeling (LGCM) was applied using Mplus for this analysis (Muthén & Muthén, 1998-2006). For every study variable (i.e., internalizing and externalizing problems, delinquency, drugs use, binge drinking, parental stress, and family functioning), a latent growth curve was calculated and resulted in an estimated start value (intercept) and linear regression coefficient (slope). The slope describes the extent of increase or decrease over time. A p-value less than .05 pointed to a significant change in
Table 1
T-tests concerning the selective attrition of participating informants based on the number of risk factors

<table>
<thead>
<tr>
<th></th>
<th>Adolescents</th>
<th></th>
<th></th>
<th>Parents</th>
<th></th>
<th></th>
<th>Group care workers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NP</td>
<td>P</td>
<td>NP</td>
<td>P</td>
<td>NP</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>F</td>
<td>p</td>
<td>M</td>
</tr>
<tr>
<td>T1 Individual RF</td>
<td>7.84</td>
<td>2.12</td>
<td>7.43</td>
<td>2.12</td>
<td>.15</td>
<td>.10</td>
<td>7.49</td>
</tr>
<tr>
<td>Family RF</td>
<td>6.00</td>
<td>2.59</td>
<td>6.09</td>
<td>2.82</td>
<td>1.00</td>
<td>.77</td>
<td>6.38</td>
</tr>
</tbody>
</table>

Note. RF = risk factors. NP = non-participating informants. P = participating informants. Participating informants did not have a more or less severe background than non-participating informants.
behavior over time. Because of the many missing values in the current data the Full Information Maximum Likelihood estimator (FIML) was used. FIML uses all information present within the dataset.

Finally, the effects of treatment can depend on the treatment groups (mixed-sex vs. same-sex group, multilevel problems); therefore, the analyses were controlled for this dependency. The possible dependence effect was partialed out via the COMPLEX module. Additionally, effect sizes (Cohen’s d) were calculated to describe the strength of the improvement over time. Effect sizes less than .20 were considered marginal, effect sizes between .20 and .49 included small effects, between .50 and .79 pointed to medium effects, and effect sizes .80 and higher indicated large effects (Cohen, 1992).

**Results**

The treatment progress of internalizing problem behaviors, according to the adolescents, parents, and group care workers, is illustrated in Figure 1. Both the adolescents and parents experienced a significant decrease of internalizing problems. Cohen’s d were .22 and .59, respectively, indicating a small improvement from the adolescents’ perception and a medium improvement from the parents’ ratings. The ratings of the group care workers, however, indicated no improvement in internalizing problems over time, as indicated by an effect size of .03 (see Figure 1).

For externalizing problems, based on both the adolescents and the parents’ ratings, a significant improvement over time was found with effect sizes of .42 and .78, respectively. Based on the ratings of the group care workers, a significant increase in externalizing problems was found with a small effect size of .20 (see Figure 2).

Concerning self-reported delinquent activities and drugs use, a significant decrease was found based on adolescents’ perceptions. The analysis revealed effect sizes of .30 and .29, both indicating a small improvement. However, a worsening effect of binge drinking was found, with an effect size of .41, indicating a medium increase over the course of treatment (see Figure 3).

In addition to adolescents’ functioning, an improvement on family functioning was revealed. As seen in Figure 4, family functioning did not indicate any improvement during treatment (Cohen’s d = .00). Parental stress, on the other hand, showed a significant decrease over time, with a small effect size of .33.

![Figure 1](image-url)

**Figure 1**

Treatment progress of internalizing problems in T-scores according to adolescent, parent, and group care workers’ perceptions
Discussion

While some scholars suggest that admittance to residential treatment is necessary to protect adolescents against themselves or their environments, others are against placement of adolescents in residential settings. Several reasons are mentioned for this negative point of view. For example, residential care is sometimes believed to be traumatic (Underwood, Barretti, Storms, & Safonte-Strumolo, 2004), negative consequences due to placing troubled youth together (Barth, 2005), or the combination of high costs and a lack of evidence concerning the effectiveness of residential care is often questioned.

The present study aimed to provide evidence for the effectiveness of a new residential treatment
program by investigating the treatment progress of seriously disrupted adolescents and their families. Overall, adolescents showed a significant improvement of problem behaviors over time, except for binge drinking. Additionally, parental stress significantly decreased over the course of treatment, whereas family functioning did not show any improvement. Despite these improvements, it is still unknown whether these adolescents and families would show the same results if they received other forms of treatment because no control group was included in the current study. As a result, we are not able to conclude whether residential care offers better future perspectives than other forms of care.

Based on both parents and adolescents’ ratings, significant improvement was found for internalizing and externalizing problems, which is a confirmation of prior studies (e.g., Larzelere et al., 2001; Leichtman et al., 2001). Based on self-reports, improvement was also found for delinquency and drugs use. However, an increase in binge drinking was found, which is a somewhat remarkable finding in that it would be expected that the availability of alcohol decreases when admitted to residential care. An explanation might be that, during residential treatment, the adolescent moved from more to less restrictive stages in terms of personal freedom. Leaves (i.e., going to the city or weekend leaves to parents) become more regular the longer adolescents are in treatment. As a consequence, the opportunities to drink alcohol increase during the course of treatment. As such, it might be that, when adolescents are on leave, they take this opportunity, which could explain the increase in binge drinking. While the new treatment program specifically aim to intervening on drug abuse, this finding might suggest a need to increase the attention given to the use of alcohol or at least offer some prevention about the risks related to excessive alcohol consumption.

While parents and adolescents’ perceptions revealed significant improvements of problem behavior, the perceptions of group care workers showed no improvement and, for externalizing problems, their ratings showed a worsening of problems. In addition, according to the ratings of the group care workers at time of discharge, adolescents’ problem behaviors fell in the borderline range for internalizing problems and in the clinical range for externalizing problems. Including the group care workers’ perceptions in reporting problem behavior is important because parents do not have full
insight into their child's problem behaviors when the adolescent stays in residential care. Ferdinand et al. (2003) emphasizes the contribution of clinicians' ratings of problem behavior. A possible explanation for not finding treatment improvement based on group care worker's perceptions might be the high severity of problems of the adolescents admitted to the new residential treatment program (Nijhof, Van Dam, Veerman, Engels, & Scholte, 2010). Possibly, group care workers find a longer duration of treatment necessary based on the problem behaviors of the adolescent and might over report the problem behaviors. Another explanation is that group care workers overemphasize problems because they want to stress the high severity of problems within the sample. For the participating institutions, the new treatment program also involves a new target group of youth and they noticed that the admitted adolescents demonstrated more severe problems than expected, which has consequences for the organizational conditions as well as treatment.

Family involvement in residential care has been found to positively influence individual outcomes (e.g., Frensch & Cameron, 2002; Hair, 2005); however, in the current study, family involvement did not seem to improve family functioning. It is often assumed that maintaining the individual's improvement after treatment is difficult and largely depends on the situation following treatment (e.g., Harder et al., 2006). Our findings suggest that, when nothing is changed within the family, it is indeed hard for the adolescents to maintain their improvement, especially when they return to the family after treatment. For the clinical practice, this finding implicates that it is important to measure and have insight into family functioning before sending the adolescent home. On the other hand, according to parent ratings, family functioning at time of entrance was not that problematic in light of the relatively high scores on overall family functioning. High scores on this measurement indicate good family functioning and there is not much room left to further increase family functioning. However, this is a surprising finding, because the families of the adolescents involved were found to show a diversity of problems (Van Dam, Nijhof, Scholte, & Veerman, 2010). One explanation might be that other problems play a role, which were not or were unsatisfactory measured with the instrument used in the present study (e.g., substance abuse, parental criminality).

Of importance, the findings showed a significant decrease of parental stress during the course of treatment. However, the question is whether parental stress increases when the adolescents is discharged and lives with the family again. That is, the decrease in parental stress might also be explained by the adolescents not living at home. Overall, more research is needed at the family level to obtain more insight into family functioning, parental stress, the adolescent functioning after treatment (follow-up), as well as the mechanisms between these variables, especially because of the low response rates of the parents.

Several limitations of the current study need attention. First, no control group was available, as a result, no conclusions can be drawn whether the adolescents and families in our study show more or less improvement compared to other adolescents in youth care or compared to a non-treatment group. However, this is a well-known phenomenon in studies examining the effectiveness of youth care (Veerman & Van Yperen, 2007). Therefore, these authors distinguished different levels that all contributed, in their own way, to achieve evidence for the effectiveness of youth care interventions. The present study attempted to provide evidence on the indicative level; that is, reducing adolescent problem behaviors. Another limitation concerns the low response rates of all informants regarding the questionnaires. Partly, this could be counterbalanced by using the FIML estimator in Mplus as this uses
all available information in the dataset via pairwise comparisons.

In general, our study adds to our understanding of the potential effects of a new residential treatment program in the Netherlands. Treatment improvement was found on several areas, which gives hope for the future and supports the effectiveness of this new treatment program. Different aspects of the new treatment program might have contributed to the improvement. First, the closeness of the institutional environment might play a role as this environment offers protection against adolescents themselves as well as the environment (e.g., abuse, threats). Second, the new treatment program includes intensive family involvement, which has been related to positive treatment outcomes (e.g., Frensch & Cameron, 2002; Hair, 2005; Harder et al., 2006). Moreover, next to the inclusion of evidence-based interventions, the new treatment program was developed in cooperation with the clinical field. This is especially important due to the high comorbidity of problems. Because of this comorbidity, a more specialised treatment was needed. Cooperation between different sectors might also have contributed to a more optimal and efficient approach. However, knowing that many adolescents return to the parental home after discharge (46%; Van Dam, Nijhof, Scholte, & Veerman, 2010), the fact that the family does not improve in their functioning underlines the importance of future research at the family level. As such, the practical field should be motivated to pay more attention to the functioning of the family.
CHAPTER 7

SEXUAL BEHAVIOR OF INSTITUTIONALIZED GIRLS:
RISK FACTORS AND TREATMENT IMPROVEMENT

Submitted as:
**Abstract**

The present study examined the associations among sexual behavior, risk factors, and treatment progress of institutionalized girls. The treatment files of 174 girls ($M_{age} = 15.71$, $SD = 1.14$) were analyzed to obtain information about risk factors before admission to the treatment program. Of these 174 girls, a subsample of 95 girls was asked to complete questionnaires to measure treatment progress. Based on their sexual behavior, girls were classified into three subgroups: girls showing sexually normative behavior (29%), girls showing promiscuous behavior (43%), and girls with a history of forced prostitution (29%). The findings revealed that promiscuous girls had the most problematic background at the individual as well as the family level before admittance. While no differences in self-reported problem behavior were found between the subgroups at the start of the treatment, over time differences between the subgroups were found. This indicates that the girls in the different subgroups might require a different treatment approach. Further research that would include larger samples is needed to explore specific treatment needs.

**Introduction**

Previous research has under-investigated the girls in residential care (Griffith, Trout, Chmelka, Farmer, Epstein, Reid, et al., 2009). This is somewhat surprising because girls represent almost half of the adolescents admitted to residential care in the Netherlands (Van Dam, Nijhof, Scholte, & Veerman, 2010) as well as in the US (Griffith et al., 2009). Concerning the risk factors that exist before residential admittance, girls seem to enter residential care with more troubled behavior compared to boys (e.g., Connor, Doerfler, Toscano, Volungis, & Steingard, 2004; Doerfler, Toscano, & Connor, 2009), showing higher levels of internalizing and externalizing problems, higher alcohol and drug use, and more aggressive behavior than do boys. Girls also show higher frequencies of out-of-home placements and are more often victim of physical and sexual abuse. Girls are also more likely to have parents who abuse alcohol (Connor et al., 2004). In addition, girls seem to profit less from residential treatment compared to boys (Frensch & Cameron, 2002). Despite the differences found between boys and girls admitted to residential care, most previous studies (e.g., Bettman & Jasperson, 2009; Knorth, Harder, Zandberg, & Kendrick, 2008) that examined the improvement while in residential care do not specifically focus on girls. Therefore, the present study aims to investigate the risk factors for admission to the treatment as well as the treatment progress of girls admitted to residential care.

In 2005, a new compulsory residential treatment program was developed in the Netherlands especially for adolescents with severe behavior problems. These youths, as well as their social environment, require protection because of a worrisome development of these adolescents. The adolescents admitted to this residential treatment program must meet one of the seven urgency criteria. The highest urgency includes being a victim of (forced) prostitution, followed by being a victim of sexual offenses and psychological or physical abuse. In addition, they must be in need of police involvement to prevent further escalation, must be vulnerable to become victim in one of the aforementioned situations, must need protection against themselves to prevent further escalation of their maladaptive behavior, or their own environment must be in need of protection from their behavior (Nijhof, Van Dam, Veerman, Engels, & Scholte, 2010).
Adolescents admitted to the new treatment program live in treatment groups in which daily structure, leisure activities, and school attendance are important aspects. Like most other residential programs, the new treatment program requires a multi-modal approach. Based on their individual needs, it offers different interventions for both the adolescents (e.g., aggression regulation training, social skills training, cognitive behavior therapy) and their family (e.g., functional family therapy, multisystemic therapy, family support). Several reviews (Frensch & Cameron, 2002; Hair, 2005; Knorth et al., 2008; Preyde, Adams, Cameron, & Frensch, 2009) have focused on the effects of residential treatment. Combining individual interventions with family interventions seems to increase the likelihood of positive outcomes (Behan & Carr, 2000; Frensch & Cameron, 2002; Hair, 2005).

Girls’ sexual behavior
The victims of forced prostitution, most of whom are girls, require urgent admittance to the new treatment program. In the 1990’s, the Netherlands experienced a sudden increase in young, underage girls who were forced to work as prostitutes (Bovenkerk, Van San, Boone, Boekhout, Van Solinge, & Korf, 2004; Van Dijke, Terpstra, Berger, & Geurts, 2006). Because youth prostitution takes place mostly in hidden contexts outside public awareness, it is difficult to estimate the number of these girls (Ayre & Barrett, 2000; ECPAT, 2002; Goderie, 2002). In addition, scientific knowledge about the treatment progress of these girls is limited. Girls who are admitted for other reasons than being a victim of forced prostitution often show promiscuous behavior and as a result are at an increased risk for becoming victims of forced prostitution (Van der Poel, Rutten, & Sondeijker, 2008). The girls admitted to the new treatment program in the Netherlands can be divided in three categories based on their sexual behavior: girls who show sexually normative behavior, girls who show promiscuous behavior (i.e., wearing provocative clothes, having high rates of sexual intercourse), and girls who are victims of forced prostitution. The present study aims to examine the risk factors for admission into the treatment program and the treatment progress of these subgroups of girls. It is expected that these three subgroups will be significantly different in terms of risk factors before admission. It is also expected that the three subgroups of girls will require different treatments because they are being admitted to the new treatment program for different reasons.

Method
Participants
The sample consisted of 174 girls admitted to four Dutch residential institutions with a mean age of 15.71 at time of admission (SD = 1.14). Of all girls, 53% had biological parents who were both born in a Western country. Moreover, 25% of the girls had at least one biological parent who was born in a non-Western country, and 22% of the girls had at least one biological parent for whom the country of birth was unknown. Compared to national data, our sample includes fewer adolescents with parents born in a Western country (Central Bureau of Statistics (CBS), 2010). Concerning the living situation before admittance, 83% of the girls already experienced some form of care, 12% lived with the family, 5% was homeless, and for almost 1% the living situation was unknown. Concerning the girls who experienced some form of care, a large part was admitted to juvenile detention centers (73%). The other girls were for example in foster care or mental health centers. Before admittance, one girl was pursuing primary
special education (0.6%), 16% secondary special education, 40% secondary regular education, and 4% followed occupational education. One girl was employed (0.6%), 29% did not engage in any structured activity during daytime, and 9% did not provide information on main daytime activities.

Procedure
The present study is part of a longitudinal study evaluating a new residential treatment program. Six institutions in the Netherlands, which offered this new residential treatment program, participated, of which four institutions offered the treatment program to girls. All adolescents that were admitted to the program from the time the institution started to offer the new treatment program to December 2008 were eligible to participate. At time of admittance, both the parents as well as the adolescents were requested to sign a form allowing us to use the collected information for scientific purposes. Because the sample consisted of underage adolescents with severe behavioral problems, the appropriate Medical Ethics Committee reviewed and approved the study.

Upon their admission, data for the study were extracted from treatment files of 185 girls (including for example judicial reports, diagnostic reports, information from youth care agencies). Both the institutions as well as the participants gave written permission to analyze these files. Sexual behavior of these girls was recorded using the scoring scheme for treatment files, classifying girls into three groups; (1) sexually normative behavior, (2) promiscuous behavior, and (3) girls with a history of forced prostitution. Girls who prostituted voluntarily according to the files, were excluded because they formed a small subsample (n = 11), resulting in a final sample of 174 girls.

Of the 174 girls, a subsample of 95 girls (55%) was asked to complete questionnaires while the remaining 79 girls were excluded because they were already halfway or at the end of their treatment and were not able to participate from the beginning (i.e., start of the treatment). The questionnaires were completed at time of admittance (T1), six months later (T2), and at time of discharge (T3). The questionnaires at T2 were completed on an average 6.15 months (SD = 1.64) after admittance, and the T3 questionnaires were completed on an average 11.88 months (SD = 3.85) into the treatment (at time of discharge). Of these 95 adolescents, 71% participated at T1, 56% at T2, and 33% at T3. Not all 95 adolescents participated in each wave for organizational or logistic reasons. For example, institutions that started their treatment programs at the time of the commencement of this study were not equipped to participate in such an intensive study, or in some institutions, the treatment duration was too short, not leaving enough time between the measurements. Attrition analyses between subgroups were performed concerning treatment improvement to see whether differences existed between the girls who completed questionnaires (n = 95) and the girls who did not complete questionnaires (n = 70). Selective attrition was measured based on the number of risk factors per level (individual, family, environmental) at all three time points because a higher number of risk factors is related to a more negative development (Rutter, 1979; Sameroff, 1998). Independent t-tests showed no differences between the girls who participated (i.e., completing questionnaires) at the three time points and the girls who did not participate at the three time points at the individual, family, and environmental levels. This means that we had no indication of selective attrition concerning the treatment progress; therefore, we could conclude that the girls who participated at all time points were representative of the total sample.
Chapter 7

Measures

Analyses of the files

To obtain information about the risk factors of participants prior to the admittance to the treatment, their treatment files were analyzed using a scoring scheme for treatment files based on previous Dutch studies (Nijhof & Van Dam, 2007). In addition to demographic information, this scheme provided information about risk factors in several domains. Based on the ecological model of Bronfenbrenner and Ceci (1994), risk factors referred either to the individual, family, or environmental level (see also Table 1). The individual domain comprised twelve factors (e.g., police contacts, truancy, internalizing problems), the family level consisted of seventeen factors (e.g., number of children, stability of parenting environment), and the environmental domain included two factors (sexual abuse outside the family, risky peer group). To test the reliability of the scoring scheme, two research assistants were trained in analyzing the files. Two research assistants analyzed ten files. We calculated inter-rater reliability with the alpha value of 80%, indicating that the two researchers analyzed these files reliably.

Questionnaires

PROBLEM BEHAVIOR. Internalizing and externalizing behavior problems were measured using the 112-item Youth Self Report (YSR, Achenbach, 1991; Verhulst, Van der Ende, & Koot, 1997). The YSR items cluster around eight narrow-band syndromes (e.g., anxiety/depression, social problems, aggressive behavior) and two broadband syndromes, internalizing problems and externalizing problems. In the present study, only the two broadband syndromes were used. All items could be answered on a three-point scale ranging from 0 ‘not at all’ to 2 ‘often’, with higher scores indicating more problems. The Cronbach’s alphas for the internalizing and externalizing dimensions were .92 and .91 at T1, .91 and .91 at T2, and .92 and .90 at T3, respectively for internalizing problems and externalizing problems.

DELINQUENCY. A 26-item questionnaire that measures delinquency during the preceding year contains three subscales, including a 11-item property offenses subscale (e.g., shoplifting, stealing), a 8-item violent offenses subscale (e.g., participating in a serious physical fight, injuring someone), and a 7-item vandalism subscale (e.g., damaging property, arson; Van der Laan, 2005). All items were measured on a 5-point scale with 1 = never (0 incidents), 2 = one incident, 3 = two incidents, 4 = 3 to 10 incidents, and 5 = more than 10 incidents. At T1, the Cronbach’s alphas for the three subscales were .90 for property offenses, .83 for violent offenses, and .82 for vandalism. At T2, the alphas were .82, .79, .75 and at T3, the alphas were .85, .86, .82, respectively for property offenses, violent offenses, and vandalism. Higher scores indicated more frequent offending.

DRUG USE. Concerning the use of drugs, all participants were asked how often they used drugs (marijuana, XTC, coke, magic mushrooms, amphetamines, heroin) in the last twelve months. This variable was measured on a 6-point scale with 1 = never, 2 = seldom, 3 = couple of times a month, 4 = once a week, 5 = couple of times a week, and 6 = every day. Higher scores indicated more frequent drugs use.

BINGE DRINKING. The participants were asked one question, ‘How often did you have five or more alcoholic drinks in a row during the last four weeks?’ Participants responded on a six-point scale (1 =
never to 6 = every day). Higher scores indicated more frequent binge drinking. This question has often been used in prior studies on alcohol use (e.g., Monshouwer, Verdurmen, Dorsselaer, Smit, Gorter, & Vollebergh, 2008; Wechsler & Nelson, 2001).

SELF-ESTEEM. The Rosenberg Self-Esteem Scale (Rosenberg, 1965) was used to measure self-esteem. This questionnaire contains 10 items measured on a 4-point scale ranging from 1 = does not fit me to 4 = does fit me. Cronbach’s alphas were .94 at T1, .93 at T2, and .94 at T3. Higher scores indicated a higher self-esteem.

COPING. Coping was measured using a 15-item questionnaire (short version of the Utrecht Coping List (UCL), Schreurs & Van de Willige, 1988) measured on a 4-point scale ranging from 1 = seldom/never to 4 = very often. The 15 items could be categorized into three domains: problem focused coping, emotional coping, and avoidance focused coping. Cronbach’s alphas were .81, .72, .51 for T1, .79, .78, .78 for T2, and .80, .69, .78 for T3, respectively for the three domains.

Statistical analyses
Cross tabulations were performed to examine differences between the three subgroups on specific risk factors at time of admittance to new treatment program. All risk factors were labeled 0 = not present and 1 = present. Consequently, multinomial logistic regression analyses were used to test these differences among the three subgroups. First, sexually normative girls were compared to the other two groups. Second, promiscuous girls were compared with the victims of forced prostitution. These analyses included only the risk factors that emerged as significant in the univariate analyses.

The next aim of the present study concerned the treatment improvement of the girls in the three subgroups. Regression analyses using Mplus tested the treatment improvement of the girls in the three subgroups (Muthén & Muthén, 1998-2006). The three subgroups were compared both at baseline and over time. Changes in problem behavior during treatment (i.e., T1-T2 and T2-T3) were measured for every study variable (internalizing and externalizing problem behaviors, criminal behavior, drugs- and alcohol use, self-esteem, and coping). To be able to use all available information obtained from the data, the estimator FIML (Full Information Maximum Likelihood) was used because of the pattern of missing values at each time point. The Maximum Likelihood Robust estimator (MLR) was used because of the skewness of the behavioral measures. Figure 1 presents the conceptual model. The model includes individual stability paths from T1 to T2, T2 to T3, and from T1 to T3 in order to account for residual change across the three measurements. To compare the three subgroups on concurrent (i.e., at baseline) and prospective differences, three dummy variables were constructed: normal girls versus promiscuous girls, normal girls versus victims of forced prostitution, and promiscuous girls versus victims of forced prostitution. In order to test all three pairwise differences, two analyses were performed for each behavior. In the first analysis, the promiscuous and forced prostitution groups were compared to the normative (reference) group. In the second analysis, the normative and promiscuous groups were compared to the forced prostitution group.
RESULTS

Descriptive statistics
Of the total sample of 174 girls, 50 (28.7%) girls showed sexually normative behavior, 74 (42.5%) girls showed promiscuous behavior, and 50 (28.7%) girls had a history of forced prostitution. The results revealed that the girls exhibiting sexually normative behavior were significantly older compared to the promiscuous girls, $F(2, 174) = 4.71, p < .05$. Moreover, significantly more girls with a history of forced prostitution (24.5%) were born abroad ($\chi^2(2) = 6.76, p < .05$) compared to the two other subgroups (12.2% of the normative sexual girls and 8.1% of the promiscuous girls). Compared to the normative (2.0%) and promiscuous girls (1.4%), they were also more often homeless (12.0%) before being admitted to the residential treatment program and were less likely to live at home, $\chi^2(2) = 20.19, p < .05$. None of the girls with a history of forced prostitution lived at home before admittance, compared to 14.0% of the sexually normative girls and 18.9% of the promiscuous girls.

Problem behaviors
Univariate results showed group differences on the risk factors (see Table 1). At the individual level, the groups differed on internalizing problem behavior, truancy, traumatic events, and running away from home. At the family level, differences between groups were found for physical violence between parents.
and financial problems. At the environmental level, the findings revealed that both the peer group and sexual abuse by persons outside the family discriminated between the subgroups.

Based on the univariate analyses, only the variables showing significant group differences (internalizing problem behavior, truancy, traumatic events, running away physical violence between parents, financial problems, peer group, sexual abuse by persons outside the family) were entered into multinomial logistic regression analyses to test differences between subgroups (see Table 1). Regarding

Table 1
Cross tabulations between sexual behavior and risk factors (N = 174)

<table>
<thead>
<tr>
<th>Level</th>
<th>Risk factors</th>
<th>Percentages Normative sexual girls</th>
<th>Percentages Promiscuous girls</th>
<th>Percentages Victims of forced prostitution</th>
<th>χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Internalizing problems</td>
<td>80.0*</td>
<td>82.4*</td>
<td>60.0*</td>
<td>8.91**</td>
</tr>
<tr>
<td></td>
<td>Truancy</td>
<td>88.0*</td>
<td>70.3*</td>
<td>80.0**</td>
<td>5.63*</td>
</tr>
<tr>
<td></td>
<td>Smoking</td>
<td>32.0</td>
<td>50.0</td>
<td>46.0</td>
<td>4.08</td>
</tr>
<tr>
<td></td>
<td>Binge drinking</td>
<td>20.0</td>
<td>35.1</td>
<td>34.0</td>
<td>3.64</td>
</tr>
<tr>
<td></td>
<td>Use of soft drugs</td>
<td>64.0</td>
<td>66.2</td>
<td>76.0</td>
<td>1.95</td>
</tr>
<tr>
<td></td>
<td>Use of hard drugs</td>
<td>30.0</td>
<td>28.4</td>
<td>30.0</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Police contact</td>
<td>58.0</td>
<td>60.8</td>
<td>50.0</td>
<td>1.46</td>
</tr>
<tr>
<td></td>
<td>Physical violence within the family</td>
<td>48.0</td>
<td>36.5</td>
<td>32.0</td>
<td>2.93</td>
</tr>
<tr>
<td></td>
<td>Autummation</td>
<td>32.0</td>
<td>35.1</td>
<td>28.0</td>
<td>.70</td>
</tr>
<tr>
<td></td>
<td>Suicidal behavior</td>
<td>40.0</td>
<td>29.7</td>
<td>28.0</td>
<td>2.01</td>
</tr>
<tr>
<td></td>
<td>Traumatic events</td>
<td>50.0*</td>
<td>71.6*</td>
<td>52.0*</td>
<td>7.56**</td>
</tr>
<tr>
<td></td>
<td>School problems</td>
<td>68.0</td>
<td>71.6</td>
<td>74.0</td>
<td>.45</td>
</tr>
<tr>
<td></td>
<td>Running away</td>
<td>78.0*</td>
<td>89.2*</td>
<td>94.0*</td>
<td>6.19**</td>
</tr>
<tr>
<td>Family</td>
<td>Presence of mother</td>
<td>94.0</td>
<td>94.6</td>
<td>98.0</td>
<td>1.10</td>
</tr>
<tr>
<td></td>
<td>Presence of father</td>
<td>72.0</td>
<td>77.0</td>
<td>80.0</td>
<td>.91</td>
</tr>
<tr>
<td></td>
<td>Relationship between parents</td>
<td>34.0</td>
<td>28.4</td>
<td>44.0</td>
<td>3.23</td>
</tr>
<tr>
<td></td>
<td>Number of children in the family</td>
<td>10.0</td>
<td>20.5</td>
<td>16.3</td>
<td>2.42</td>
</tr>
<tr>
<td></td>
<td>Physical/health problems mother</td>
<td>44.0</td>
<td>59.5</td>
<td>52.0</td>
<td>2.88</td>
</tr>
<tr>
<td></td>
<td>Physical/health problems father</td>
<td>20.0</td>
<td>21.6</td>
<td>24.0</td>
<td>.24</td>
</tr>
<tr>
<td></td>
<td>Addictions (alcohol and/or drugs) mother</td>
<td>8.0</td>
<td>13.5</td>
<td>14.0</td>
<td>1.10</td>
</tr>
<tr>
<td></td>
<td>Addictions (alcohol and/or drugs) father</td>
<td>16.0</td>
<td>14.9</td>
<td>16.0</td>
<td>.04</td>
</tr>
<tr>
<td></td>
<td>Abuse by parents</td>
<td>36.0</td>
<td>37.8</td>
<td>36.0</td>
<td>.06</td>
</tr>
<tr>
<td></td>
<td>Physical violence between parents</td>
<td>22.0**</td>
<td>32.4*</td>
<td>14.0*</td>
<td>5.71*</td>
</tr>
<tr>
<td></td>
<td>Stability parental environment</td>
<td>64.0</td>
<td>70.3</td>
<td>62.0</td>
<td>1.05</td>
</tr>
<tr>
<td></td>
<td>Quality parental environment</td>
<td>92.0</td>
<td>95.9</td>
<td>88.0</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>Problems parent-child relationship</td>
<td>96.0</td>
<td>95.9</td>
<td>96.0</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Police contacts family</td>
<td>16.0</td>
<td>18.9</td>
<td>18.0</td>
<td>.18</td>
</tr>
<tr>
<td></td>
<td>Problems social network</td>
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<td>13.5</td>
<td>14.0</td>
<td>3.46</td>
</tr>
<tr>
<td></td>
<td>Accommodation problems</td>
<td>8.0</td>
<td>9.5</td>
<td>20.0</td>
<td>4.22</td>
</tr>
<tr>
<td></td>
<td>Financial problems</td>
<td>20.0*</td>
<td>31.1*</td>
<td>14.0*</td>
<td>5.27*</td>
</tr>
<tr>
<td>Environment</td>
<td>Sexual abuse outside the family</td>
<td>20.0*</td>
<td>37.8*</td>
<td>34.0*</td>
<td>4.58*</td>
</tr>
<tr>
<td></td>
<td>Risky peer group</td>
<td>60.0*</td>
<td>74.3*</td>
<td>80.0*</td>
<td>5.34*</td>
</tr>
</tbody>
</table>

Note. Univariate analyses (cross tabulations) were applied to test whether or not there were group differences on risk factors (see percentages and χ²). **p < .01, *p < .05, .p < .10. Multinomial logistic regression analyses were performed using one group as a reference to test how subgroups differed from one another (see the superscripts). Subgroups with different superscripts were significantly different from each other, p < .10.
Table 2
Means and standard deviations for all study variables for the three subgroups (N = 95)

<table>
<thead>
<tr>
<th></th>
<th>Sexually normative girls</th>
<th>Promiscuous girls</th>
<th>Victims of forced prostitution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1</td>
<td>T2</td>
<td>T3</td>
</tr>
<tr>
<td>Internalizing</td>
<td>58.60</td>
<td>13.88</td>
<td>58.78</td>
</tr>
<tr>
<td>Externalizing</td>
<td>61.90</td>
<td>11.56</td>
<td>60.80</td>
</tr>
<tr>
<td>Criminality</td>
<td>1.95</td>
<td>.73</td>
<td>1.77</td>
</tr>
<tr>
<td>Drugs use</td>
<td>.33</td>
<td>.48</td>
<td>.55</td>
</tr>
<tr>
<td>Binge drinking</td>
<td>1.38</td>
<td>1.02</td>
<td>1.65</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>2.57</td>
<td>.42</td>
<td>2.65</td>
</tr>
<tr>
<td>Coping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem</td>
<td>2.20</td>
<td>.67</td>
<td>2.17</td>
</tr>
<tr>
<td>Emotional</td>
<td>2.49</td>
<td>.62</td>
<td>2.80</td>
</tr>
<tr>
<td>Avoidance</td>
<td>2.10</td>
<td>.50</td>
<td>2.39</td>
</tr>
</tbody>
</table>

Note. T1 = at time of entrance, T2 = halfway treatment, T3 = at time of discharge.
internalizing problem behavior, the analyses of the files indicated that girls with a history of forced prostitution were less likely to show internalizing problems compared to both other subgroups. Moreover, compared to girls with a history of forced prostitution, promiscuous girls showed less truancy compared to sexually normative girls, and their parents engaged more in physical violence. Promiscuous girls experienced significantly more traumatic events and more financial problems within the family compared to the two other subgroups. Running away, having a risky peer group, and sexual abuse outside the family were significantly less common for sexually normative girls compared to both other subgroups.

Treatment improvement
Differences between subgroups at baseline
At time of admission to the new treatment program, no differences were found between the three subgroups on the measured variables, except for criminal behavior (see Table 3). This means that the three subgroups of girls did not differ in the extent of internalizing and externalizing problems, drugs use, binge drinking, self-esteem, and coping when they entered the treatment program. For criminal behavior, the only difference was found between sexually normative girls and victims of forced prostitution, with normative girls entering the treatment program with significantly higher rates of criminal behavior compared to victims of forced prostitution (see Table 2).

Table 3
Regression analyses predicting differences at baseline for the three subgroups (N = 95)

<table>
<thead>
<tr>
<th>Subgroups</th>
<th>1 vs 2</th>
<th>2 vs 3</th>
<th>1 vs 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>β</td>
<td>β</td>
</tr>
<tr>
<td>Internalizing problems</td>
<td>-.18</td>
<td>.06</td>
<td>-.20</td>
</tr>
<tr>
<td>Externalizing problems</td>
<td>-.03</td>
<td>.14</td>
<td>-.15</td>
</tr>
<tr>
<td>Criminality</td>
<td>.20</td>
<td>.14</td>
<td>.29**</td>
</tr>
<tr>
<td>Drugs use</td>
<td>.01</td>
<td>-.21</td>
<td>.20</td>
</tr>
<tr>
<td>Binge drinking</td>
<td>.07</td>
<td>-.02</td>
<td>.08</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>-.05</td>
<td>.03</td>
<td>-.07</td>
</tr>
<tr>
<td>Coping Problem</td>
<td>-.01</td>
<td>-.07</td>
<td>.05</td>
</tr>
<tr>
<td>Emotional</td>
<td>-.04</td>
<td>.04</td>
<td>-.07</td>
</tr>
<tr>
<td>Avoidance</td>
<td>.07</td>
<td>-.07</td>
<td>.12</td>
</tr>
</tbody>
</table>

Note. Subgroups: 1 = sexually normative girls, 2 = promiscuous girls, 3 = victims of forced prostitution.
*p < .10, **p < .05, ***p < .01.

Differences in subgroups over time
To test the changes of problem behavior during treatment, we examined the differences between the three subgroups from T1 to T2 and from T2 to T3. The mean duration of the treatment was almost one year (M = 10.83 months, SD = 5.81) with no differences between the three subgroups. Although the extent of problem behavior between the three subgroups did not differ at the start of the treatment, significant differences were found in the changes in internalizing problems, criminal behavior, drugs use, self-esteem, and emotional coping across the three time point measurements. Table 2 presents the mean-levels of each behavior across the three measurements separately for each subgroup. For internalizing problems differences were found between sexually normative girls and promiscuous girls...
from T1 to T2, with the normative girls reporting relatively stable scores and the promiscuous girls reporting an increase in internalizing problems (see Table 4). Victims of forced prostitution differed from the other two groups from T2 to T3, with victims of forced prostitution reporting increases in internalizing problems while girls in the other two groups reported decreases in internalizing problems. The three subgroups did not change significantly different in criminal behavior over time from T1 to T2. However, from T2 to T3, the normative girls differed from the other two subgroups in that normative girls reported a stronger decrease in criminal behavior compared to promiscuous girls and victims of forced prostitution. For drugs use, again no differences between the subgroups were found from T1 to T2. From T2 and T3, the normative group reported higher increases in drugs use compared to the promiscuous girls and victims of forced prostitution. The three subgroups did not differ in change in self-esteem from T1 to T2. From T2 to T3, however, promiscuous girls differed from normative girls and victims of forced prostitution, with normative girls and victims of forced prostitution reporting a decrease in their self-esteem. Finally, differences appeared in the use of emotional coping. From T1 to T2, victims of forced prostitution differed from both other subgroups, with victims of forced prostitution reporting a decrease in the use of emotional coping and the normative and promiscuous girls reporting an increase. From T2 to T3, the normative girls differed from the two others, in that the normative girls showed a further increase in the use of emotional coping, whereas the two other subgroups had relatively stable scores (see Table 2).

Table 4
Regression analyses predicting treatment improvement for the three subgroups (N = 95)

<table>
<thead>
<tr>
<th></th>
<th>T1 - T2</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 vs 2</td>
<td>2 vs 3</td>
<td>1 vs 3</td>
<td>1 vs 2</td>
<td>2 vs 3</td>
<td>1 vs 3</td>
<td></td>
</tr>
<tr>
<td>Internalizing problems</td>
<td>.24**</td>
<td>.12</td>
<td>.10</td>
<td>.10</td>
<td>.31*</td>
<td>.36**</td>
<td></td>
</tr>
<tr>
<td>Externalizing problems</td>
<td>.05</td>
<td>.05</td>
<td>.09</td>
<td>.05</td>
<td>.10</td>
<td>.13</td>
<td></td>
</tr>
<tr>
<td>Criminality</td>
<td>.25</td>
<td>.13</td>
<td>.11</td>
<td>.32*</td>
<td>.06</td>
<td>.22*</td>
<td></td>
</tr>
<tr>
<td>Drugs use</td>
<td>.06</td>
<td>.15</td>
<td>.07</td>
<td>.53***</td>
<td>.17</td>
<td>.31**</td>
<td></td>
</tr>
<tr>
<td>Binge drinking</td>
<td>-.00</td>
<td>-.19</td>
<td>.16</td>
<td>-.01</td>
<td>-.24</td>
<td>.20</td>
<td></td>
</tr>
<tr>
<td>Self-esteem</td>
<td>.07</td>
<td>.06</td>
<td>.01</td>
<td>.27***</td>
<td>.49**</td>
<td>.18</td>
<td></td>
</tr>
<tr>
<td>Coping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem</td>
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<td>.23</td>
<td>.04</td>
<td>.06</td>
<td>.07</td>
<td>.12</td>
<td></td>
</tr>
<tr>
<td>Emotional</td>
<td>-.09</td>
<td>.28**</td>
<td>-.32**</td>
<td>-.27*</td>
<td>.18</td>
<td>.39**</td>
<td></td>
</tr>
<tr>
<td>Avoidance</td>
<td>.01</td>
<td>.04</td>
<td>.03</td>
<td>.25</td>
<td>.05</td>
<td>.26</td>
<td></td>
</tr>
</tbody>
</table>

Note: Subgroups: 1 = sexually normative girls, 2 = promiscuous girls, 3 = victims of forced prostitution. *p < .10, **p < .05, ***p < .01.

Discussion

The present study aimed to examine the risk factors and treatment progress of three subgroups of girls, i.e., sexually normative girls, promiscuous girls, and victims of forced prostitution, that differed in their sexual behavior. Scientific research in this area of high-risk girls being involved in or potentially becoming involved in (youth) prostitution is lacking. Working as a prostitute is not only dangerous (i.e., higher risk of being murdered or raped), but is also related to many serious health risks (e.g., sexually transmitted diseases, teenage pregnancies, severe emotional problems, see Tyler, Whitbeck, Hoyt, &
Moreover, while it is important to examine treatment improvement to get insight into treatment effectiveness, most previous studies did not distinguish between boys and girls. The two reasons, i.e., the lack of research in the area of girls' treatment improvement and girls' involvement in or risk of prostitution, motivated us to select this sample for the purpose of this study. Our findings revealed that 43% of the institutionalized girls showed promiscuous behavior and almost 30% of the girls appeared to be victims of forced prostitution before admittance to the new residential treatment program. This means that 72% of the institutionalized girls were involved in or at risk for becoming involved in youth prostitution and that only 28% of the girls showed sexually normative behavior. Moreover, we found that more victims of forced prostitution were born abroad and that they were more often homeless before admittance compared to normative and promiscuous girls. Whereas promiscuous girls showed a more problematic background at the individual or the family level, no differences were found between promiscuous girls and victims of forced prostitution at the environmental level. Promiscuous girls as well as victims of forced prostitution experienced significantly more sexual abuse by persons outside the family and belonged to a deviant peer group more often compared to sexually normative girls. The literature suggests that both factors are strong predictors of prostitution (e.g., Pedersen & Hegna, 2003; Tyler, Hoyt & Whitbeck, 2000; Widom & Kuhns, 1996).

In our study, the homelessness seems to be the factor that differentiates promiscuous girls from victims of prostitution. Many studies confirmed the association between homelessness and prostitution (e.g., Cusick, 2002; Stewart, Steiman, Cauce, Cochran, Whitbeck, & Hoyt, 2004; Weber, Boivin, Blais, Haley, & Roy, 2004; Willis & Levy, 2002; Yates, 1991). Studies also showed that the primary reason for being homeless is a disrupted family (Hyde, 2005, Rew, 2008; Whitbeck, Hoyt, & Ackley, 1997). Pimps seem to isolate and detach girls from their families (Terpstra & Van Dijke, 2005) and solicit them for prostitution when they run away from home if they feel that the situation at home is untenable (Venizc, 2005). In sum, adolescents from disrupted families are at a higher risk to run away, which in turn relates to homelessness and ultimately prostitution. Our findings that promiscuous girls come from the most problematic families, experience sexual abuse more often compared to normative girls, are involved in deviant peer groups, and show a higher level of running away compared to normative girls suggest that these girls are most vulnerable to become victims of prostitution. Further research should uncover why these girls did not become victims yet or how likely they are to become victims in the future. Our findings also indicated that promiscuous girls were more likely to live at home, whereas the victims of prostitution were more often homeless. A high probability of promiscuous girls to run away might suggest that the promiscuous girls were admitted to the treatment program just in time to prevent them from becoming victims of prostitution.

One of the risk factors promiscuous girls and victims of forced prostitution had in common in our study was the involvement in deviant peer groups. Having deviant peers relates to several negative outcomes, e.g., criminality, prostitution. In adolescence, peers become more important and have an increasing influence on the adolescents' behavior, values, and choices. Girls are even more vulnerable to the influence of peers due to greater intimacy and loyalty in their friendships (Buhrmester & Furman, 1987; Hartup, 1996). Especially homeless girls are at risk for prostitution, whether it is forced or not. The sexually normative girls were significantly less involved with deviant peers compared to the other two subgroups. This implies that being involved in a deviant peer group might be one of the important risk factors for showing non-normative sexual behavior.
The present study also investigated the treatment progress of the three subgroups. Since the sample sizes were very small, it is necessary to exercise caution when interpreting the results. We see this study as the first exploratory study into the treatment progress of three subgroups of girls showing different sexual behavior. Our results showed no differences in problem behavior, except for criminal behavior, at time of admission between the subgroups. Sexually normative girls reported higher levels of criminal behavior at time of entry compared to the two other subgroups. Concerning the treatment progress, we found differences in internalizing problems, criminal behavior, drugs use, self-esteem, and emotional coping. Most differences were found between T2 and T3. Victims of forced prostitution reported an increase in internalizing problems, whereas other subgroups reported a decrease. Moreover, victims of forced prostitution reported less use of emotional coping and compared to promiscuous girls reported a decrease in their self-esteem. These findings imply that the treatment program should focus intensively on internalizing problems, coping, and self-esteem of victims of forced prostitution. The normative girls entered the institutions with higher levels of criminal behavior compared to other two subgroups; however, they also reported greater decreases in criminal behavior. This might suggest that criminal behavior is the primary reason for the sexually normative girls to enter the treatment program. However, normative girls also reported higher increases in drug use and compared to the promiscuous girls, they showed decreases in self-esteem. This suggests that the treatment of sexually normative girls should focus intensively on drugs use and self-esteem. Overall, our findings imply that the girls in different subgroups do have different treatment needs. Further research should examine specific needs of the girls using a much larger sample.

A limitation of the present sample includes the small number of girls completing questionnaires over time. Despite close monitoring, several reasons can be given for the low response rates, i.e., unwillingness to participate, a lack of organization within the institutions. The small sizes limited us to use complex analyses, for example, growth curve analyses. The second limitation concerns the use of treatment files on which the classification of the girls was based. As Tyler and Johnson noted, some cases are difficult to classify into voluntarily or not. This is also one of our limitations because it was not always clear whether a girl who was admitted to the new treatment program had experiences with prostitution, and if she did, whether it was voluntary or not. We specifically asked the girls to indicate in the questionnaires whether their involvement in prostitution was voluntary; however, they were reluctant to talk about it. A final limitation is that only the girls’ perceptions about their problem behavior during treatment was included, while previous studies indicated that adolescents, parents, and group care workers differ in their perceptions of the adolescents’ problem behavior (e.g., Ferdinand, Van der Ende, & Verhulst, 2006; Grills & Ollendick, 2003).

Despite these limitations, the current study contributes to our knowledge of institutionalized girls’ sexual behavior, risk factors and treatment improvement, which is an under-examined area. In general, we can draw two important conclusions. First, promiscuous girls rather than victims of forced prostitution show the most problematic background. It is important that youth care providers are well aware that the promiscuous girls have an increased risk of prostitution. Despite their more troubled background, promiscuous girls did not do worse compared to the other two subgroups during treatment. Our study might suggest that the living situation before admission influences whether or not promiscuous girls become victims since the promiscuous girls but not the victims of forced prostitution were more likely to live at home before admission. However, concerning their high-risk background, it might be that if these
promiscuous girls were not admitted to the new treatment program in time, they could have ended up in prostitution. Future research should examine whether these promiscuous girls indeed profit from treatment and do not become engaged in prostitution after the treatment. Post-treatment assessment is needed to examine how these girls are doing after the treatment and whether the treatment program indeed decreases the risk of prostitution among these girls. Second, the three subgroups did not differ on the level of problem behavior at time of admittance. However, they differed in the treatment progress over time, suggesting that a differential approach should be utilized. Future research may want to examine the needs of adolescents in treatment to be able to reach optimal effects and minimize the risk of (again) initiating prostitution after the treatment.
CHAPTER 8

GROUP CARE WORKER BEHAVIOR AND ADOLESCENTS’ INTERNALIZING AND EXTERNALIZING PROBLEMS IN COMPULSORY RESIDENTIAL CARE

Submitted as:
ABSTRACT

Approximately 30,000 children receive residential care in the Netherlands every year. Although residential care shows positive outcomes, little is known about the influence of group care workers on changes in adolescents’ problem behavior during treatment. In the present study, we examine the initial status and change in the adolescents’ problem behavior during treatment, focusing on group care workers’ behavior towards the adolescents. The sample consisted of 126 adolescents (M age = 15.80, SD = 1.23, 56% boys) residing in a new Dutch compulsory residential treatment program. At time of admittance, halfway through treatment, and at time of discharge, we assessed internalizing and externalizing behaviors of adolescents based on the reports of adolescents and group care workers. Group care workers’ ratings of their own behavior were measured at adolescents’ discharge. Latent growth curve analyses were used to analyze whether group care workers adapted their behavior to the adolescents’ problem behavior at time of admittance. Second, we examined whether group care workers’ behavior was associated with the adolescents’ problem behavior. The results revealed that group care workers were more likely to exert structuring and controlling behavior with adolescents with externalizing problems and warm and supportive behavior with adolescents with internalizing problems. Generally, group care workers exerted more controlling behavior towards older adolescents and boys, whereas they exerted more warm and supportive behavior towards younger adolescents and girls. No associations were found between group care workers behavior and the adolescents’ treatment progress. Clinical implications of these findings and suggestions for future research are discussed.

INTRODUCTION

Approximately 30,000 children receive residential care in the Netherlands every year (Baecke, De Boer, Bremmer, Duenk, Kroon, et al., 2009; Van Dam & Veerman, 2011). In the Netherlands, residential youth care can be divided into four areas: child welfare services, youth mental health services, youth care for the intellectually disabled, and the juvenile justice system. Residential care can be defined as 24-hour care offering several mental health services with the goal of preparing children to re-enter into the community. Children who are placed in residential settings suffer from severe internalizing and externalizing problem behaviors and often come from dysfunctional families who cannot cope with the problem behavior of their children. Problems in school, problems in leisure activities, and affiliation with deviant peer groups often accompany the individual problems of the children. For these children and youth, it is required that treatment takes place outside their home in a non-family setting (Connor, Miller, Cunningham, & Melloni, 2002; Frensch & Cameron, 2002; Knorth, Harder, Huyghen, Kalverboer, & Zandberg, 2010).

Although residential care is often considered a last resort for children who dropped out from several other treatment programs, sometimes it can be the most appropriate treatment. Several studies showed that residential care leads to positive outcomes for some children. In general, effect sizes vary from .45 for internalizing problems to .60 for externalizing problem behavior (Knorth, Harder, Zandberg, & Kendrick, 2008). In their review, Harder, Knorth, and Zandberg (2006) pointed out that behavior problems do not improve in about 20 to 40% of the children, and for a small part of the children, behavior problems become even worse. Multimodal residential programs and programs based
on cognitive behavioral frameworks combined with a family focus appear to be the most promising programs for reducing problem behavior (Boendermaker Van Rooijen & Berg, 2010; Harder et al., 2006). Whereas several studies examined the treatment improvement of youth admitted to residential care, little attention has been paid to the association between the content of residential care and changes in problem behavior during treatment. This lack of knowledge is also referred to as the ‘black box’ of residential care (Florsheim, Shotorbani, Guest-Warnick, Barratt, & Hwang, 2000; Knorth et al., 2010).

Group care workers play an important role in the processes of change. As Knorth et al. (2010) stated, ‘we can be certain about one thing: the box can only function thanks to the care-giving staff in the residential community’ (p. 51). In residential care, group care workers are the substitute primary caregivers who look after the children 24 hours a day. Besides school attendance and individual therapies, children in residential care spend most of their times in the treatment group. During the everyday life in the group, group care workers have several opportunities to model appropriate responses, to support the children in coping with aspects of daily life, and to challenge and encourage them to experiment with newly learned behavior (Ward, 2004). This means that a large part of the treatment in residential care involves adolescents engaging in everyday routine through interactions with group care workers. Two key factors involved in this treatment include the group climate and the relationships between group care workers and the children (Knorth et al., 2010). Despite the important role of group care workers, only a few studies provided insight into the therapeutic role of group care workers. Therefore, the present study focused on these group care workers and especially their behavior when interacting with the adolescents.

Recently, Van der Helm, Klapwijk, Stams, and Van der Laan (2009) studied the role of group climate in establishing and maintaining treatment effects in adolescents placed in a juvenile detention centre. They distinguished two types of group climate, an open, supportive climate and a closed, repressive group climate. In an open group climate, group care workers treat adolescents with respect and pay attention to the adolescents’ needs. In addition, the adolescents trust the care workers and feel safe around them. In a closed or repressive group, group care workers give little attention to adolescents and have strict and unfair rules. Adolescents feel unsafe and do not trust group care workers. Van der Helm et al. (2009) found that in open group climates, adolescents were more motivated for treatment compared to adolescents in closed group climates. High treatment motivation is assumed to be one of the most pivotal indicators of positive treatment outcomes or successful reintegration into society.

To our knowledge, only two previous studies focused on the actual behavior of group care workers. Van den Berg (2000) performed an observational study of interactions between 16 group care workers and 24 children (mean age 10.2 years) with severe behavioral and emotional problems residing in residential group homes. The researcher studied two types of treatment groups, groups in which the provision of structure was predominantly apparent (i.e., structured group) and groups in which the provision of emotional-affective care and support was of primary importance (i.e., affective group). The structured group comprised of children with externalizing problems and the affective group consisted of children with emotional behavior problems. The results of this study revealed that in 59% of the interactions, group care workers’ behavior was genuinely friendly (e.g., nurturing, protecting, affirming, understanding), which means that they created a positive, warm group climate. In 24% of the interactions, autonomy granting behavior (e.g., freeing, forgetting, separating) was apparent. Controlling behavior was much less prevalent, observed in 11% of the interactions, while authoritarian behavior
occurred seldom (1.6%). The remaining interactions could be classified as neutral (5.4%). In sum, the group care workers' behavior was similar for the two types of treatment groups. However, group care workers' interpersonal behavior differed within treatment groups (structured vs. affective groups) as much as between the two different types of treatment groups. Van den Berg concluded that group care workers' behavior reflects a more personal behavior style rather than a methodological approach. Kloosterman and Veerman (1999) also examined group care workers' behavior. They developed an intervention checklist to measure group care workers' behavior towards 136 children (mean age 10.3 years) placed in day care centers. They focused on how group care workers treat children with specific behavior problems and whether group care workers' behavior related to treatment outcome. Group care workers reported their own behavior and children's internalizing and externalizing problems in half-year intervals. The results revealed that children with externalizing problems received more structured interventions (e.g., correcting inappropriate behavior) and children with internalizing problems received more stimulating interventions (e.g., talking about feelings) from group care workers. The researchers also found that group care workers' structuring behavior related to lower levels of treatment improvement in externalizing problems. For internalizing problems, the study did not find a significant relation between group care workers' behavior and treatment outcome.

The present study
The aim of the present study was to examine the relationship between group care workers' behavior and adolescents' change in problem behavior during their stay in a compulsory residential treatment program. The literature on the treatment of children with intellectual disabilities generally assumes that staff perceptions of children's problem behavior affect their own behavior towards children (Hastings, 2005). Therefore, we used both care workers and adolescents as informants of the adolescents' problem behavior. Our first expectation was that group care workers adapt their behavior to the problem behavior of the adolescents at time of admission. Based on the results of the study of Kloosterman and Veerman (1999), we expected for group care workers to exert more structuring and controlling behavior towards adolescents with externalizing problems. Further, we expected group care workers to show more warm and supportive behavior towards adolescents with internalizing problems. Second, we hypothesized that group care workers' behavior is associated with the change in the adolescents' problem behavior. For adolescents with externalizing problems, we expected that structuring and controlling behavior from group care workers would improve the treatment outcomes. For adolescents with internalizing problems, we expected that warm and supportive behavior from group care workers would improve the treatment outcomes.

**Method**

**Procedure**
The present study is part of a prospective longitudinal study on the effects of a new compulsory residential treatment program for adolescents with severe behavior problems. Six Dutch residential institutions offer this new one-year treatment program. The treatment incorporates daily routine in the group, leisure activities, school attendance, and individual and family interventions, if indicated (Nijhof, Vermulst, Veerman, Engels, & Scholte, 2011).
Adolescents who were admitted to the new treatment program between May 2007 and December 2008 participated in the study. Adolescents and group care workers, i.e., the mentor of the adolescent, completed questionnaires at time of admittance (T1), six months later (T2), and at time of discharge (T3). To ascertain that group care workers had a reliable picture of the adolescents' behavior, group care workers took the first measurement (T1) approximately six weeks after the adolescents' admittance to the treatment group. Because the sample consisted of under aged adolescents with severe behavior problems, the appropriate medical ethics committee reviewed and approved the research.

Participants
The sample consisted of 126 adolescents (56% boys and 44% girls). The mean age was 15.80 (SD = 1.23). With regard to ethnicity, parents of 52% of all adolescents in the study were both born in a Western country. The mean length of stay in the institutions was 11.77 months (SD = 5.07). From the 126 respondents, 76% adolescents participated at T1, 56% at T2, and 51% at T3. Some adolescents did not participate for organizational reasons (22% at T1, 22% at T2, 44% at T3), explicit refusal (2% at T1, 1% at T2, 2% at T3), or the length of stay was too short to be able to participate at T2 or T3 (21% at T2, 2% at T3). No significant differences were found in participation rates between boys and girls.

Regarding group care workers, 70% participated at T1, 58% at T2, and 84% at T3. Those group care workers who did not complete questionnaires for the participating adolescents did not participate for organizational reasons (30% at T1, 21% at T2, 14% at T3), or the length of stay was too short to be able to participate at T2 or T3 (21% at T2, 2% at T3). Again, no significant differences were found between participation rates of adolescent boys and girls.

Measures
GROUP CARE WORKER BEHAVIOR. Group care workers' behavior was measured with the 23-item Group Care Worker Intervention Checklist at the end of treatment (GICL, Kloosterman & Veerman, 1997). Bastiaansen, Kroes, Nijhof, Delsing, Engels, & Veerman (2011) recently revised the GICL. Each item of the GICL represents a specific intervention that group care workers can undertake within the group as part of the daily routine, e.g., enhance the ability to live independently and teach to obey the rules. The mentors of the adolescents reported to what extent (0 = not, 1 = some, 2 = certainly) they used that specific intervention in the treatment of the adolescents. The items represent three scales, Controlling (12 items), Autonomy Granting (5 items), and Warmth/Support (6 items). Cronbach’s alphas in the present study were .90 for Controlling, .60 for Autonomy Granting, and .77 for Warmth/Support subscales.

PROBLEM BEHAVIOR. The Child Behavior Checklist (CBCL, Achenbach & Rescorla, 2001, 2007; Verhulst, Van der Ende, & Koot, 1996) was used to measure problem behavior of the adolescents as reported by group care workers. The equivalent of the CBCL, the Youth Self-Report (YSR, Verhulst, Van der Ende, & Koot, 1997), was used to measure problem behavior as reported by the adolescents themselves. The CBCL and YSR consist of 113 and 112 items, respectively, measured on a three-point scale. Higher scores indicate more problem behavior. The CBCL and YSR items cluster around eight narrow-band syndromes, e.g., anxiety/depression, social problems, aggressive behavior, and two broad-band syndromes, i.e., internalizing problems and externalizing problems. In the present study,
only the two broadband syndromes were used. Although the CBCL is meant to be completed by parents, Albrecht, Veerman, Damen, and Kroes (2001) have shown that the factor structure of the parent form is also applicable to the ratings of group care workers. In the present study, Cronbach’s alphas for the CBCL were .85 at T1, .86 at T2, and .86 at T3 for internalizing problems and .87 at T1, .89 at T2, and .93 at T3 for externalizing problems. Alphas for the YSR were .92 at T1, T2, and T3 for internalizing problems and .93 at T1, .93 at T2, and .90 at T3 for externalizing problems.

Statistical analyses
T-tests were performed to examine sex, age, or ethnicity differences in the group care workers’ behavior and the adolescents’ problem behavior. To investigate the development of problem behavior over time, Latent Growth Curve Modeling (LGCM) was applied using Mplus (Muthén & Muthén, 1998-2006). Following the procedures recommended by Singer and Willett (2003), we used a two-step approach to LGCM to test our hypotheses. In the first step, we specified unconditional models (i.e., growth models without predictors). The models included two latent factors. The first latent factor, labeled initial status (of adolescents’ problem behavior), corresponded to the intercept of the model. The loadings of all three measured variables on the initial status factor were constrained to 1. The second factor, labeled change, represented the slope (increase, decrease) of problem behavior over the period of the study (i.e., from Time 1 to Time 3). We specified a linear change trajectory by fitting a model fixing the slope factor loadings for Time 1, Time 2, and Time 3 to 0, .5, and 1, respectively, thus corresponding to the half-year intervals between measurements.4

In the second step, the GICL scale scores were added to the models and regressed on the initial status and change factors to investigate the effects of adolescents’ problem behavior development on group care workers’ behavior. Additionally, adolescents’ age at T1, sex, and ethnicity were included as control variables by specifying paths from these variables to the intercept and slope factors and the GICL scale scores (see Figure 1). Separate models were specified for externalizing and internalizing problems and for adolescent and group care workers’ problem behavior.

For all LGCM analyses, we used a full-information maximum likelihood (FIML) estimator with robust standard errors, implemented as MLR in Mplus 5.1, to make use of all the available data and provide better estimations of standard errors when normality assumptions are violated. The full information maximum likelihood techniques are thought to provide less biased estimates compared to listwise or pairwise deletion (Schafer & Graham, 2002), and they are appropriate even when data are not missing at random or completely at random (Little & Rubin, 2002). Little’s (1988) MCAR tests revealed that data for all our models were missing completely at random. The proportion of missing values may be calculated with a covariance “coverage” matrix. This provides an estimate of available observations for each pair of variables. The minimum recommended coverage is .10 (Muthén & Muthén, 1998-2006). In this study, the coverage with regard to the problem behavior variables ranged from .24 to .86, which is sufficient. The goodness of fit of the model was assessed using chi-square and the p-value, the Comparative Fit Index (CFI: Bentler, 1989), and the Root Mean Square Error of Approximation (RMSEA: Steiger, 1990). According to the generally accepted cut-off criteria of model fit indices, CFI values above .90 indicate an acceptable fit and values above .95 indicate an excellent fit to the data in this study. In

4 Note that we could not test higher order (e.g., quadratic) functions because with only three waves of data available such models (without further restrictions) would not be identified (see Bollen & Curran, 2006).
addition, RMSEA values below .08 suggest an acceptable model fit to the data and values below .05 indicate a good fit (Hu & Bentler, 1999). Finally, the effects of treatment may depend on the treatment groups. The COMPLEX module as implemented in Mplus 5.1 accounted for non-independence of observations due to cluster sampling.

Figure 1
Conditional model

RESULTs

Descriptive statistics
Table 1 presents the means and standard deviations of problem behavior and group care workers’ behavior. For both adolescent and group care workers ratings, t-tests showed that girls scored significantly higher on internalizing problems compared to boys, both halfway through the treatment (T2).
Table 1
Means and standard deviations for internalizing problems, externalizing problems, and group care workers’ behavior

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Sex</th>
<th>Ethnicity</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Internalizing T1 (YSR)</td>
<td>89</td>
<td>54.01</td>
<td>12.39</td>
<td>-7.3</td>
</tr>
<tr>
<td>Internalizing T2 (YSR)</td>
<td>58</td>
<td>55.24</td>
<td>12.25</td>
<td>-2.47*</td>
</tr>
<tr>
<td>Internalizing T3 (YSR)</td>
<td>55</td>
<td>49.67</td>
<td>11.76</td>
<td>-2.33*</td>
</tr>
<tr>
<td>Externalizing T1 (YSR)</td>
<td>96</td>
<td>59.52</td>
<td>12.29</td>
<td>-5.11</td>
</tr>
<tr>
<td>Externalizing T2 (YSR)</td>
<td>62</td>
<td>57.29</td>
<td>11.29</td>
<td>-1.93 †</td>
</tr>
<tr>
<td>Externalizing T3 (YSR)</td>
<td>64</td>
<td>54.02</td>
<td>10.68</td>
<td>-1.42</td>
</tr>
<tr>
<td>Internalizing T1 (CBCL)</td>
<td>73</td>
<td>61.18</td>
<td>8.75</td>
<td>-1.46</td>
</tr>
<tr>
<td>Internalizing T2 (CBCL)</td>
<td>68</td>
<td>58.59</td>
<td>9.33</td>
<td>-3.04**</td>
</tr>
<tr>
<td>Internalizing T3 (CBCL)</td>
<td>107</td>
<td>59.45</td>
<td>9.11</td>
<td>-2.12*</td>
</tr>
<tr>
<td>Externalizing T1 (CBCL)</td>
<td>72</td>
<td>63.72</td>
<td>8.35</td>
<td>-1.79 †</td>
</tr>
<tr>
<td>Externalizing T2 (CBCL)</td>
<td>71</td>
<td>61.93</td>
<td>8.66</td>
<td>-1.96 †</td>
</tr>
<tr>
<td>Externalizing T3 (CBCL)</td>
<td>108</td>
<td>63.84</td>
<td>9.33</td>
<td>-1.14</td>
</tr>
<tr>
<td>Controlling T3</td>
<td>126</td>
<td>1.24</td>
<td>0.46</td>
<td>1.31</td>
</tr>
<tr>
<td>Autonomy granting T3</td>
<td>126</td>
<td>1.38</td>
<td>0.59</td>
<td>-1.36</td>
</tr>
<tr>
<td>Warmth T3</td>
<td>126</td>
<td>1.41</td>
<td>0.43</td>
<td>-1.75 †</td>
</tr>
</tbody>
</table>

†p < .10, *p < .05, **p < .01.

and at time of discharge (T3). With regard to ethnicity, group care workers reported more internalizing problems for adolescents whose parents were born in a Western country across all three measurements. No significant differences were found for age in relation with problem behavior as well as group care workers’ behavior towards the adolescents.

Furthermore, group care workers reported higher scores on internalizing problems at T1 (t(57) = -3.80, p = .00) and T3 (t(61) = -2.74, p = .01) and externalizing problems at T1 (t(54) = -3.69, p = .00), T2 (t(50) = -5.48, p = .00), and T3 (t(60) = -6.28, p = .00) compared to adolescents. However, adolescent and group care workers’ ratings on internalizing problems were significantly (p < .01) related across all three measurements, respectively, r = .35 (T1), r = .40 (T2), r = .51 (T3). Ratings on externalizing problems were significantly (p < .01) associated at two measurements T2 (r = .44) and T3 (r = .54).

Table 2 presents correlations between internalizing, externalizing problems, and group care workers’ behavior. Controlling behavior correlated significantly with externalizing problems over time, as reported by adolescents themselves, indicating that group care workers exerted more control over adolescents with higher externalizing problems at all three time points. Showing warmth towards the adolescents correlated significantly with internalizing problems over time, in that group care workers showed more warmth when adolescents reported higher levels of internalizing problems. Based on the group care workers’ perceptions, the results showed significant correlations between warmth and internalizing problems at T3 and control and externalizing problems at T3. That is, warmer and more controlling behavior of group care workers was associated with higher levels of internalizing and externalizing problems of adolescents.
Table 2
Correlations among internalizing problems, externalizing problems, and group care workers’ behavior

<table>
<thead>
<tr>
<th></th>
<th>Controlling</th>
<th>Autonomy</th>
<th>Warmth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internalizing T1 (YSR)</td>
<td>.15</td>
<td>.12</td>
<td>.23*</td>
</tr>
<tr>
<td>Internalizing T2 (YSR)</td>
<td>.23</td>
<td>.13</td>
<td>.32*</td>
</tr>
<tr>
<td>Internalizing T3 (YSR)</td>
<td>.18</td>
<td>.29*</td>
<td>.30*</td>
</tr>
<tr>
<td>Externalizing T1 (YSR)</td>
<td>.26*</td>
<td>.05</td>
<td>.07</td>
</tr>
<tr>
<td>Externalizing T2 (YSR)</td>
<td>.26*</td>
<td>.03</td>
<td>.04</td>
</tr>
<tr>
<td>Externalizing T3 (YSR)</td>
<td>.28*</td>
<td>.02</td>
<td>.14</td>
</tr>
<tr>
<td>Internalizing T1 (CBCL)</td>
<td>-.06</td>
<td>.12</td>
<td>.20</td>
</tr>
<tr>
<td>Internalizing T2 (CBCL)</td>
<td>-.23</td>
<td>.11</td>
<td>.16</td>
</tr>
<tr>
<td>Internalizing T3 (CBCL)</td>
<td>-.01</td>
<td>.16</td>
<td>.34**</td>
</tr>
<tr>
<td>Externalizing T1 (CBCL)</td>
<td>.06</td>
<td>.06</td>
<td>.00</td>
</tr>
<tr>
<td>Externalizing T2 (CBCL)</td>
<td>-.02</td>
<td>.03</td>
<td>.01</td>
</tr>
<tr>
<td>Externalizing T3 (CBCL)</td>
<td>.29**</td>
<td>.01</td>
<td>.16</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01

Latent growth curve models
Unconditional models

Latent growth curve analyses indicated that the unconditional models generally provided a good fit to the data (see Table 3). Based on adolescent reports, the mean estimates and variances of the initial status factors were significantly different from zero for both internalizing (M = 55.04, p < .01; σ² = 119.54, p < .01) and externalizing problems (M = 59.71, p < .01; σ² = 110.50, p < .01), indicating that there were systematic individual differences in adolescents' initial problem scores. Concerning the change over time, significant negative slope means were found for both models [M (Internalizing) = -3.95, p < .01; M (Externalizing) = -5.86, p < .01], indicating that, on average, adolescents reported a decrease in both internalizing and externalizing problems from T1 to T3. The variances of the change factors were not significant [σ² (Internalizing) = 35.00, p > .05; σ² (Externalizing) = 44.50, p > .05], indi-

Table 3
Model fit indices for the latent growth curve models

<table>
<thead>
<tr>
<th>Adolescent report</th>
<th>df</th>
<th>N</th>
<th>σ²</th>
<th>CFI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconditional Internalizing</td>
<td>3</td>
<td>107</td>
<td>7.93</td>
<td>.89</td>
<td>.12</td>
<td>.05</td>
</tr>
<tr>
<td>Unconditional Externalizing</td>
<td>3</td>
<td>112</td>
<td>1.35</td>
<td>1.00</td>
<td>.00</td>
<td>.07</td>
</tr>
<tr>
<td>Conditional Internalizing</td>
<td>19</td>
<td>126</td>
<td>36.35</td>
<td>.90</td>
<td>.09</td>
<td>.07</td>
</tr>
<tr>
<td>Conditional Externalizing</td>
<td>19</td>
<td>126</td>
<td>23.04</td>
<td>.97</td>
<td>.04</td>
<td>.08</td>
</tr>
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<td>Group care worker report</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unconditional Internalizing</td>
<td>3</td>
<td>123</td>
<td>1.90</td>
<td>1.00</td>
<td>.00</td>
<td>.13</td>
</tr>
<tr>
<td>Unconditional Externalizing</td>
<td>3</td>
<td>123</td>
<td>2.48</td>
<td>1.00</td>
<td>.00</td>
<td>.06</td>
</tr>
<tr>
<td>Conditional Internalizing</td>
<td>19</td>
<td>126</td>
<td>24.27</td>
<td>.97</td>
<td>.05</td>
<td>.07</td>
</tr>
<tr>
<td>Conditional Externalizing</td>
<td>19</td>
<td>126</td>
<td>24.96</td>
<td>.96</td>
<td>.05</td>
<td>.08</td>
</tr>
</tbody>
</table>

Note. CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual.

Note: A significant mean estimate for the initial status factor indicates that the scores significantly differed from zero (which is trivial for the type of scores used in this study).
cating that no systematic individual differences were found for adolescents’ changes in problems. In other words, all adolescents improved at more or less the same rate.

Concerning problems reported by group care workers, the mean and variance of the initial status factor for internalizing problems were significantly different from zero (M = 60.51, p < .01, s4 = 40.71, p < .05), indicating systematic individual differences in group care worker reports of adolescents’ initial internalizing problems. The variance of the initial status factor for externalizing problems, however, was not significantly different from zero (M = 62.87, p < .01, s4 = 41.50, p > .05), indicating relatively little variation in group care workers’ reports of adolescents’ initial externalizing problems. For both internalizing and externalizing problems, change means and variances were not significant [M (Internalizing) = -1.25, p > .05; s4 = 15.97, p > .05; M (Externalizing) = .85, p > .05; s4 = 9.07, p > .05]. This means that group care workers did not report significant changes in adolescents’ problem behavior during treatment.

Conditional models
In the second step of our LGCM analyses, our aim was to test associations between group care workers’ behavior and adolescents’ problem behavior development (see Table 4 for the results regarding adolescents’ reports and Table 5 for the results regarding group care workers’ reports). For this purpose, the GICL scores were regressed on the growth factors. Additionally, control variables (age, sex, ethnicity) were included as predictors of the growth factors and the GICL scores. Consistent with the recommendation by Byrne and Crombie (2003), we did not specify associations between the change factor and the GICL scores because the change factor variances were non-significant in the unconditional models6. The conditional models generally provided a good fit to the data (see Table 3).

Table 4
Standardized beta-coefficients for the effects of adolescents’ age, sex, ethnicity, and initial problem behaviors (adolescent reported) on group care workers’ behavior (N = 126)

<table>
<thead>
<tr>
<th>Model</th>
<th>Group care workers behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
</tr>
<tr>
<td>Internalizing</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.14*</td>
</tr>
<tr>
<td>Sex</td>
<td>.17*</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.03</td>
</tr>
<tr>
<td>Initial status Internalizing</td>
<td>.28**</td>
</tr>
<tr>
<td>Externalizing</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.10</td>
</tr>
<tr>
<td>Sex</td>
<td>.17†</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.05</td>
</tr>
<tr>
<td>Initial status Externalizing</td>
<td>.38**</td>
</tr>
</tbody>
</table>

*p < .10 *p < .05 **p < .01

6 Although the variance of the initial status factor for group care workers reporting externalizing problems was not significant in the unconditional model, we did specify paths to and from this factor in the conditional version of the model. We decided to do so because the variance in the unconditional model was close to statistical significance (p = .07).
Table 5
Standardized Beta-coefficients for the effects of adolescents’ age, sex, ethnicity, and initial problem behaviors (group care worker reported) on group care workers’ behavior (N = 126)

<table>
<thead>
<tr>
<th>Model</th>
<th>Control</th>
<th>Warmth</th>
<th>Autonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internalizing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.11</td>
<td>-.20**</td>
<td>.09</td>
</tr>
<tr>
<td>Sex</td>
<td>.10</td>
<td>.04</td>
<td>-.07</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>-.03</td>
<td>.20</td>
<td>-.03</td>
</tr>
<tr>
<td>Initial status Internalizing</td>
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<td>.47**</td>
<td>.16</td>
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<tr>
<td><strong>Externalizing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.17*</td>
<td>.16*</td>
<td>.12</td>
</tr>
<tr>
<td>Sex</td>
<td>.16†</td>
<td>.14†</td>
<td>.12</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>-.00</td>
<td>.02</td>
<td>-.10</td>
</tr>
<tr>
<td>Initial status Externalizing</td>
<td>.27†</td>
<td>.08</td>
<td>-.06</td>
</tr>
</tbody>
</table>

*p < .10  †p < .05  **p < .01

Several significant associations were found in the models based on adolescent reported problem behaviors. In the internalizing model, age related to group care workers’ control and warmth significantly and negatively, suggesting that group workers showed less control and warmth towards older adolescents. Sex related to control significantly and positively, suggesting that group workers exerted more control over boys than they did over girls. In the externalizing model, these associations were not, or only marginally, significant. Ethnicity was not related to group care workers’ behavior.

Controlling for adolescents’ age, sex, and ethnicity, significant positive associations were found between the initial status of internalizing problems and group care workers' control and warmth. These findings indicate that the more internalizing problems adolescents report at time of admittance to the residential treatment program, the more control and warmth the group care workers show towards the adolescents. A significant association was also found between the initial status of externalizing problems and group care workers’ control, indicating that higher levels of externalizing problems at the time of admittance related to more controlling behavior of group care workers towards the adolescents.

Moreover, in the models based on group care workers’ reports of adolescent problem behavior, several significant associations were found. In both the internalizing and externalizing models, age related negatively to group care workers’ warmth, suggesting that group workers showed less warmth towards older adolescents. In the externalizing model, age related negatively to group care workers’ control, suggesting that group care workers are less controlling towards older adolescents. In both models, sex and ethnicity did not relate to group care workers’ behavior.

Controlling for adolescents’ age, sex, and ethnicity, a significant positive association was found between the initial status factor of internalizing problems and group care workers’ warmth. This means that when group care workers perceive that adolescents at time of admittance experience more internalizing problems, their behavior towards the adolescents is warmer. In addition, the analyses revealed several significant effects of the control variables (i.e., age, sex, ethnicity) on the initial status factors. In the internalizing model, sex and ethnicity had negative effects on the intercept factor, indicating that group care workers perceived boys and adolescents with non-western parents to have lower levels of internalizing problems at time of admittance. In the externalizing model, age had a
positive effect on the intercept factor, indicating that group care workers perceived older adolescents to have higher levels of externalizing problems at time of admittance.

**Discussion**

Studies on residential treatment provide only limited information on the actual behavior of group care workers. However, since treatment in residential care involves interactions between residents and group care workers in everyday routines, group care workers are assumed to be the key change agents. In the current study, we focused on the behavior of group care workers as well as initial status and change in problem behavior of adolescents in compulsory residential treatment.

Regarding our first hypothesis, the analysis revealed that group care workers indeed adapted their behavior to the problem behavior of adolescents at time of admission. According to the adolescents' reports, adolescents with higher levels of externalizing problems at time of admission received more controlling interventions by group care workers. Group care workers also exerted greater control over adolescents with higher levels of internalizing problems at time of admission; however, their behavior towards these adolescents was warmer. The group care workers' perceptions about the adolescents' behavior problems at time of admission related also to their own behavior. Group care workers showed more warmth towards adolescents for whom they reported higher levels of internalizing problems. Concerning the perceived externalizing problems of the adolescents by group care workers, we found no association with the interventions of group care workers. These findings are partially in accordance with the results of Kloosterman and Veerman (1999). They found the same associations of externalizing problems with structuring, controlling behavior of group care workers and internalizing problems with stimulating, supportive behavior of group care workers. However, their results were based only on group care workers' ratings of behavior problems. In our study, the adolescent reports were similar to those of Kloosterman and Veerman while the group care workers' reports were not entirely similar. Group care workers interventions did not relate to externalizing behavior, probably because of little variation in externalizing problems of adolescents at time of admittance as reported by group care workers. Since the change factors in our LGC- models were not significant, we were not able to examine the influence of group care workers' behavior on the treatment improvement.

Overall, based on our results, group care workers adjust their behavior according to the actual problem behavior of adolescents at time of admittance. However, the group care workers' behavior does not contribute to the treatment progress of adolescents. This latter finding was unexpected, since several scholars argued that the behavior of group care workers might be a strong predictor of treatment outcome (e.g., Knorth et al., 2010). Perhaps the perceived quality of the relationship between care workers and adolescents has a greater influence on treatment outcome than actual behavior of group care workers. Group care workers' behavior plays an important role in the relationship, also referred to as therapeutic relationship or therapeutic alliance, between group care workers and adolescents. Several studies state that the therapeutic relationship is an important common factor of treatment outcome in residential care (Karver, Handelsman, Fields, & Bickman, 2006; Orsi, Lafortune, & Brochu, 2010). To achieve a good therapist-client relationship, group care workers should practice a warm, supportive behavior style, mixed with a reasonable amount of control (Holmqvist, Hill, & Lang, 2007). Therefore, although the present study did not focus on the therapeutic alliance between group care...
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workers and adolescents, our results might imply that it is not the behavior of group care workers that affects the treatment outcome but the perception of this behavior by their clients. The associations among group care workers’ behavior, therapeutic relation, and treatment outcome clearly need further study.

That group care workers’ behavior in our study was not associated with treatment outcome could also be due to some methodological issues. Group care workers’ behavior in this study was measured by means of a self-reported questionnaire at one point in time, i.e., at time of the adolescents’ discharge. As in parenting, group care workers’ behavior and adolescent problem behavior affect each other mutually (Colyar, 1992; Hastings, 2005; Reid, Patterson, & Snyder, 2002). Therefore, it might be expected that group care workers adapt their behavior to the changing behavior of the adolescents. In their study on group care workers’ behavior, Kloosterman and Veerman (1999) found that, on average, group care workers’ behavior remained relatively stable during the treatment period. However, there were indications that with longer duration of treatment, adolescents with externalizing problems received more warmth and support. Therefore, longitudinal measurements on group care workers’ behavior during treatment might reveal a more comprehensive picture of group care workers adaptation to and their influence on adolescents’ behavioral development. In addition, observations of the interactions between group care workers and adolescents could be a valuable addition to the self-reported ratings of group care workers’ behavior.

The finding indicating that adolescents reported significant improvement in behavior during treatment corresponds to other reports on treatment progress in residential care (e.g., Frensch & Cameron, 2002; Harder et al., 2006). On the contrary, group care workers reported no progression in behavior problems during treatment; instead, compared to adolescents, they reported higher levels of problem behavior at all time points (T1, T2, T3). Perhaps informant bias plays a role in these findings. Adolescents who suffer from severe problem behaviors usually underestimate their problems. Partly this is inherent to the problems associated with adolescents lacking sufficient self-insight (Orsi et al., 2010). Therefore, they underestimate their problem behavior. Other studies on severely problematic youth, such as juvenile delinquents, reported similar findings indicating low scores on problem behavior (Van der Helm et al., 2009; Breuk, Clauser, Stams, Slot, & Dorelijiers, 2007). Findings showing that group care workers reported higher levels of problem behavior compared to adolescents and perceived no treatment progress is also consistent with other studies that used multi-informant ratings (Knorth et al., 2008; Koes, 2006). Boendermaker et al. (2007) suggested that it might be difficult for group care workers to look at positive changes when problematic behavior of adolescents is also still apparent.

The finding that girls receive more warmth from group care workers while boys receive more control is consistent with earlier findings of Kloosterman and Veerman (1999). Girls receive more warmth probably because they experience more internalizing problems compared to boys. Many prior studies indicated that girls score higher on internalizing problems, according to both themselves and group care workers (e.g., Handwerk, Clopton, Huefner, Smith, Hoff, & Lucas, 2006). Furthermore, we found that girls demonstrated equal rates of externalizing problems as did boys. Although boys generally demonstrate more aggressive and antisocial behavior compared to girls, in clinical samples of adolescents with severe problem behavior, girls tend to show more troubled behavior. For example, Handwerk et al. (2006) stated that girls in residential care are more impaired compared to boys and have a greater number of risk factors and stressful life events compared to boys. Furthermore, girls who
Group care workers' behavior in residential care

demonstrate externalizing problems are more likely to be referred for out-of-home placement programs compared to boys. This might explain the relatively high number of girls in our sample of adolescents in a compulsory residential treatment program.

This study has some limitations. The sample size in our study was relatively small, thereby limiting the chance of detecting subtle associations. Furthermore, we had to deal with missing values. Using FIML in Mplus that included all present data partially counterbalanced this issue. Furthermore, although we used adolescents and group care workers as informants of adolescents' problem behavior, we used only group care workers' self-reports to assess group care workers' behavior. To get a more comprehensive picture of group care workers' behavior, adolescents' reports of group care workers' behavior should also be used. Finally, statements regarding the causality of the relations, as depicted in our model, cannot be made since longitudinal measurements of group care workers' behavior were not included in this study.

Despite these limitations, the results of this study contribute to a better understanding of the content of residential treatment. Although it is often argued that group care workers' behavior plays an important role in treatment outcome (Knorth et al., 2010), only a little empirical evidence has supported this assumption so far. Our study revealed that group care workers behave differently towards adolescents with internalizing and externalizing problems. Furthermore, our findings do not support the aforementioned assumption that group care workers' behavior relates to treatment outcome. Although further study on this latter finding is clearly needed before we can draw firm conclusions, we also must keep in mind the possibility that group care workers' behavior is not that important as is often stated. It could be their role in creating a positive group climate that contributes to positive treatment outcomes. By creating a positive group climate, they provide the necessary conditions for adolescents to experiment with newly learned behavior in a safe and supportive environment (Van der Helm et al., 2009). In addition, the quality of the relationship between group care workers and residing adolescents might be more important for treatment outcome than actual behavior of group care workers would be. Further research is necessary to gain more insights into the associations among group care workers' behavior, group climate, therapeutic alliances, and residential outcomes.
CHAPTER 9

Deviancy training in a sample of high risk adolescent girls in The Netherlands

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ABSTRACT

In the current study the real time process of deviancy training was assessed. Observations with a task developed by Dishion and colleagues (1996) were conducted with a sample of high risk adolescent girls and a sample of high school girls. Our results suggest that individual non-delinquent girls adapt their behavior to their in rule break talk engaging interaction partner. Overall, these non-delinquent girls showed less frequent episodes of rule break talk with their interaction partner than delinquent and mixed dyads. Moreover, the relative delinquent facility dyads engaged longer in rule break talk and they provided more reinforcement for such behavior than high school dyads.

INTRODUCTION

Girls persistently demonstrate lower levels of delinquent behavior than boys (e.g., Bongers, Koot, Van der Ende, & Verhulst, 2004; Hartung & Widiger, 1998; Martino, Ellickson, Klein, McCaffrey, & Edelen, 2008; Vazsonyi & Kelley, 2007). Girls’ relatively small share in delinquent behavior is presumably underlying their previous neglect in delinquency research. Since the 1990s, when several researchers noticed that female delinquency was on the rise, more attention for girls has emerged in this field (Hipwell, Loeber, Stouthamer-Loeber, Keenan, White, & Kroneman, 2002; Hoyt & Scherer, 1998; Keenan, Loeber, & Green, 1999; Kerpelman & Smith-Adcock, 2005; Pleydon & Schnier, 2001).

The increasing female-male ratio of delinquency is worrisome, because various adverse outcomes are associated with adolescent delinquent behavior. Both delinquent boys and girls are more likely to demonstrate school drop-out, teenage parenthood, poor physical and mental health, substance abuse and dependence, antisocial personality disorder, and increased likelihoods of arrests and criminal activity in adulthood (e.g., Bardone, Moffitt, Caspi, Dickinson, Stanton, & Silva, 1998; Booth & Zhang, 1997; Kovacs, Krol, & Voti, 1994; Lewis, Yeager, Cobham-Portorreal, Klein, Showalter, & Anthony, 1991; Pajer, 1998; Robins, Tripp, & Pryzbeck, 1991; Zoccolillo, Tremblay, & Vitaro, 1996). Moreover, girls showing externalizing behavior are more likely to end up in romantic relationships with a deviant partner (Krueger, Moffitt, Caspi, Bleske, & Silva, 1998; Moffitt, 1993; Quinton, Pickles, Maughan, & Rutter, 1993). In turn, this increases the likelihood that these girls’ offspring will suffer from similar adverse home circumstances (e.g., poor parenting practices such as low supervision; low levels of parental warmth; permissive or overly harsh disciplining and living in poor and disadvantaged neighbourhoods) that were factors in the development of their own problem behavior (Richters & Martinez, 1993).

Although boys and girls are partly vulnerable to the same risk factors, recent advances in research on girls’ problem behavior suggest a sex-specific phenotype. First of all, delinquent girls more often seem to have a history of maltreatment - particularly sexual abuse - than boys (e.g., Baker & Purcell, 2005; Dembo, Shemwell, Guida, Schmeidler, Pacheco, & Seeberger, 1998; Handwerk, Clopton, Huefner, Smith, Hoff, & Lucas, 2006; McCabe, Lansing, Garland, & Hough, 2002; Reebey, Moretti, Wiebe, & Lessard, 2000). Moreover, girls are more likely to be raised in tumultuous, chaotic, dysfunctional families, characterized by high levels of conflict and seriously disrupted parenting (Connor, Doerfler, Toscano, Volungis, & Steingard, 2004; Henggeler, Edwards, & Borduin, 1987; Silverthorn & Frick, 1999). Finally, delinquent girls are much more likely than delinquent boys to suffer from co-occurring mental health problems, in particular internalizing problems such as depression, anxiety, self-harming
behavior, and suicide attempts (Barton, Rey, Simpson, & Denshire, 2001; Chamberlain & Reid, 1994; Handwerk et al., 2006; Stewart & Trupin, 2003; Timmons-Mitchell, Brown, Schulz, Webster, Underwood, & Semple, 1997; Weis, Whitemarsh, & Wilson, 2005). This sex-specific phenotype may imply different developmental pathways for girls. Therefore, research unravelling the processes and mechanisms underlying these pathways to delinquent behavior is highly needed.

One possible pathway concerns association with deviant peers (e.g., Dishion, McCord, & Poulin, 1999; Gifford-Smith, Dodge, Dishion, & McCord, 2005; Patterson, Dishion, & Yoerger, 2000). Although this appears to be important for boys' and girls' problem behavior, girls may even be more vulnerable to peer influences due to the greater intimacy and loyalty of their friendships (Buhrmester & Furman, 1987; Hartup, 1996). Peer influences are exerted both in informal and formal settings, such as treatment groups. Several studies, of which the Cambridge Somerville Youth study is one of the most famous, reveal negative effects associated with the aggregation of deviant youth in treatment groups (e.g., Dishion et al., 1999; Gifford-Smith et al., 2005; Leve & Chamberlain, 2005; McCord, 2002; see for reviews Arnold & Hughes, 1999; Weiss, Caron, Ball, Tapp, Johnson, & Weisz, 2005). In the Cambridge Somerville Youth study, a stay in a summer camp was embedded in a comprehensive intervention program. The results indicated that deviant youngsters who went to summer camp at least twice were more likely to show negative outcomes, such as higher self-reported delinquency, even after 30 years (McCord, 2002). Likewise, in a study of Chamberlain and Reid (1998), participation in a foster care program predicted fewer official and self-reported delinquency during the first year after termination of the program than participation in peer group treatment. These studies provide evidence for the assumption that affiliation with deviant peers leads to an increase in externalizing behavior.

One presumed mechanism underlying the influence of peers on deviant behavior, is a process referred to as "deviancy training" (Dishion, Eddy, Haas, Li, & Spracklen, 1997; Dishion, Poulin, & Burraaston, 2001; Dishion, Spracklen, Andrews, & Patterson, 1996; Patterson et al., 2000). The core of this process consists of the presumption that peers reinforce one another's deviant or rule-breaking behavior (i.e., all behavior that goes against prevailing norms or seems inappropriate for the task or setting).

With one exception (Granic & Dishion, 2003) previous studies on deviancy training focused on boys. From a prevention and treatment point of view it is however very important to gain insight into the causes and precursors of female delinquency. Since several studies showed that deviancy training is related to later delinquency (Dishion, Capaldi, Spracklen, & Li, 1995; Dishion et al., 1997; Dishion et al., 1996), one way to gain more insight into female delinquency is to assess the deviancy training process in girls.

Dishion and colleagues (Dishion et al., 1997; Dishion et al., 1996; Granic & Dishion, 2003) developed an observation task to assess the process of deviancy training in interactions of adolescents. In this task reinforcement of deviant talk and behavior is assessed through registration of the amount of laughing and other encouraging behavior, like a thumbs up sign or a high five. The tendency to engage in deviant talk and reinforcement of this behavior appears to be uniquely associated with violence, and increases in self-reported substance use and delinquency in adolescence and later on, in young adulthood (Dishion et al., 1995; Dishion et al., 1997; Dishion et al., 1996).

A previous study with these observation tasks in a sample of adolescent boys indicated that delinquent dyads engaged more often in deviant talk than non-delinquent and mixed dyads (Dishion
Deviancy training

et al., 1996). In addition to these descriptive analyses, matching law analyses were conducted. In that particular study matching law analyses revealed a linear relationship between contingent positive reactions to and engagement in rule-breaking talk. This suggests that these positive reactions function as a catalyst for engagement in rule-breaking talk. Furthermore, sequential analyses revealed that non-delinquent dyads showed less positive reinforcement in response to rule-breaking talk than delinquent and mixed dyads.

With the rising popularity of dynamic systems theory, Granic and Dishion (2003) argued that the analyses as conducted in previous work did not provide full insight into the temporal pattern of interactions. Whereas previous studies relied on central tendency measures such as means and narrow temporal contingencies of behavior in sequential analyses, dynamic systems theorists argue that the overall temporal patterning of an interaction is crucial in the study of dyadic interactions (Granic & Hollenstein, 2003). As a first step to take dynamic systems principles into account, Granic and Dishion (2003) developed “(...) a temporally sensitive measure that captures the extent to which deviant talk, over the course of a conversation, functions as an absorbing state for antisocial adolescents” (Granic & Dishion, 2003, p. 316). In dynamic systems theory an absorbing state, denoted with the term “attractor”, is a specific situation or behavior subjects are repeatedly drawn to. Over time it becomes increasingly hard to withdraw from that particular state, situation or behavior. In their study Granic and Dishion (2003) created an index of attractor strength for all dyads by deriving slope values from time series of each successive episode of rule-breaking talk over the course of the interaction. They found that adolescents with externalizing problems showed a positive and significantly higher slope value than adolescents without externalizing problems. This indicates that adolescents with externalizing problems showed increasingly longer episodes of rule-breaking talk over the course of the interaction. Rule-breaking talk in other words, was an attractor for these dyads.

The attempt to take dynamic systems principles into account in the study of deviancy training was taken a step further by performing state space grid analyses on similar observation data (Dishion, Nelson, Winter, & Bullock, 2004). State space grids is a recently developed methodology inspired on dynamic systems theory, allowing for a visual depiction of the course of an interaction (Lamey, Hollenstein, Lewis, & Granic, 2004 ). With regard to dyadic interactions, the state space is comprised of all possible joint states of two individuals. All coded behavior of the first person is plotted on the x-axis and the coded behavior of the second person is plotted on the y-axis. The grid encompasses cells which reflect all possible combinations of states; each cell represents a specific combination of behavior of the two subjects (Hollenstein, 2007). Dishion and colleagues (2004) conducted state space grid analyses on observation data as collected with the task mentioned before. Their focus was on interpersonal processes in male adolescent friendships. Their results showed that in general the interactions of antisocial boys were less organized (high dispersion over the grid; behavior occurs in a considerable number of cells) and included more rule-breaking talk than the interactions of well-adjusted control boys. However, those antisocial boys with well-organized interactions and elevated levels of rule-breaking talk, were most likely to display antisocial behavior in adulthood.

The present study

Although the last two studies (Dishion et al., 2004; Granic & Dishion, 2003) extended the literature on deviant talk, the response of the interaction partner to episodes of rule-breaking talk was not taken into
account. As mentioned before, the core of the deviancy training process consists of the presumption that peers positively reinforce one another’s deviant or rule-breaking behavior. Therefore, it is crucial to take the response of the interaction partner into account when studying deviancy training. Our study is the first to apply the dynamic systems principles to the study of deviancy training in girls, as assessed with an observation task similar to the one used by Dishion and colleagues (1996). In addition to regular descriptive analyses at the individual and dyadic level and sequential analyses, we analysed the interactions with the state space grid methodology with a focus on both deviant content of the interaction and the response of the interaction partner.

At the individual level we hypothesized that non-delinquent girls would show more rule-breaking talk in interaction with a delinquent partner compared with their behavior in interaction with a non-delinquent partner. At the dyadic level we expected that delinquent and mixed dyads (i.e., a non-delinquent girl in interaction with a delinquent girl) would show more rule-breaking talk than non-delinquent dyads. Sequential analyses were performed to test the hypothesis that delinquent dyads would respond to rule-breaking talk more often with rule-breaking talk or laughing than mixed and non-delinquent dyads. State space grid analyses were performed to examine whether delinquent and mixed dyads show greater dispersion over the grid, since these dyads would visit more cells on the grid. Furthermore, we expected that non-delinquent dyads would return less often and less quickly to the "deviancy training region", in which deviant talk is coupled with a reinforcing response of the interaction partner, after their first visit than mixed and delinquent dyads. Finally, we expected that delinquent and mixed dyads would stay longer in this deviancy training region.

**Method**

**Participants and procedure**

Two groups of adolescent girls participated in the current study. The “facility group” consisted of 17 adolescent girls with severe behavioral difficulties living in a residential care facility, ranging in age from 14.97 to 18.0 years ($M = 16.50, SD = .90$). The 17 participating girls from the facility lived in two residential groups consisting of ten girls each (parents of two girls refused participation and despite several attempts of our side one girl did not complete the questionnaire). The “high school group” consisted of 88 girls in six school classes of a Dutch vocational training school (VMBO) in the eastern part of the Netherlands. A vocational training school was chosen because most girls of the facility group attended a similar level of education. These high school girls ranged in age from 14.23 to 17.40 years ($M = 15.52, SD = .70$). Before the start of the study parents or guardians were informed by letter about the goal and purpose of the study. A passive informed consent procedure was employed. As mentioned before, for the facility group, parents of two girls refused participation in the study. For the high school group, parents of one adolescent refused participation.

Two introductory visits were made to both residential girls groups to explain the purpose and goal of the study. Girls were told that the researchers were primarily interested in the way adolescents discuss day-to-day topics with each other. Approximately two weeks after our last visit, both girl groups completed a questionnaire on delinquency. Approximately six weeks after completion of the questionnaire, the observations were conducted at the facility. All observations were scheduled on one afternoon. The high school students were given a short verbal introduction about the goal and purpose of the study before
completion of the questionnaire, similar to the introduction given to the girls in the facility. One week after completion of the questionnaire the first observations were conducted. Appointments were made with students by telephone or email, without interference of the school.

The first page of the questionnaire consisted of a form, on which girls could indicate whether they wanted to participate in the observation study, for which they were paid eight euro's. Seven of the "facility girls" (41.2%) agreed to participate in the observation study. Unfortunately, one of these girls was the only one of her residential group who agreed to participate. Because there was no interaction partner for this girl, since she was the only one in her group who agreed to participate, this girl was excluded from the study. Facility girls who agreed to participate in the observation study did not differ from girls who refused participation in respect of age or delinquency score. Of the high-school students 62 (70.5%) subscribed for the observation study. These participating youngsters differed from students who refused participation in the observation study. T-tests revealed that high-school students who were willing to participate in the observation study were significantly younger ($M = 15.43$, $SD = .73$) than girls who refused participation in the observation study ($M = 15.74$, $SD = .59$, $t (84) = 1.87$, $p < .10$, $d = .44$). Furthermore, students who subscribed for the observation study had higher scores on the self-report questionnaire on delinquency ($M = 8.63$, $SD = 9.86$) than girls who refused participation in the observation study ($M = 4.31$, $SD = 5.40$, $t (79.80) = -2.64$, $p < .01$, $d = -.49$). Based on the results of the self-report questionnaire on delinquency, girls were classified as either delinquent or non-delinquent. This classification was used to form delinquent, non-delinquent and mixed dyads for participation in the observation study.

For the facility group, of the six participating girls, three were classified as delinquent (scores ranging from 42 to 70, $M = 55.00$, $SD = 14.11$). The remaining three girls were classified as non-delinquent (scores ranging from 0 to 14, $M = 7.66$, $SD = 7.09$). Although the high school students were told that youngsters who subscribed for the observation study were selected randomly for actual participation in the observation study, selection was in fact based on the scores on the self-report questionnaire on delinquency. From each class, the two most delinquent en the two least delinquent girls were selected for participation in the observation study. The twelve high school girls who were identified as delinquent had scores ranging from 10.00 to 41.00 ($M = 21.25$, $SD = 12.57$), whereas the twelve high school girls who were categorized as non-delinquent had scores ranging from 0 to 3.00 ($M = .75$, $SD = .87$).

An observation task highly comparable to the Peer Interaction Task developed by Dishion and colleagues (Poe, Dishion, Griesler, & Andrews, 1992) was employed in the current study. A pilot study among 16 dyads at another high school in the eastern part of the Netherlands gave rise to minor adjustments in our initial procedure.

All participants in the observation study interacted twice with a different group or class mate. They participated once with a partner from their own "delinquency group" (in a delinquent or non-delinquent dyad) and once with a partner from the other delinquency group (in a mixed dyad). Eventually, this resulted in 24 high school dyads (six delinquent, six non-delinquent and twelve mixed dyads) and five facility dyads (one delinquent, one non-delinquent and three mixed dyads). In both groups, the facility group and the high school group, the observations were conducted in a quiet room. Participants were seated next to each other at a table, on which were some tea-bags, two pens and a plasticized card on which the first task was printed. Approximately two meters in front of them, a camera was installed on a
tripod, standing on a table. After entrance to the observation room, participants were given instructions about the purpose of the task. Each individual received two forms, one listing topics adolescents regularly have quarrels about with adults (e.g., drugs and alcohol; smoking; pocket money) and one list of topics youngsters regularly have quarrels about with their friends or peers (e.g., clothes; appearance; trust). Both girls chose one topic of each list, resulting in four topics to be discussed. After the general introduction, the completion of the forms and the introduction of the first task; planning a fun activity, the experimenter left the room. After each five minute episode she returned to the room to introduce the next topic. The order of topics was constant; after the warm up task of planning a fun activity, youngsters started discussing topics adolescents have quarrels about with adults. Finally, topics youngsters have quarrels about with friends and peers were discussed. The youngster who started discussing the topic related to adults, started with the topic related to peers as well.

Coding procedure
A coding scheme similar to the Peer Topic Code (Poe, Dishion, Griesler, & Andrews, 1992) was used in this study. All dyadic observations were coded in real-time with software application Observer XT (Noldus). Main objects of the coding scheme were rule break talk and laughing. All dyads were coded by the first author and after a thorough training and instruction two undergraduate students coded twelve dyads each (approximately 41% of all dyads in the study). These dyads were used for the purpose of calculating interrater reliability. Reliability analyses were conducted with an earlier version of the software application; Observer 5.0 (Noldus). Cohen’s kappa was determined for each of the twelve double coded high school dyads separately. Reliability was very good, with all kappa’s over .90. At the moment of coding all observers were unaware of the delinquency status of the dyads.

Measures
DELINQUENCY. The Self-report Delinquent Behavior questionnaire (in Dutch "Zelfrapportage Delinquent Gedrag", ZDG-vragenlijst) was administered with both groups. This questionnaire consists of 30 items on several forms of delinquent behavior. Examples of items are “How often in the last six months did you injure a person with a weapon”, “How often in the last six months did you steal a bike”, and “How often in the last six months did you sell hard drugs like heroine or cocaine”. Participants answered on a 5 point scale; zero times, one time, two times, three through ten times, more than ten times. Earlier research with this questionnaire revealed sufficient reliability with alphas over .80.

RULE BREAK TALK. Rule break talk was defined as all verbal and nonverbal behavior consisting “(...) of any reference to violations of legal or conventional norms, any inappropriate behavior during the taped interaction, and any activities violating the instructions given for the task” (Dishion et al., 2004, p. 655). Importantly, all verbal responses to rule break talk of the interaction partner were also coded as rule break talk, unless the utterance was intended to stop the rule break talk of the interaction partner. All talk or behavior that was not coded as rule break was coded normative. Two variables were used in the analyses; the total duration of rule break talk during an interaction in seconds and the frequency of episodes of rule break talk over the course of an interaction. Because both members of each dyad were coded separately, individual and dyadic scores on the variables were computed. Dyadic scores are the sum of the scores of both members of the dyad. For the double coded dyads, mean scores of both
observers were used in the analyses, for both individual and dyadic scores.

LAUGHING. All audible and visible instances of laughing and smiling were coded as laughing, irrespective of the preceding behavior of the interaction partner. Similar to rule break talk, a default state was created for this construct; not laughing.

Strategy of analyses
Analyses were performed in four steps. First, analyses at the individual level were performed. Paired t-tests were executed to assess whether non-delinquent individuals behaved differently in both types of dyads. Second, analyses at the dyadic level were performed, followed by sequential analyses. Finally state space grid analyses were performed. Both the dyadic analyses and the state space grid analyses started with t-tests to compare the facility dyads and the high school dyads. After these t-tests, multivariate analyses of variance were performed with dyad type as factor, to assess differences between non-delinquent dyads and the two other dyad types; mixed and delinquent dyads.

SEQUENTIAL ANALYSES. All dyads were submitted to a sequential analysis. In case a dyad was coded by two observers, one data file was randomly selected for the sequential analysis. If a behavior code occurred in the file within five seconds after the preceding behavior, this was considered a sequence. All four types of behavior were taken into account; rule break talk, normative behavior, laughing, and not laughing. Because not laughing is not a positive reaction to the preceding behavior, all instances of not laughing were considered normative. Initially, a three by three crosstab was constructed with the following three behavior categories; rule break behavior, normative behavior (including not laughing), and laughing. For each dyad two crosstabs were constructed, one for which the behavior of girl A was antecedent and one for which the behavior of girl B was antecedent. After manually identifying all sequences and completing the three by three crosstabs, the three categories were converted into a two by two crosstab with the categories rule break talk and normative behavior. Because laughing is considered as a positive, or reinforcing response to rule break talk, all rule break - laughing sequences were collapsed in the rule break - rule break category. The laughing - rule break sequences were collapsed in the normative - rule break category. All laughing - normative, laughing - laughing and normative - laughing sequences were collapsed into the normative - normative category.

STATE SPACE GRIDS. As explained before, state space grids is a relatively new methodology based on dynamic systems principles. In the present study the two coded variables, rule break talk and laughing and their counterparts normative behavior and not laughing, were combined into four categories; 1) normative - not laughing, 2) normative - laughing, 3) rule break talk - not laughing, and 4) rule break talk - laughing. Behavior of a subject always occurs in one of these four categories. The four categories result in a grid consisting of 16 cells, with each cell representing a particular combination of the behavior of subject A and subject B. The interaction, as it occurs in real time is plotted on the grid. Any time there is a change in the behavior of one of the interaction partners a new point is plotted in the cell representing that behavior and a line is drawn connecting the new point and the previous point. This results in a behavioral trajectory, or a depiction of the sequence of combinations of behavioral states on the grid (Hollenstein, 2005; Hollenstein & Lewis, 2006).
GridWare (Lamey, Hollenstein, Lewis, & Granic, 2004), the computer application that is able to produce these state space grids, was used to analyse all dyadic interactions. In case a dyad was coded by two observers, one data file was randomly selected for the state space grid analyses. A number of measures for each dyad or interaction were derived from GridWare. Six of them were used in regular statistical analyses. The first is Dispersion, this is a measure that denotes the variation of the interaction. This measure has a value ranging from 0 to 1, where 0 means that there is no dispersion at all; all behavior occurs in one cell of the grid, whereas a value of 1 means that there is maximal dispersion over the grid. The second measure is Duration, which denotes the time a dyad stays in the selected deviancy training region, in which, as mentioned before, rule break talk is coupled with a positive response of the interaction partner (either laughing or engaging in rule break talk). The third measure is the number of Events in the selected region. An event is a distinct episode occupying a particular cell. The fourth measure is the number of Visits to the selected region. A visit starts upon entry into the selected region and ends with the dyad’s exit from the selected region. The fifth measure is the Return time to the selected region after the first visit. The smaller the Return time, the faster a dyad returns to the selected region. The last measure concerns the number of Return visits to the region after the first visit.

Traditionally, alpha levels are set at .05 to reduce the risk of type one errors. Over the last few decades however, several researchers have argued to refrain from this static significance testing, since the value of $p$ is strongly influenced by the number of participants in a study (see for example Olejnik & Algina, 2000). In very large samples significant effects are rather easily obtained, whereas this significance does not necessarily reflect a large difference in terms of effect sizes. Since alpha levels do not provide any information about the effect size, we decided to include effect size measures for all of our analyses. The effect size of $t$-tests is denoted with Cohen’s $d$. If this value is larger than .20 the effect size is considered small, when $d$ is .50 or higher, the effect size is considered medium and a Cohen’s $d$ larger than .80 indicates a large effect (Cohen, 1988). The effect size of analyses of variance and contrasts is assessed with eta squared. Due to our small sample size, we decided to consider alpha levels below .15 significant. With the given sample size ($n = 29$) this alpha level is appropriate to detect large differences in the population, while maintaining a power of .80 (Cohen, 1988).

**Results**

**Preliminary analyses**

As noted in the preceding section, participants were classified as delinquent or non-delinquent. Overall, $t$-tests revealed that girls classified as non-delinquent had significantly lower scores on the delinquency questionnaire than girls classified as delinquent ($M_{\text{non-delinquent girls}} = 2.13, SD = 4.00, M_{\text{delinquent girls}} = 28.00, SD = 18.65, t (15.28) = -5.25, p < .001, d = -1.92$). Due to their stay in a facility for youngsters with severe behavior problems, we reasoned that overall, girls from the facility would have higher scores on the self-report questionnaire on delinquency than the high school girls. This is exactly what a $t$-test revealed ($M_{\text{high school girls}} = 11.00, SD = 13.62, M_{\text{facility girls}} = 31.33, SD = 27.78, t (5.62) = -1.74, p < .15, d = -1.19$).

**Individual level analyses**

We expected that non-delinquent girls would engage longer and more frequent in rule break talk in a
mixed dyad than in a non-delinquent dyad. The results partly confirmed our hypothesis; non-delinquent girls showed more frequent episodes of rule break talk in interaction with a delinquent partner \(M = 8.43, SD = 6.99\) than in interaction with a non-delinquent partner \(M = 3.82, SD = 4.54, t (13) = -2.43, p < .05, d = .78\). No significant differences however, were found for the duration of rule break talk. Moreover, the difference was in the opposite direction \(M_{\text{non-delinquent dyad}} = 130.62\) seconds, \(SD = 308.47, M_{\text{mixed dyad}} = 89.71\) seconds, \(SD = 131.31\).

**Dyadic level analyses**

At the dyadic level 29 dyads were the unit of analysis. First, the facility group was compared with the high school group. Due to the overall higher level of delinquency among the facility group, we expected longer and more frequent engagement in rule break talk in girls from this group. T-tests indeed revealed that dyads from the facility group engaged longer in rule break talk than the high school dyads \(M = 725.97\) seconds, \(SD = 623.18\) versus \(M = 109.94\) seconds, \(SD = 159.54, t (4.11) = -2.20, p < .10, d = -2.19\). Although the difference was in the expected direction, the facility and high school dyads showed no significant difference in the frequency of rule break episodes \(M_{\text{facility dyads}} = 24.20, SD = 8.87, M_{\text{high school dyads}} = 15.73, SD = 15.12\).

Second, multivariate analyses of variance were performed on the same dependent variables to assess differences between the three dyad types (i.e., non-delinquent, delinquent and mixed dyads). We expected that non-delinquent dyads would show less rule break talk than delinquent and mixed dyads, both in duration and frequency. Concerning the frequency of rule break talk, the dyad types differed from each other \(F(2, 28) = 3.04, p < .10, \eta^2 = .19\). Simple contrast testing with non-delinquent dyads as reference group, revealed that non-delinquent dyads differed significantly from delinquent \(F(1, 26) = 6.00, p < .05, \eta^2 = .19\) and mixed dyads \(F(1, 26) = 2.71, p < .15, \eta^2 = .09\). As shown in Table 1 delinquent and mixed dyads engaged more often in rule break talk than non-delinquent dyads. Concerning the total duration of rule break talk the different dyad types did not differ from each other. However not significant, the differences were not in the expected direction. Non-delinquent dyads engaged longer in rule break talk than delinquent and mixed dyads.

**Table 1**

<table>
<thead>
<tr>
<th></th>
<th>Non-delinquent dyads</th>
<th>Delinquent dyads</th>
<th>Mixed dyads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N)</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Duration RB</td>
<td>7</td>
<td>261.24</td>
<td>641.83</td>
</tr>
<tr>
<td>Frequency RB</td>
<td>7</td>
<td>7.64</td>
<td>9.09</td>
</tr>
</tbody>
</table>

*Note.* Asterisks refer to significant differences with the reference group; the group of non-delinquent dyads. \(F\) refers to the omnibus \(F\).

\(f\ p < .15, *p < .10, **p < .05, ***p < .01\).

**Sequential analyses**

The preceding analyses provided a description of the total duration and frequency of rule break talk during the interactions. However, those analyses do not provide insight into the relation between rule break talk and accompanying positive or reinforcing reactions, such as laughing. We expected that in delinquent dyads, the interaction partner would respond positively more often to an episode of rule
break talk, by either engaging in rule break talk or by laughing, than in mixed and non-delinquent dyads. Remember that two by two cross tabs were constructed by collapsing all rule break -laughing sequences (laughing in response to rule break talk) into the rule break - rule break category. This way all positive reactions of the interaction partner to rule break talk; laughing and engaging in rule break talk, were taken up in the rule break - rule break category. Because we were primarily interested in positive reactions to rule break talk, we focused on that particular sequence. Transitional probabilities of the target behavior (rule break talk of the “responding” interaction partner) were compared with simple probabilities of the target behavior. The use of Allison-Liker binomial z scores (Gottman & Roy, 1990) is common in sequential analysis. Therefore, this statistic was applied to assess the statistical significance of the difference between the transitional and the simple probability of the target behavior; rule break talk. If the transitional probability, the chance that rule break talk was preceded by rule break talk of the interaction partner, is greater than the simple probability, the chance of overall occurrence of rule break talk by the responding girl, it can be stated that it is likely that the response to rule break talk consists of rule break talk or laughing.

Contrary to our hypotheses, all dyads showed a significant level of rule break talk in response to rule break talk of the interaction partner (non-delinquent dyads z = 10.09, delinquent dyads, z = 10.58, and mixed dyads, z = 13.05, p < .05). The same results were obtained for the comparison between facility and high school dyads (facility dyads z = 8.85, high school dyads z = 17.68, p < .05). These results indicate that for all dyads the probability that rule break was preceded by a rule break behavior was significantly larger than the probability of the overall occurrence of rule break talk; all dyads were likely to positively reinforce their interaction partner’s rule break talk.

State space grid analyses
As explained before, the two observed constructs, rule break talk and laughing and their counterparts normative behavior and not-laughing were combined in a state space grid. In Figures 1 and 2 the region that was of special interest in our analyses is marked; in this deviancy training region rule break talk of one of the interaction partners co-occurred with rule break talk or laughing of the interaction partner. Figure 1 shows the course of an interaction for a non-delinquent dyad. All behavior during this interaction occurs exclusively in the quadrant in the bottom left of the grid, where normative - not laughing and normative - laughing are paired with normative - not laughing or normative - laughing of the interaction partner. So, both members of this non-delinquent high school dyad engaged exclusively in normative behavior. Dispersion over the grid is limited, because behavior is restricted to this normative quadrant. Figure 2 shows the state space grid for a delinquent dyad. It is obvious that this dyad visited many more cells, and as a result showed greater dispersion over the grid than the non-delinquent dyad. As opposed to the non-delinquent dyad, this dyad visited the deviancy training region several times.

As described in the method section, several variables were derived from these state space grids. First, t-tests were performed to assess differences between the facility group and the high school group. Due to the overall higher level of delinquency of the facility girls, we expected that they would spend more time in the deviancy training region, and that they would visit this region more often. Because these dyads were supposed to visit the deviancy training region more than the high school dyads, we expected that delinquent dyads would show larger dispersion over the grid. In Table 2 an overview of the descriptive statistics is provided for both the facility group and the high school group. T-tests revealed
four significant differences between both groups. First, Dispersion over the grid was larger for the facility dyads than for the high school dyads ($t(27) = 3.74, p < .05, d = 1.84$). Second, the facility dyads stayed longer in the deviancy training region ($t(4.04) = 2.15, p < .10, d = 2.37$). Third, the Duration per Event in the deviancy training region was longer for the facility dyads ($t(4.23) = 2.83, p < .05, d = 2.51$). Finally, the Duration of their Visits to the deviancy training region lasted significantly longer than those of the high school group ($t(4.01) = 2.10, p < .15, d = 2.39$). As can be seen in Table 2, only 20 dyads have values for Return time and Return visits. This discrepancy is caused by the fact that nine dyads (four non-delinquent, two delinquent and two mixed high school dyads and one mixed facility dyad) did not visit the selected deviancy training region at all. In accordance with our hypotheses, although not significant, facility dyads displayed more events and visits in the deviancy training region, moreover, they returned faster to this region than the high school dyads. Neither significant and contrary to our hypotheses, high school dyads made slightly more return visits to the deviancy training region.

Figure 1
State space grid for a non-delinquent high school dyad

![State space grid for a non-delinquent high school dyad](image1)

Figure 2
State space grid for a delinquent facility dyad

![State space grid for a delinquent facility dyad](image2)
Table 2
Descriptive statistics for the state space grid variables, categorized according to group

<table>
<thead>
<tr>
<th>Facility group</th>
<th>High school</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispersion</td>
<td></td>
<td>5</td>
<td>.52</td>
<td>.25</td>
<td>24</td>
<td>.20</td>
<td>.16</td>
<td>3.74***</td>
</tr>
<tr>
<td>Duration</td>
<td></td>
<td>5</td>
<td>312.79</td>
<td>300.00</td>
<td>24</td>
<td>23.70</td>
<td>43.40</td>
<td>2.15*</td>
</tr>
<tr>
<td>Duration / E</td>
<td></td>
<td>5</td>
<td>9.25</td>
<td>5.88</td>
<td>24</td>
<td>1.71</td>
<td>2.15</td>
<td>2.83**</td>
</tr>
<tr>
<td>Duration / V</td>
<td></td>
<td>5</td>
<td>35.65</td>
<td>35.51</td>
<td>24</td>
<td>2.26</td>
<td>3.17</td>
<td>2.10†</td>
</tr>
<tr>
<td>Events</td>
<td></td>
<td>5</td>
<td>28.80</td>
<td>28.49</td>
<td>24</td>
<td>7.54</td>
<td>10.24</td>
<td>.70</td>
</tr>
<tr>
<td>Visits</td>
<td></td>
<td>5</td>
<td>8.60</td>
<td>6.43</td>
<td>24</td>
<td>5.92</td>
<td>8.05</td>
<td>-.71</td>
</tr>
<tr>
<td>Return time</td>
<td></td>
<td>4</td>
<td>3.96</td>
<td>.82</td>
<td>16</td>
<td>4.02</td>
<td>1.76</td>
<td>-.07</td>
</tr>
<tr>
<td>Return visits</td>
<td></td>
<td>4</td>
<td>3.96</td>
<td>.82</td>
<td>16</td>
<td>4.02</td>
<td>1.76</td>
<td>-.07</td>
</tr>
</tbody>
</table>

Note. Duration / E = Duration per event; Duration / V = Duration per visit.
†p < .15, *p < .10, **p < .05, ***p < .01.

Multivariate analyses of variance were conducted to assess differences between the three dyad types. We expected that non-delinquent dyads would visit the deviancy training region less often and less long than mixed and delinquent dyads. Consequently, we expected that delinquent and mixed dyads would show larger dispersion over the grid than non-delinquent dyads. Moreover, we hypothesized that non-delinquent dyads would return less often and less fast to the deviancy training region after their first visit than mixed and delinquent dyads. In Table 3 an overview of the descriptive statistics for the state space grid variables is provided for each dyad type. In the first set of analyses the following variables were included: Dispersion, Duration, Events and Visits. The omnibus F-test revealed no significant differences between the three dyad types. Simple contrast testing however, revealed one significant difference. Delinquent dyads made more Visits to the deviancy training region than non-delinquent dyads ($F(1, 26) = 2.33, p < .15, \eta^2 = .08$). Remarkable to note is that overall, however not significant, non-delinquent dyads stayed considerably longer in the deviancy training region than delinquent and mixed dyads. The second set of variables included Duration per Event and Duration per Visit. Nor the analysis of variance nor simple contrast testing revealed significant differences between the three dyad types. The third set of variables included Return time and Return visits. As mentioned before, the discrepancy in number of dyads is caused by the fact that nine dyads did not visit the deviancy training region at all. Although the omnibus F-test revealed no significant differences between the three dyad types, simple contrast testing revealed two significant differences. First, non-delinquent dyads differed from delinquent dyads in Return time to the deviancy training region ($F(1, 17) = 2.75, p < .15, \eta^2 = .14$). Non-delinquent dyads had a higher return time, which means that once non-delinquent dyads visited the deviancy training region, it took them a longer period of time to return to the selected region than delinquent dyads. Second, non-delinquent dyads made significantly less Return visits to the deviancy training region than mixed dyads ($F(1, 17) = 2.54, p < .15, \eta^2 = .13$) after their first visit to this region.

Discussion

In the current study the real time process of deviancy training was assessed among two groups; a group of high risk adolescent girls and a group of high school girls. Non-delinquent, delinquent and mixed
Individual analyses

In line with previous studies suggesting that individuals, especially adolescents, adapt their behavior to others (see for a classic study Asch, 1952), we found that non-delinquent girls displayed more episodes of rule break talk in a mixed dyad than in a non-delinquent dyad. Our hypothesis that these non-delinquent girls would engage in rule break talk for a longer period of time in a mixed dyad was not confirmed. Presumably, the absence of a significant difference for the overall duration of rule break talk is caused by the presence of two non-delinquent facility girls, who engaged the majority of the time in rule break talk with their non-delinquent group mate. When only non-delinquent high school girls are considered, a significant difference does emerge for duration of rule break talk. Non-delinquent high school girls adapt their behavior to their delinquent interaction partner both in respect of duration and frequency of rule break talk.

Dyadic analyses

The finding that individual non-delinquent girls adapt their behavior to their delinquent interaction partner provides additional evidence for previous studies showing negative effects of peer group treatment (e.g., Chamberlain & Reid, 1998; McCord, 1992). With this knowledge in mind, it is interesting to determine whether delinquent and mixed dyads show more rule break talk than non-delinquent dyads. In accordance with findings of Dishion and colleagues (1996) we found that delinquent and mixed dyads showed more frequent episodes of rule break talk than non-delinquent dyads. Although the direction of the differences is in accordance with the results of Dishion and colleagues (1996), it is important to note that the rates of rule break talk per minute diverge enormously. The rates adolescent boys in their study showed were at least seven times the rates girls in our study showed. There are at least two explanations for this difference. First, Dishion and colleagues (1996) conducted their study with boys. Although no sex differences were found in another study (Granic & Dishion, 2003), there is reason to assume that boys are more likely to show rule break talk, since research repeatedly showed that dyads were formed to participate in an observation task. Analyses with a varying level of complexity and innovativeness were performed.
boys experience more externalizing problems (e.g., Bongers et al., 2004; Martino et al., 2008; Vazsonyi & Keiley, 2007). Engagement in rule break talk might be one expression of underlying externalizing problems. This same presumption holds for at risk adolescents. Both the study that Dishion conducted in the nineties as his study that failed to show any sex differences were conducted exclusively with at risk adolescents, recruited from neighborhoods with high densities of reported delinquency.

Our hypothesis that delinquent and mixed dyads would engage longer in rule break talk than non-delinquent dyads was not confirmed. A closer inspection of the descriptive statistics revealed that the means were not in the expected direction. Analogue to the results at the individual level, this unexpected finding is explained through the presence of one non-delinquent facility dyad, whose members engaged almost exclusively in rule break talk during the interaction. Although the means were in the expected direction after exclusion of this dyad, most effects remained non-significant. Due to our small sample size, we decided not to exclude this dyad from the analyses. Moreover, we ran the same analyses with exclusively high school dyads. Although the means were in the expected direction, the difference was still not significant. With precaution we argue that there is a trend in our data that delinquent and mixed dyads engage longer in rule break talk than non-delinquent dyads. In contrast to the frequency of rule break talk, we saw that over all dyads, the duration of rule break talk over the interaction was comparable to the duration as found in at risk boys (Dishion et al., 1997).

With regard to the comparison between facility and high school dyads, our results indicate that facility dyads engaged longer, but not more frequent in rule break talk than high school dyads. Presumably, once facility dyads start engaging in rule break talk, it takes them a longer period of time to disengage from it. This reasoning is supported by the fact that their rule break episodes lasted on average significantly longer than the mean rule break episodes of high school dyads. This finding might be in line with the results from a study by Granic and Dishion (2003) in which they found that for delinquent dyads rule break talk was an attractor. The more episodes of rule break talk occurred, the longer these episodes became. The same phenomenon might have manifested itself in our study.

Sequential analyses
The results of our sequential analyses suggest that all dyads, regardless of their level of delinquency, positively reinforce rule break talk. This is not in line with sequential analyses performed by Dishion and colleagues (1996) on the same type of data. They found that non-delinquent dyads, in contrast to delinquent and mixed dyads, did not positively reinforce rule break talk. Dishion and colleagues' (1996) study was conducted with boys. Research repeatedly showed that interpersonal relationships are of greater importance for girls than for boys. Instead, boys attach more value to the larger peer group (Gavin & Furman, 1989). Girls' concern with interpersonal relationships might have urged individual girls to follow their interaction partner in rule break talk to maintain or obtain a good relationship with the interaction partner. Boys in Dishion and colleagues' study participated in the observation task with one of their best friends. Since boys attach more value to the larger peer group they might have felt less inclined to follow their friend in rule break talk. Support for our results can be found in a study of Buehler and colleagues (1966). Their results too seem to indicate that delinquent or deviant behavior is positively reinforced by all adolescent girls, regardless of their level of delinquency. Another explanation for the absence of a difference in reinforcement between the different dyad types is methodological in nature. Our time slot of five seconds is quite arbitrary, it might take individuals more than five seconds to
respond to the behavior of their interaction partner. Moreover, only the first behavior that occurred within five seconds of the preceding behavior was considered a consequent behavior. Presumably, as the state space grid analyses showed, sequential analyses rely too heavily on narrow temporal contingencies.

State space grid analyses
In contrast to the sequential analyses, the state space grid analyses revealed differences between dyad types. Delinquent dyads made more visits to the deviancy training region and returned faster to the region after their first visit than non-delinquent dyads. Further, mixed dyads made more return visits to the deviancy training region than non-delinquent dyads.

The dyadic analyses already showed that facility dyads engaged longer in rule break talk than high school dyads. In addition to this finding, state space grid analyses revealed that facility dyads also stayed longer in the deviancy training region, in which rule break talk is positively reinforced by the interaction partner. This suggests that in interactions of facility dyads more reinforcement of rule break talk occurs than in high school dyads. These findings do not fit with the results of the sequential analyses and illustrate the additive value of the state space grid analyses. Instead of relying on narrow temporal contingencies, the state space grid analyses took the overall pattern of an interaction into account (Granic & Patterson, 2006), which resulted in a better understanding of the process.

The current study is a step forward in the deviancy training literature due to several factors. First, the application of the state space grid methodology is new in this type of research. The additive value of this methodology concerns the possibility for inspection of the overall temporal patterning of the course of an interaction on a state space grid (as shown in Figures 1 and 2). In addition, GridWare (Lamey et al., 2004) determines several measures that reflect the temporal organization of an interaction. Dishion and colleagues (Dishion et al., 2004; Granic & Dishion, 2003) suggested that since nearly all adolescents engage in rule break talk, the temporal patterning might be more predictive of later antisocial behavior. Granic and Dishion (2003) found support for this reasoning; in their study the attractor index of rule break talk was more predictive of later antisocial behavior than the duration adolescents engaged in rule break talk during an interaction. Our results underscore the presumed importance of the temporal organization of an interaction. Whereas the sequential analyses failed to detect differences, state space grid analyses succeeded in showing differences between the different dyad types.

Another unique characteristic of the current study concerns the inclusion of composed dyads. In the original studies adolescents brought in one of their best friends for participation in the observation task. We coupled adolescents based on their level of delinquency and let them interact twice, to assess the possibility that participants behaved differently in both types of dyads. A major advantage of this approach is that one can determine with relative certainty that individual behavior is influenced by the interaction partner. So far, most studies on deviancy training focused at the dyadic level. To assess the possibility that individuals adapt their behavior to peers, a presumption central in the theory of peer contagion, more individual analyses are necessary in future studies.

Due to the inclusion of the facility group we were able to provide some insight into the feared effects of aggregating deviant youth in treatment groups (see Dishion et al., 1999). Our results suggest that this worry is justified. As expected, we found that non-delinquent girls showed more rule break talk in interaction with a delinquent partner than in interaction with a non-delinquent partner. Moreover, delinquent and mixed dyads showed more frequent episodes of rule break talk than non-delinquent
dyads and facility dyads showed 1) a longer duration of rule break talk and 2) more reinforcement of rule break talk as reflected in a longer stay in the deviancy training region. In short, this means that in delinquent and facility dyads, there are more instances for peers to positively reinforce one another's deviant behavior. Exactly this reinforcement plays an important role in the development and maintenance of deviant behavior. Although the sample size is too limited to make any firm statements about the results, this study offers potential implications for practice. If these results are replicated in a larger sample, it indicates that it is important to restrict utterances with a deviant content to a minimum in group treatment. Moreover, given the importance of positive reinforcement in the development and maintenance of deviant behavior, it is recommended to prevent such reinforcement by group members. We are aware that this is a very difficult challenge, since the results of a study by Buehler and colleagues (1966) suggest that the frequency of reinforcement provided by peers greatly outnumbers the reinforcement provided by staff. This makes sense since even in facilities adolescents spend the majority of their time in company of peers.

Although informal observations suggested that girls were at ease and not disturbed by the camera, the observation task remains a rather artificial situation to capture an interaction as it would unfold in "real life". Therefore, it is desirable to study the process of deviancy training in real life situations. Furthermore, research with larger sample sizes in different situations is required to gain more insight into the exact process of deviancy training.

Despite these limitations, our study showed that the deviancy-training process found in boys seems to apply for girls as well. With regard to the frequency of rule-breaking talk episodes, girls in the present study showed less frequent episodes than the boys in Dishion and colleagues' studies. However, the total duration of rule-breaking talk episodes for the girls in our study is similar to the duration of boys’ engagement in rule-breaking talk. In other words, boys and girls engaged in the same amount of time in rule-breaking talk, but girls did this in fewer episodes. This could suggest that for girls engaging in rule-breaking talk is a stronger attractor than it is for boys, as it is apparently harder for girls to disengage from rule-breaking talk when it appears. This phenomenon may be caused by girls' greater orientation towards or emphasis on interpersonal relationships (Buhrmester & Furman, 1987). Their need to preserve the close relationship, might lead adolescent girls to reinforce their friend's behavior. When an interaction partner brings up a deviant topic (e.g., being drunk), girls may, for example, feel more inclined than boys to ask questions about the situation (e.g., 'what did you drink?' 'how did you feel?'), thereby reinforcing their interaction partner’s rule-breaking talk.

A similar reinforcement mechanism seems to apply to internalizing behavior. In particular, studies found that depressive feelings of best friends are associated with adolescents' own depressive symptoms (Hogue & Steinberg, 1995; Stevens & Prinstein, 2005). Moreover, Rose (2002) found that girls actually spend more time than boys do "(...) extensively discussing and revisiting problems, speculating about problems and focusing on negative feelings" (Rose, 2002, p. 1830) with their friends. By actively paying attention to each other's “problem talk”, the rumination process that is so strongly associated with the development of internalizing problems, is dyadically reinforced. In this way, this specific reinforcement process is comparable to that of deviancy training. Adolescent girls are especially at risk for the negative effects associated with co-rumination, since their friendships are characterized by higher levels of intimacy and self-disclosure, which is a premise for engagement in co-rumination (Buhrmester & Furman, 1987). So, the relatively strong interpersonal orientation of girls might make
them more vulnerable to detrimental interactions in a dyadic peer context.

Since delinquent girls suffer more often than boys from co-occurring internalizing problems (Barton et al., 2001; Handwerk et al., 2006; Stewart & Trupin, 2003; Timmons-Mitchell et al., 1997), it is important to assess whether deviancy training and co-rumination co-occur in adolescent girls' dyadic relationships. Moreover, future studies should address the relationship between these reinforcement mechanisms and the interplay in their respective developmental pathways.
PART 3
POST-TREATMENT FUNCTIONING
The role of pre-treatment risk factors in the prediction of post-treatment outcomes in compulsory residential care

Submitted as:
Predictive value of risk factors

Abstract

In the present study we examined whether the number of adolescents' pre-treatment risk factors predicted their post-treatment functioning after being treated in a compulsory residential treatment program. Participants were 132 adolescents aged between 11 and 18 years old ($M = 15.69$, $SD = 1.36$, 58.3% males). Treatment files of the adolescents were analyzed to measure pre-treatment risk factors. Six months after discharge the adolescents were interviewed by telephone how they were functioning on several indicators. Regression analyses revealed that having a higher number of individual risk factors was related to a higher likelihood to live in a family setting, having less positive family contacts and more police contacts. Furthermore, having a higher number of family risk factors was related to more positive contacts with the family, living independently, and a higher risk of having police contacts. Risk factors on the environmental domain did not add predictive value to post-treatment functioning. Overall, the findings revealed that the number of individual and family factors was predictive of post-treatment outcomes. For intervention purposes this suggests to intensively focus on individual as well as family interventions. Further research on the prediction of the long-term outcomes is, however, needed.

Introduction

Residential admittance is the last and most restrictive option of youth care for children with behavior problems in the Netherlands. About 150,000 to 170,000 children in the ages between 0 to 18 years - almost 5% of the total underaged population - needed some form of youth care in 2002. Nearly 30,000 children needed residential care (Baecke, De Boer, Bremmer, Duenk, Kroon, et al., 2009; Van Dam & Veerman, 2011). For adolescents with severe behavior problems, combined with psychiatric disorders and/or being mentally disabled, the existing residential institutions could not offer adequate care. As a consequence, adolescents showing severe problem behavior (referred to as ‘behavioral disturbed adolescents’ in the present study) were accommodated in juvenile detention centers where they were placed together with juvenile delinquents. In the Netherlands, there was a growing resistance against the aggregation of these behavioral disturbed adolescents and juvenile delinquents in juvenile detention centers. The judicial regime was seen as to stressful and inappropriate for the behavioral disturbed adolescents. Furthermore, there were possible detrimental effects of peer contagion. Research on deviancy training showed that the aggregation of juveniles is related to an increase in later delinquency (e.g., Dishion, McCord & Poulin, 1999; Gifford-Smith, Dodge, Dishion, & McCord, 2005). Prior research also showed that when aggregated with convicted delinquent adolescents, behavioral disturbed adolescents who were not or only moderately delinquent, seemed to adapt their deviant behavior to that of the delinquent adolescents (De Haan, Nijhof, Engels, & Overbeek, 2010). According to Dishion and Dodge (2005) especially moderately deviant adolescents are highly vulnerable to peer contagion and thus aggregating behavioral disturbed adolescents with juvenile adolescents in juvenile detention centers seemed an undesirable option (Boendermaker, Eijgenraam, & Geurts, 2004). In 2005 the Dutch government started a new compulsory residential treatment program specifically for adolescents with severe problem behaviors (Boendermaker, 2005). As part of a longitudinal study to evaluate this new treatment program, the present study examined whether characteristics of the behavioral disturbed adolescents admitted to this new compulsory residential treatment program were
related to post-treatment functioning.

One of the theoretical bases used for the new residential treatment program was the ecological approach (Bronfenbrenner, 1979; 1994). This approach suggests that to help the adolescents, treatment should not only focus on the individual characteristics of the adolescent, but should also include the environment such as parents, guardians, and peers. Moreover, the accumulation of risk factors in all these areas has to be considered, because a higher number of risk factors is related to a more problematic development (Rutter, 1979; Sameroff, 1998). Based on this ecological model, Deković (1999) distinguished three domains of risk factors: the individual, the family and the environmental (or extra familial) domain. As is well known, adolescents admitted to residential care experience many risk factors (e.g., Dasinger, Shane, & Martinovich, 2004; Frensch & Cameron, 2002). For adolescents admitted to the new residential treatment program, these risk factors include a high co-morbidity between internalizing and externalizing problems (67%), police contacts (70%), the use of soft drug (59%), the use of hard drug (17%), abuse within the family (30%), prostitution (20%), and parent’s addictions (22%) (Nijhof, Van Dam, Veerman, Engels, & Scholte, 2010).

Concerning post-treatment outcomes, previous studies found that adolescents with externalizing problem behavior are more likely to experience positive effects from residential treatment than adolescents with internalizing problem behavior (see review Knorth, Harder, Zandberg, & Kendrick, 2008), but even the latter benefit from residential treatment (Leichtman, Leichtman, Barber, & Neese, 2001). Adolescents showing both internalizing and externalizing problem behavior showed more negative post-treatment functioning. Frensch and Cameron (2002) conclude that on the long term the individual situation at time of entrance to residential care is a poor predictor for how well the adolescent is doing after discharge. Next to the individual risk factors, adolescents admitted to residential care are also often confronted with problematic family situations (Frensch & Cameron, 2002; Griffith, Ingram, Barth, Trout, Hurley, Thompson et al., 2009; Preyde, Adams, Cameron, & Frensch, 2009). Family conflict and cohesion were indirectly related to treatment outcomes in the way that poorer family functioning was associated with more negative treatment outcomes (Godley, Kahn, Dennis, Godley, & Funk, 2005). Moreover, the number of family risk factors (e.g., parental pathology, single-parent families, parental addictions) at time of entrance appeared to be negatively related to follow-up outcomes concerning home and school adjustment (Frensch & Cameron, 2002). Regarding the environmental risk factors, adolescents with severe problem behavior are more likely to affiliate with deviant peers. Concerning the relation between pre-treatment deviant networks and post-treatment functioning little is known, however, previous studies found that having deviant peers is related to a higher risk of delinquency (e.g., Dishion, Patterson, Stoolmiller, & Skinner, 1991; Keenan, Loeber, Zhang, Stouthamer-Loeber, & Kammen, 1995; Thornberry, & Krohn, 1997), substance use (Fergusson, Swain-Campbell, & Horwood, 2002; Thornberry, & Krohn, 1997) and risky sexual behavior (Dishion, 2000). Concerning adolescents admitted to residential care, girl’s pre-treatment friends were often older males, while for boys friends seemed to be of the same sex and age (Riehman, Bluthenthal, Juvonen, & Morral, 2003). Girls were also more likely to become victim of sexual harassment in relationships with peers (Acoca & Dedel, 1998). Overall, adolescents discharged from residential care can still be seen as vulnerable, at risk adolescents (Hirsch, 2009), for which the risk of affiliation with deviant peers after treatment will therefore still be high. According to the study of Broome, Knight, Knight, Hiller and Simpson (1997) for drugs users it indeed was found that having pre-treatment deviant social networks was associated with
Predictive value of risk factors

A large number of studies has tried to identify population characteristics of residential samples or focused on treatment outcomes or improvement during treatment, but less research focused on the link between pre-treatment risk factors (population characteristics), especially family- and environmental characteristics, and post-treatment functioning. Concerning the new compulsory residential treatment program the relation between the number of risk factors before entry and post-treatment functioning is even unknown. The aim of the present study was to examine to what extent the number of risk factors predicted post-treatment outcomes of a new compulsory residential treatment program, in which the risk factors were categorized into the individual, family and environmental domain. The present study focused on the number of risk factors, because the number of risk factors rather than the separate risk factors is related to a more problematic development (Rutter, 1979; Sameroff, 1998). Based on prior studies, it was hypothesized that the number of environmental and family risk factors was negatively related to post-treatment functioning. This implies that for both domains adolescents with a higher number of risk factors will function less positive after discharge. Concerning the individual domain we hypothesized that no relation exists with post-treatment outcomes.

Method

Data of the current study were collected as part of a prospective study, which examined the impact of a compulsory residential program for adolescents with severe problem behaviors in the Netherlands. Six institutions participated in this study, all offering compulsory residential treatment to adolescents aged 12 to 18.

Participants

A total of 242 adolescents were included in the follow-up study (post-treatment functioning). From 132 adolescents follow-data was completed (55%). Concerning the other 110 adolescents, 30 adolescents (12%) were not willing to participate, 37 (15%) could not be reached, and for 43 adolescents (18%) the institutions informed the researchers too late that the adolescent was discharged. Of the final 132 adolescents who participated ($M_{age} = 15.69, SD = 1.36$ at time of entrance), 58.3% appeared to be male. Adolescents were mainly Caucasian (89%). Of the participants, 78.8% already stayed in some kind of treatment before entering the residential treatment program, while 17.8% lived in a family setting, and 3.4% was homeless. More than half of the adolescents had followed some kind of education (51.9%), one adolescent already had a job (0.7%), and 47.4% had no job or was not engaged in any form of education before entrance.

Procedure

At time of entrance the treatment files (i.e., judicial documents, reports of Youth Welfare, diagnostic reports) of the adolescents were analyzed (pre-treatment functioning). The files were analyzed to gather demographic information and information about the risk factors on several areas before entering treatment. Parents and children had given their consent for the use of these treatment files. The files provided us with information regarding the individual situation (e.g., school problems, disorders, addiction, traumas), family problems (e.g., relational problems, abuse, parenting quality, parental
addiction), and environmental situation (e.g., peer behavior).

Follow-up measures included self-reported structured interviews per telephone and were completed approximately six months after the adolescent left the residential treatment. Adolescents were approached by a letter six months after discharge in which the aim of the study was shortly explained. Parents received a similar letter to make sure they were informed about the study as well. After a week, adolescents were contacted by phone and asked for their willingness to participate. If adolescents were not reached by phone, a second letter was sent in which a return letter was added. If interested, adolescents could fill in their phone number and return the letter, after which contact was made. When adolescents could not be detected, contact was made with the adolescent’s guardian who was asked to inform the adolescent about the study and to help us contact the adolescent. Confidentiality of the data was fully assured beforehand. Adolescents received 25 Euros for their participation.

MEASURES

Pre-treatment risk factors
To measure pre-treatment functioning, treatment files were analyzed using the Scoring scheme for Demographic Information (SDI, Flipse, 2000), which is originally developed by Veerman and Tates (1989). The SDI was developed to reliably score demographic and background information from treatment files of children, adolescents, and families who have been registered for care. For the present study, the SDI was extended with several questions related to parental or adolescents’ problem behavior, which are derived from the risk factor screening list of Orobio de Castro, Veerman, Bons, and Beer (2002) and the findings of the study of Boendermaker et al. (2004). The treatment files were scored by several investigators who received a scoring training on forehand, of which the overall inter-rater reliabilities were above .80. Based on the SDI, risk factors were measured on three different domains. The individual domain concerns risk factors with regard to externalizing and internalizing problems, substance use, life events, and non-adequate sexual behavior (see Table 1). Risk factors on the family domain refer to structural risk factors, risk factors related to the parenting situation, and parental problems (see Table 1). Risk factors on the environmental domain refer to having deviant peers, and sexual abuse outside the family (see Table 1). All risk factors were first dichotomized (i.e., ‘0’ is absent, ‘1’ is present) and then summed in order to obtain a total score for each of the three domains.

Post-treatment functioning
To measure post-treatment functioning, six indicators of general functioning stemming from a Dutch follow-up study (Janssen, Kroes, & Van Dam, 2005) were used, including family contact, social network, daily activity, living situation, police contacts and well-being.

FAMILY CONTACT. With regard to family contact, adolescents were asked to rate the relationship with their father, mother, and for each of their brother(s) and sister(s) from 0 (very good relationship) to 10 (not a good relationship at all). These ratings were averaged in order to obtain a mean score for family contact with higher scores indicating less positive valued family contacts.

SOCIAL NETWORK. With regard to social network, adolescents were asked to indicate on a 6-point
Predictive value of risk factors

scale (‘1’ daily to ‘6’ never) how frequently they had contact with other family members, partner, best friend, other friends, and club/society (e.g., sports club). Scores were averaged in order to obtain a total score for social network. A higher score means that the adolescent has fewer social contacts.

SCHOOL/WORK. The dichotomous indicator school/work refers to whether the adolescent currently has a job or is engaged in some form of education. A score of ‘0’ means no job/school and ‘1’ means that the adolescent goes to school or has a job.

LIVING SITUATION. Adolescents were asked whether they were currently living on their own, in a family situation, or in a residential/judicial setting. With regard to the living situation, two dummy variables were constructed, after which a distinction was made between residential/family versus independent living situation, and residential/independent versus family living situation.

Table 1
Pre-treatment risk factors on three domains

<table>
<thead>
<tr>
<th>Domain</th>
<th>Subdomain</th>
<th>Risk factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Externalizing</td>
<td>Violence against family member</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Police contacts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>School problems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Truancy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Running away</td>
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<tr>
<td></td>
<td>Internalizing</td>
<td>Internalizing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Personality problems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suicide/automutilation</td>
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<tr>
<td></td>
<td>Substance use</td>
<td>Smoking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Binge drinking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Drug use</td>
</tr>
<tr>
<td></td>
<td>Negative life events</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-normative sexual behavior</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>General</td>
<td>Number of kids</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parental presence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relationship between mother and father</td>
</tr>
<tr>
<td></td>
<td>Parenting environment</td>
<td>Quality of parenting environment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stability of parenting environment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abuse by parents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Physical violence between parents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Child-parents relation problems</td>
</tr>
<tr>
<td></td>
<td>Parental problems</td>
<td>Physical/psychological problems parents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Addiction problems parents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Police contacts parents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Financial problems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Problems with social network</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
<td>Accommodation problems</td>
</tr>
<tr>
<td></td>
<td>Risky peer group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual abuse</td>
<td></td>
</tr>
</tbody>
</table>
POLICE CONTACTS. Adolescents were asked whether or not they had police contacts since there discharge from the residential institution. A score of ‘0’ means that the adolescent did not have police contacts after discharge and ‘1’ means that the adolescent did have police contacts.

WELL-BEING. Well-being was measured using the subscale anxious/depressed of the Youth Self Report (YSR; Achenbach, 1991; Verhulst, Van der Ende, & Koot, 1997). This subscale consists of 16 items covering different behaviors (e.g., ‘I feel lonely’), each to be rated on a 3-point scale (‘1’ not at all to ‘3’ often). A mean score was calculated. Higher scores indicate more problem behavior, i.e., feelings of depression/anxiety.

Statistical analyses
First, descriptive statistics were described separately for boys and girls. The t-test for independent samples was used to test sex differences for the interval variables (family contact, social network, well-being). To examine sex differences for the binary variables (i.e., school/work, living situation, and police contacts) the chi-square test was used. Because living situation was a nominal variable a dummy variable was made (residential/family versus independent living situation, residential/independent versus family living situation).

Then, the correlations between all study variables were calculated controlling for sex, age, and ethnicity. As the variables have a different metric with a mixture of binary variables and variables at the interval level three different types of correlations were used. The correlations between the binary variables are of tetrachoric nature, the correlations between binary and interval variables are of polyserial nature, and the correlations between the interval variables concern Pearson correlations.

To examine the predictive value of pre-treatment risk factors on post-treatment functioning, regression analyses were applied using Mplus 5.1 (Muthén & Muthén, 1998). To deal with missing values, a full information estimator was used which is the default estimator in Mplus (full information means that all available information in the data was used). For all regression analyses the percentage of missing values was lower than five. Because the respondents were from five institutions, the data had a multilevel structure. To correct for possible institution dependence effects, the COMPLEX procedure in Mplus was used. Four dependent variables (i.e., school/work, residential/family versus independent living situation, residential/independent versus family living situation, and police contacts), were binary. For this type of variables we applied probit regression analysis using the Weighted Least Square estimator with Mean- and Variance- adjusted chi-square statistic (WLSMV-estimator, Muthén & Muthén, 1998). Results will be reported in terms of unstandardized regression weights implying that a one-unit increase (decrease) of a predictor is related to the z-score of the dependent variable which will increase (decrease) according to the reported unstandardized regression weight. For the other variables the MLR-estimator was used (Maximum Likelihood estimator with estimated parameters that are robust against non-normality and non-independence). Results will be reported in terms of standardized regression weights. Sex, age and ethnicity were included as control variables.
Results

Descriptive statistics
Table 2 shows the means and standard deviations of the study variables by sex. As shown, girls scored significantly higher on risk factors with regard to both the individual and environmental domain with medium effect sizes. This indicates that regarding pre-treatment history, girls were exposed to a significant higher number of individual as well as environmental risk factors than boys. Further, concerning post-treatment functioning boys scored significantly higher on police contacts than girls with a small effect size, which means that boys (41.6%) were more likely to have police contacts after discharge compared to girls (23.6%).

Table 2
Means and standard deviations for main study variables by sex (N = 132)

<table>
<thead>
<tr>
<th></th>
<th>Boys (n = 77)</th>
<th>Girls (n = 55)</th>
<th>Cohen’s d/phi²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>RF individual</td>
<td>7.06</td>
<td>1.99</td>
<td>8.18</td>
<td>1.80</td>
</tr>
<tr>
<td>RF family</td>
<td>5.21</td>
<td>2.27</td>
<td>5.44</td>
<td>2.25</td>
</tr>
<tr>
<td>RF environment</td>
<td>.98</td>
<td>.31</td>
<td>1.28</td>
<td>.50</td>
</tr>
<tr>
<td>Family Contact</td>
<td>5.13</td>
<td>3.00</td>
<td>5.47</td>
<td>2.93</td>
</tr>
<tr>
<td>Social Network</td>
<td>3.40</td>
<td>1.15</td>
<td>3.26</td>
<td>1.07</td>
</tr>
<tr>
<td>School/Work</td>
<td>.71</td>
<td>.46</td>
<td>.76</td>
<td>.43</td>
</tr>
<tr>
<td>Living situation R_F vs I</td>
<td>.15</td>
<td>.36</td>
<td>.21</td>
<td>.41</td>
</tr>
<tr>
<td>Living situation R_L vs F</td>
<td>.51</td>
<td>.50</td>
<td>.58</td>
<td>.50</td>
</tr>
<tr>
<td>Police Contacts</td>
<td>.42</td>
<td>.50</td>
<td>.24</td>
<td>.43</td>
</tr>
<tr>
<td>Well-being</td>
<td>20.86</td>
<td>5.27</td>
<td>21.55</td>
<td>5.42</td>
</tr>
</tbody>
</table>

Note 1. RF = Risk Factors. Living situation: R = Residential, F = Family, I = Independent.
Note 2. The Cohen’s $d$ represents the strength between two interval variables. For the binary variables it is usual to present the Phi instead of the Cohen’s $d$. *$p < .05$, **$p < .01$, ***$p < .001$.

Correlations
The number of risk factors on the individual domain correlated positively with the number of risk factors on the environmental domain and with the post-treatment indicator family contact (see Table 3). The number of risk factors on the family domain correlated with the post-treatment indicator living situation. Adolescents, who were exposed to more risk factors within the family, were more likely to live on their own. The number of risk factors on the environmental domain correlated with none of the other variables.

Concerning the correlations between the post-treatment indicators, living situation and daily activity were negatively correlated with social network, indicating that adolescents who live in a residential setting or on their own were more likely to have fewer social networks compared to adolescents who live in the family. In addition, adolescents who had a daily activity were more likely to have a good social network than adolescents who did not have a daily activity. Well-being correlated positively with social network, in that the adolescents who experienced feelings of depression or anxiety were more likely to have fewer social contacts. Finally, well-being correlated negatively with living situation. Adolescents who live on their own or in a residential setting were more likely to experience feelings of depression or anxiety.
Table 3
Correlations among main study variables (N = 132)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sex</td>
<td></td>
<td>-0.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Age</td>
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<tr>
<td>3. Ethnicity</td>
<td></td>
<td>-0.05</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>4. RF individual</td>
<td>0.29***</td>
<td>-0.06</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5. RF family</td>
<td>0.05</td>
<td>-0.18*</td>
<td>-0.06</td>
<td>0.10</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>6. RF environmental</td>
<td>0.31***</td>
<td>0.01</td>
<td>0.01</td>
<td>0.38***</td>
<td>0.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Family Contact</td>
<td>0.06</td>
<td>0.02</td>
<td>0.06</td>
<td>0.31***</td>
<td>-0.10</td>
<td>0.13</td>
<td></td>
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</tr>
<tr>
<td>8. Social Network</td>
<td>-0.07</td>
<td>-0.15</td>
<td>-0.17</td>
<td>0.04</td>
<td>0.07</td>
<td>-0.06</td>
<td>0.08</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>9. School / Work</td>
<td>0.06</td>
<td>-0.23**</td>
<td>-0.07</td>
<td>-0.07</td>
<td>0.04</td>
<td>0.08</td>
<td>0.01</td>
<td>-0.19*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Living situation R_F vs I</td>
<td>0.10</td>
<td>0.15</td>
<td>-0.01</td>
<td>0.02</td>
<td>0.21*</td>
<td>0.01</td>
<td>-0.05</td>
<td>0.00</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Living situation R_I vs F</td>
<td>0.06</td>
<td>0.18</td>
<td>-0.02</td>
<td>0.06</td>
<td>-0.11</td>
<td>-0.01</td>
<td>0.05</td>
<td>-0.21*</td>
<td>0.05</td>
<td>0.49***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Police Contacts</td>
<td>-0.18*</td>
<td>0.09</td>
<td>0.12</td>
<td>0.12</td>
<td>0.13</td>
<td>-0.03</td>
<td>-0.14</td>
<td>0.06</td>
<td>-0.08</td>
<td>0.08</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>13. Well-being</td>
<td>0.07</td>
<td>0.08</td>
<td>0.10</td>
<td>0.02</td>
<td>0.01</td>
<td>0.00</td>
<td>0.04</td>
<td>0.21*</td>
<td>-0.10</td>
<td>0.06</td>
<td>-0.26**</td>
<td>0.14</td>
</tr>
</tbody>
</table>

Note: RF = Risk Factors, Living situation: R = Residential, F = Family, I = Independent. *p < .05, **p < .01, ***p < .001.
Regression analyses

To examine the predictive value of pre-treatment risk factors on post-treatment functioning, seven different regression models were tested with Mplus. Sex, age and ethnicity were added as control variables and the three pre-treatment variables were added as the predictors of each of the seven post-treatment variables (see Table 4). Concerning the control variables, girls were more likely than boys to live independently after discharge, while boys were more likely to have had police contacts after discharge and to have fewer social contacts. Girls were also more likely to experience feelings of depression or anxiety than boys. Age only predicted daily activity, in that older adolescents were less likely to have a structured daily activity six months after treatment. Ethnicity was related to well-being and social network; adolescents who had at least one parent born abroad experienced more depression and anxiety after treatment and were more likely to have fewer social contacts compared to Caucasian adolescents.

Table 4

Regression analyses concerning the number of pre-treatment risk factors as predictors of post-treatment functioning (N = 132)

<table>
<thead>
<tr>
<th>Family Contact</th>
<th>Social Network</th>
<th>School/Work</th>
<th>Living situation R_F vs F</th>
<th>Living situation R_I vs F</th>
<th>Police Contacts</th>
<th>Well-being</th>
</tr>
</thead>
<tbody>
<tr>
<td>β</td>
<td>β</td>
<td>β</td>
<td>β</td>
<td>β</td>
<td>β</td>
<td>β</td>
</tr>
<tr>
<td>Sex</td>
<td>.03</td>
<td>-.07*</td>
<td>.22</td>
<td>.41**</td>
<td>.22</td>
<td>-.61***</td>
</tr>
<tr>
<td>Age</td>
<td>.01</td>
<td>-.14</td>
<td>-.31*</td>
<td>.39</td>
<td>.15</td>
<td>.12</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.05</td>
<td>.15***</td>
<td>-.34</td>
<td>.12</td>
<td>.02</td>
<td>.52</td>
</tr>
<tr>
<td>RF individual</td>
<td>.32***</td>
<td>.08</td>
<td>.11</td>
<td>-.05</td>
<td>.06*</td>
<td>.13***</td>
</tr>
<tr>
<td>RF family</td>
<td>-.12*</td>
<td>.05</td>
<td>-.01</td>
<td>.20*</td>
<td>-.06***</td>
<td>.08**</td>
</tr>
<tr>
<td>RF environment</td>
<td>.03</td>
<td>-.07</td>
<td>.28</td>
<td>-.09</td>
<td>-.14</td>
<td>-.12</td>
</tr>
</tbody>
</table>

Note. RF = Risk Factors. Living situation: R = Residential; F = Family; I = Independent.

*p < .05, **p < .01, ***p < .001.

Concerning the risk factors on the three domains (i.e., individual, family, environmental), the number of risk factors on the individual domain was related to family contacts, living situation, and police contacts. These associations indicate that the higher the number of individual risk factors an adolescent experienced, the less positive adolescents valued the family contacts and the more police contacts the adolescents had, but also the more likely adolescents were to live in a family setting. The number of risk factors on the family domain was significantly related to family contact, living situation, and police contacts. More specifically, the more risk factors on the family domain, the more positive adolescents valued the family contact, the more likely adolescents were to live in an independent setting instead of a family setting, but also the more likely the adolescents were to have had police contacts within six months after treatment. Having risk factors on the environmental domain did not predict post-treatment functioning: having deviant peers as well as sexual abuse outside the family was not related to the post-treatment indicators.

Discussion

The aim of the present longitudinal study was to examine to what extent the number of pre-treatment
risk factors was predictive for post-treatment functioning in a residential sample of adolescents with severe behavior problems. Our findings showed that post-treatment functioning can be predicted by the number of individual and family pre-treatment risk factors. That the number of individual risk factors was predictive for post-treatment functioning is not in line with conclusions of Frensch and Cameron (2002). Based on a qualitative review, they stated that child characteristics at time of entrance in treatment are poor predictors of post-treatment outcomes. This discrepancy might be explained by using the number of individual risk factors in our study while Frensch and Cameron point to separate risk factors. Moreover, in their review Frensch and Cameron included studies conducted ten to thirty years ago. In recent years much has changed in residential care, partly because more information is available about what works in residential care. This change might also contribute to the differences in findings between our study and those in the review of Frensch and Cameron.

That adolescents showing more individual risk factors in our study were found to have less positive family contacts can possibly be explained by the more problematic behavior of the adolescent. Adolescent’s problem behavior is found to be related to a decrease in the quality of the parent-child relationship (Dishion & McMahon, 1998). Spending time with adolescents showing problem behavior might be difficult and frustrating for both the adolescent as well as the parents, resulting in lower valued family contacts. Moreover, adolescents showing externalizing behavior are more likely to be rejected by peers. Rejected adolescents have a higher risk to affiliate with deviant peer groups in which deviant behavior is accepted (e.g., Ary, Duncan., Biglan, Metzler, Noell, & Smolkowski, 1999; Farrington, Loeber, Elliott, Hawkins, Kandel, Klein et al., 1990), which may explain the relation between a higher number of individual risk factors and a higher likelihood of having police contacts within six months after discharge.

It is well-known that adolescents admitted to residential care are often confronted with difficult and complex family situations (e.g., Frensch & Cameron, 2002; Griffith et al., 2009). The findings revealed that these family risk factors are associated with post-treatment functioning. Adolescents experiencing a higher number of family risk factors are more often living on their own. This is not a surprising finding, because a problematic family situation is not a positive environment for the adolescent to return to after treatment and to maintain the improvement during treatment. But it is remarkable to find that adolescents who live in a more problematic family before treatment do have more positive contacts with their family after treatment. It can be the case that for adolescents it is easier to build up and maintain positive relationships with family members when not living with them, especially when the family environments are characterized by frequent conflictual situations. Living separately from the family implies less involvement in conflicts with parents and consequently experiencing fewer frustrations occurred, resulting in more positively valued family contacts. The literature on leaving home indeed found that greater geographical distance between adolescents and parents is often associated with improved family relationships, less conflict and disagreements, and increasing independence in making decisions (Aseltine & Gore, 1993; Dubas & Petersen, 1996; Graber & Brooks-Gunn, 1996; O’Connor, Allen, Bell, & Hauser, 1996). The same might be an explanation for the finding that adolescents with a higher number of individual risk factors were more likely to live in the family and experienced less positive family contacts. Another explanation for the relation between a higher number of pre-treatment family risk factors and positive valued family contacts, might also be that the families that showed higher numbers of risk factors were more involved in the residential treatment compared to families.
with fewer risk factors. One of the characteristics of the new compulsory treatment program is intensive family involvement, including family interventions. As a consequence it could be that the family contacts improved from the treatment and were much more positively valued. Research indeed reveals that family involvement is found to positively influence post-treatment outcomes (Behan & Carr, 2000; Curry, 1991; Frensch & Cameron, 2002; Hair, 2005; Kazdin, Siegel & Bass, 1992; Knorth, Harder, Zandberg, & Kendrick, 2008; Lyman & Campbell, 1996; Piermont & McGinty, 2004).

Against our expectations, pre-treatment environmental risk factors including peers did not predict any of the post-treatment indicators. This is surprising because the influence of peers increases during adolescence (e.g., Furman & Buhrmester, 1992; Scholte, Van Lieshout, & Van Aken, 2001). A possible explanation is that environmental risk factors do not have a direct but primarily an indirect association with post-treatment functioning, for example, through individual risk factors. Having deviant peers increases the risk of engagement in delinquent activities (e.g., Fergusson & Horwood, 1996; Garnier & Stein, 2002; Haynie, 2001; Haynie & Osgood, 2005), which increases the risk of future delinquency (e.g., Lattimore, Macdonald, Piquero, Linster, & Visher, 2004; Loeb, Wung, Keenan, Giroux, Stouthamer-Loeber, Van Kammen et al., 1993). Another explanation is that adolescents learned to avoid negative peer relationships during treatment and learned to associate with non-deviant friends. In other words, through changing the environment, the pre-treatment environment exerted fewer risks. Hirsch (2009) found that adolescents with positive post-treatment outcomes after six and twelve months (i.e., not living in unstable or restrictive environments and not having legal problems) were more likely to avoid deviant peers and to affiliate with non-deviant peers.

It is important to notice that treatment characteristics were not included in our study. Improvement of child behaviors during residential treatment frequently occurs (e.g., Fields, Farmer, Apperson, Mustillo, & Simmers, 2006; Lyons, Terry, Martinovich, Peterson, Bouska, 2001), while maintaining treatment improvement after discharge seems to be difficult (Epstein, 2004; Frensch & Cameron 2002). However, exactly which aspects of treatment, including the new compulsory treatment program, are predictive of post-treatment functioning remains unclear. Duration of treatment (Daly, Thompson, & Coughlin, 1994; Hussey & Guo, 2002; Simpson, Joe, & Rowan-Szal, 1997), family involvement (e.g., Frensch & Cameron, 2002), and after care (e.g., Hair, 2005) were found to have a positive effect on post-treatment outcomes. Further research should reveal the effect of treatment characteristics on post-treatment functioning within the new compulsory residential treatment program.

Limitations
Our study has some shortcomings. The design of the present study included a single-sample pre-posttest design. Some scholars argue that this design does not reveal whether the adolescents would show the same results without treatment (Frensch & Cameron, 2002; Little, Kohm, & Thompson, 2005). We indeed were not able to measure the effectiveness of the treatment through a randomized control trial, but we were able to expose the relation between adolescent’s characteristics and outcomes. In addition, because post-treatment functioning was measured six months after discharge we could only examine short-term functioning but not long-term functioning. It needs further study to clarify to what extent the effects we found persist over a longer period of time, as long-term effects of residential care generally appear to be less encouraging than short term effects (e.g., Frensch and Cameron, 2002). A final limitation concerns the use of treatment files to measure pre-treatment risk factors. It is difficult to establish the reliability of these files because they are largely based on descriptions from guardians, parents and the adolescents.
themselves. Moreover, once the information is recorded in the file, it will stay in the files. For example; at three years of age the mother has an abusive partner for a period of six months, it is questionable whether this is still important when the adolescent is admitted to residential care at the age of 15. As a consequence, when analyzing the files also non-actual information will be taken into account, of which is unknown whether they still play a role in the adolescents’ live. Still, some incidents can have long-term consequences.

Implications
To understand which and to what extent pre-treatment risk factors influence post-treatment functioning enables practitioners to anticipate on these risk factors. Our study indicates that the number of individual and family risk factors is related to post-treatment functioning. This suggests that adolescents scoring high on the number of risk factors on these two domains might need a more intensive individual (e.g., aggression regulation training) or family oriented approach (e.g., improving parental competence). One of the characteristics of the new compulsory program is intensive family involvement, including family interventions. When interventions intensively focus on the family risk factors, this might increase the likelihood of maintaining the improvement of treatment. Further research should reveal the influence of intensive parental involvement within the new compulsory residential program on post-treatment functioning. It also important to examine to what extent treatment factors influences the relation between pre-treatment risk factors and post-treatment functioning. However, our study points to the influence of the number of individual and family risk factors on post-treatment functioning and gives suggestions for treatment aimed at adolescents admitted to the residential treatment program.
CHAPTER 11

THE ASSOCIATIONS BETWEEN STRUCTURAL TREATMENT CHARACTERISTICS AND POST-TREATMENT FUNCTIONING IN COMPULSORY RESIDENTIAL YOUTH CARE

Resubmitted as:
ABSTRACT

The aim of the present study was to examine the association of structural treatment characteristics of a new Dutch compulsory residential treatment program (i.e., duration of treatment, discharge status, and group composition in terms of sex) with post-treatment functioning. Additionally, the number of pre-treatment risk factors was included in the model. A total of 301 adolescents (174 boys, 127 girls), with a mean age at time of admittance of 15.50 (SD = 1.26) participated in this study. The number of risk factors was derived from treatment files of the adolescents at time of entrance. Six months after discharge, adolescents participated in a telephone interview to measure ten post-treatment variables indicating how well they were doing. The results showed that duration of treatment was related to post-treatment living situation, in that adolescents who were in treatment for shorter durations were more likely to live on their own after treatment. For discharge status, findings suggested that adolescents who were regularly discharged had more frequent contact with their family; however, they also showed higher alcohol consumption six months after treatment. Group composition was related to the girls' official offending, indicating that girls placed in mixed-sex groups showed significantly fewer official police contacts than did girls in girls-only treatment groups. Suggestions for future research are discussed.

INTRODUCTION

A small percentage of adolescents in the Netherlands show severe, complex behavior problems. These adolescents are in need of residential care because they must be protected against themselves (e.g., suicidal behavior) or against the environment (e.g., abusive parents, pimps). They often do not accept help and will withdraw themselves from treatment. Prior to 2005, compulsory residential care did not exist and existing residential institutions were not able to deal with the complexity of problems demonstrated in this specific group; therefore, in 2005, a new compulsory residential treatment program was developed for adolescents aged 12 to 18 years. The present study aimed to examine the influence of duration of treatment, discharge status, and group composition (i.e., boys-only, girls-only, mixed-sex) of this new treatment program on post-treatment functioning.

The newly developed treatment program is based on the ecological model of Bronfenbrenner (1979; 1994), and distinguishes high risks on the individual, family, and peer group levels. This model implies that treatment of adolescents with multiple problems should include a multimodal approach. The new treatment program is characterized by stages from more to less restrictive care, with the first stage focusing on future orientation. The second stage involves behavioral change and includes encouraging prosocial behaviors and discouraging antisocial behaviors. The third stage focuses on training and preparing for the future and stage four includes the transfer to a new living situation and after care. Other characteristics of this new treatment program include a focus on the family, structure and daily routine, school achievement, and leisure activities. Moreover, a range of evidence-based individual interventions (e.g., aggression-regulation training, trauma therapy, medication, cognitive behavioral therapy, substance abuse counseling) as well as family interventions or support (e.g., Functional Family Therapy, Multi System Therapy, Parent Management Training Oregon, parental support) are offered. The main goal of treatment is to give adolescents a safe place to live in society, daily activities (i.e., school engagement or a job), and develop and maintain a stable living situation where adolescents
have positive contacts with their family and peer group (Van der Poel, Rutten, & Sondeijker, 2008). The duration of the new treatment program is generally one year. The underlying assumptions are that adolescents should not be admitted for a longer period than is needed and they should return to a normal environment in the short-term, with counseling and after care available. A review of French and Cameron (2002) found that a shorter duration of treatment is positively related to treatment outcomes. Leichtman, Leichtman, Barber, and Neese (2001) investigated a short-term residential treatment (mean durations between three to four months) for adolescents with severe problem behaviors and found that these adolescents showed significant improvement, which was maintained one year after discharge. Other studies revealed that adolescents, living independently after discharge, experienced the longest duration of treatment (Trout, Chmelka, Thompson, Epstein, Tyler, & Pick, 2010), followed by adolescents who returned to the family, adolescents who went to intermediate settings (e.g., foster care, group homes), and adolescents who were transferred to residential or judicial settings. Adolescents living independently and those living with the family after discharge also showed significantly lower rates of problem behaviors compared to the other two subgroups. Further, compared to the other groups, gang behavior, drugs use, and sexual behaviors occurred more often among adolescents who were sent to restrictive residential settings during the last eight weeks before discharge.

Concerning discharge status, Trout et al. (2010) found that 55% of the adolescent discharges in residential care were planned and treatment goals were met. This means that 45% of the discharges were unplanned, for example, the adolescents ran away or were transferred to more restrictive settings. Adolescents who went to more restrictive settings (i.e., prison, detention or correctional centers, residential treatment, or drug and alcohol rehabilitation) more often grew up in families with high risk factors (e.g., parental criminality, sexual abuse, family addictions) (see also Stage, 1998) and discharge was often unplanned. Scholte and Van der Ploeg (2000) compared adolescents who completed treatment to those who dropped out prematurely and found that 42% of discharges were planned, 7% of adolescents were still admitted at the time of data collection, and 51% of discharges were unplanned. In addition, adolescents discharged successfully were in treatment for a longer duration compared to adolescents who dropped out of treatment prematurely. Of note, Scholte and Van der Ploeg found no significant differences regarding age, sex, externalizing and internalizing problems at time of entry, or family risk factors for adolescents who left treatment according to plan compared to those who left unplanned. Differences were, however, found for the adolescents’ peers, in that the peers of adolescents who left unplanned had higher levels of antisocial behavior than did peers of the adolescents who successfully completed treatment (Scholte & Van der Ploeg, 2000).

As far as we know, previous studies have not included group composition in terms of sex as a predictor of outcome success of residential treatment for adolescents with severe behavioral problems. However, boys and girls admitted to residential care seem to differ on several aspects; specifically, girls demonstrate higher rates of individual problem behaviors and come from more dysfunctional families (e.g., Connor, Doerfler, Toscano, Volungis, Steingard, 2004; Doerfler, Toscano, & Connor, 2009; Handwerk, Clopton, Huefner, Smith, Hoff, & Lucas, 2006). Girls are also more likely to have sexually traumatic experiences, such as sexual abuse (e.g., Doerfler et al., 2009). Moreover, due to the more dysfunctional families girls come from, they are also more at risk to develop problematic interaction patterns that can result in more problematic peer relations (Leve & Chamberlain, 2005). These findings suggest that boys and girls admitted to residential treatment might need a different approach (see
Few studies investigated the influence of group composition within adult samples. Studies investigating the differences between mixed-sex and single-sex, mostly women-only, reported differences between women in single-sex and mixed-sex treatment groups, in that women in single-sex programs showed more individual problems with drugs and alcohol (Greenfield, Sharpe Potter, Lincoln, Popuch, Kuper, & Gallop, 2008). Additionally, these women were more often physically abused, experienced shorter duration in treatment, and were more likely to not complete treatment than were women in mixed-sex groups. Moreover, women with substance abuse problems and psychiatric symptoms improved more in single-sex programs than in mixed-sex treatment. Niv and Hser (2007) reported that women in single-sex treatment were also less likely to have been arrested after treatment compared to woman in mixed-sex treatment. Furthermore, according to the women's own perceptions, they felt safer and more comfortable in single-sex treatment groups (Kauffman, Dore, & Nelson, 2010) and were more satisfied with the single-sex treatment (Greenfield, Trucco, McHugh, Lincoln, & Gallop, 2007). It is, however, unclear to what extent group composition is related to outcomes of adolescents in residential care.

The primary aim of the present study was to examine the relationship between structural treatment characteristics including duration of treatment, discharge status, and group composition, and post-treatment functioning. The number of pre-treatment risk factors on the individual, family, and environmental levels was included in this study because these numbers are related to post-treatment functioning (Nijhof, Meijs, Van Dam, Veerman, Engels, & Scholte, 2011). Based on prior studies, we hypothesized that adolescents with a longer duration of treatment, who completed treatment, would show more positive post-treatment outcomes. Concerning the composition of treatment groups, based on the literature on adult women, we expected that girls would do better after being treated in single-sex treatment groups than in mixed-sex treatment groups. For boys we did not expect such differences between single-sex and mixed-sex treatment groups.

**Method**

Procedure
The current study was part of a longitudinal study examining a new compulsory residential treatment program for adolescents with severe behavior problems. Six institutions participated, including 30 treatment groups. Of these treatment groups, 13 groups consisted only of boys, nine groups consisted only of girls, and eight groups including mixed-sex treatment groups. Concerning the placement of adolescents in single-sex or mixed-sex treatment groups, the institutions made this determination. This is especially important for girls due to their vulnerability. Vulnerable girls (e.g., victims of prostitution or negative, traumatic sexual experiences), are typically placed in girls-only treatment groups. Next to the vulnerability of girls, the decision to place adolescents in single-sex or mixed-sex groups is based on problem behavior, age, and group composition. Two institutions offered the new treatment program to boys only. Regarding the remaining four institutions with both boys and girls, one consisted of only single-sex treatment groups, one of only mixed-sex treatment groups, and two of both single-sex and mixed-sex treatment groups. All adolescents entering the institutions between May 2007 and December 2008 participated in the study, N = 514. At time of admittance, the treatment files of these adolescents
were analyzed to obtain insight into background characteristics regarding the period before admittance. At time of discharge, the institutions were asked to inform us of the date the adolescent left the institution and their discharge status. The reasons for discharge included regular (i.e., treatment goals were accomplished, treatment was finished in consultation with all involved parties) and non-regular discharge (i.e., the client ran away, youth care services ended treatment due to the clients’ misbehavior, treatment was ended because of the adolescent’s age (18+) or because judicial approval had expired). Six months after discharge, adolescents were approached by letter in which the aim of the study was briefly explained. Parents received a similar letter to ensure they were informed of the study as well. One week following the letter, adolescents were contacted by phone and asked for their willingness to participate. If adolescents could not be reached, a second letter was sent with a return letter and envelope. If interested, adolescents could provide their phone number and return the letter, after which contact was made. When adolescents could not be reached, contact was made with the adolescent’s guardian who was asked to inform the adolescent about the study and help us contact the adolescent. Confidentiality of the data was fully assured beforehand and adolescents received 25 euro for their participation.

A total of 420 adolescents (82%) were eligible to participate in the follow-up study. The other 94 adolescents had entered institutions before the beginning of our study, (i.e., before May 2007) and were not able to participate. Of the 420 eligible adolescents, 301 adolescents participated (59%). Of the other 119 participants, 11% did not want to participate, 12% could not be reached at the time of follow-up, and for 18% the researchers were not informed in time by the institutions about discharge. Because the sample consisted of underage adolescents with severe behavior problems, the study was reviewed and approved by the relevant medical ethics commission.

Attrition analyses, using t-tests and χ²-tests, showed that the participating adolescents (N = 301) did not differ in the number of individual (t(514) = 2.58, p = .92), family (t(514) = .43, p = .15), and environmental (t(514) = .84, p = .44) risk factors at the time of entrance compared to the adolescents who did not participate (N = 213). Participating and non-participating adolescents were also equally distributed over treatment groups, (i.e., boys-only, girls-only, sex-mixed) χ²(514) = 4.45, p = .11. However, the two groups did differ in the duration of treatment. The participating adolescents had a significantly longer duration of treatment (M = 10.74 months, SD = 6.45) compared to non-participating adolescents (M = 9.57 months, SD = 6.15), t(514) = -1.97, p = .05. As a result, non-participating adolescents were more often non-regularly discharged (37%) than were participating adolescents (20%), χ²(514) = 17.57, p = .00.

Participants
Of the final 301 adolescents who participated in the present study, 57.8% were boys. The mean age of participants was 15.50 (SD = 1.26). Of 34.9%, at least one of the parents was born in a non-Western country, for 54.2%, both parents were born in a Western country, and for 11%, the ethnicity was unknown. At time of entry, a mother figure was present (e.g., biological mother, stepmother, foster mother) for 95% of the adolescents; for 4%, no mother figure was present; and for one girl, it was unknown. For 75% of the adolescents, a father figure was present (e.g., biological father, stepfather, foster father); for 23%, no father figure was present; and for 2%, it was unknown whether a father figure was present. Concerning the treatment groups, 24.9% of the adolescents were admitted to girls-only treatment groups, 43.5% to
boys-only treatment groups, and 31.6% were admitted to mixed-sex treatment groups.

Measures

RISK FACTORS. A scoring scheme, based on the Scoring scheme for Demographic Information (SDI; Flipse, 2000) was extended to include several questions related to parental or adolescent problem behaviors (Orobio de Castro, Veerman, Bons, & De Beer, 2002; Boendermaker, Eijgenraam, & Geurts, 2004), was used to measure adolescent risk factors on different areas before admittance to the new treatment program. Risk factors were measured on three different domains, individual, family, and environmental. The individual domain included risk factors with regard to externalizing and internalizing problems, substance use, life events, and non-adequate sexual behaviors. Risk factors on the family domain concerned structural risk factors (e.g., number of children, relationship between parents), risk factors related to the parenting situation (e.g., quality and stability of the parenting environment), and parental problems (e.g., illnesses, addictions, criminality). Risk factors on the environmental domain referred to being involved with deviant peers and sexual abuse outside the family. All risk factors were registered as present or absent. A total score was calculated for each domain to obtain the number of individual, family, and environmental risk factors.

STRUCTURAL TREATMENT CHARACTERISTICS. Three structural treatment characteristics were included in the present study: duration of treatment, discharge status, and the sex composition of treatment groups. Duration of treatment was calculated by subtracting the date of admittance from the discharge date. Discharge status was a dichotomous variable, in which ‘0’ represented a regular discharge and ‘1’ a non-regular discharge. The group compositions included boys-only treatment groups, girls-only treatment groups, and mixed-sex treatment groups.

POST-TREATMENT FUNCTIONING. Self-reported structured interviews via telephone were completed approximately six months after the adolescent left the residential treatment. Ten indicators were assessed to give an insight into how well the adolescents were doing on several aspects after discharge. These indicators are described below and included living situation, frequency of family contact, quality of family contact, daily activity, social network, the use of soft drugs, alcohol use, internalizing problems, self-reported police contacts, official police contacts.

LIVING SITUATION. Adolescents were asked whether they were living on their own, in a family situation, or in a residential or judicial setting six months after discharge. Based on these three types of living situation two dummy variables were constructed. A distinction was made between residential or family (score 0) versus independent (score 1) living situation and residential or independent (score 0) versus family (score 1) living situation.

INTENSITY OF FAMILY CONTACT. Adolescents were asked how often they had contact with their parents ranging from ‘1’ hardly or none to ‘4’ daily. Higher scores indicated more frequent contact with parents.

QUALITY FAMILY CONTACT. Adolescents were asked about the quality of the relationships with both their mother and father. The ratings varied between ‘0’ not a good relationship at all to ‘10’ very good relationship. The ratings were averaged to obtain a mean score for the quality of the parental relationship. Higher scores indicated a better quality of the relationship with parents.
DAILY ACTIVITY. Adolescents were asked whether they had a daily activity, (e.g., engaged in school or a job). A score of ‘0’ indicated that the adolescents did not have a daily activity (negative outcome) and a score of ‘1’ meant the adolescents was currently involved in school or work (positive outcome).

SOCIAL NETWORK OTHER THAN PARENTS. Adolescents were asked how frequently they had contact with other family members other than their parents; for example, partner, best friend, other friends, and club or society (e.g., sports club). Answers were given on a 6-point scale ranging from ‘1’ never to ‘6’ daily. Scores were averaged to obtain a total score for social network. A higher score meant the adolescent had more frequent contact with their social network.

USE OF SOFT DRUG. Adolescents were asked how often they used soft drugs in the last six months from ‘1’ monthly or less/none to ‘2’ weekly to ‘3’ daily. The higher the score, the more soft drugs were used.

ALCOHOL USE. Adolescents were asked about their alcohol consumption during the last six months. They answered on a scale ranging from ‘1’ monthly or less/not to ‘2’ weekly to ‘3’ daily. The higher the score on alcohol use, the more alcohol was used.

INTERNALIZING PROBLEMS. Internalizing problems (anxiety or depression) were measured using the 16-item subscale on anxiety and depression from the Youth Self Report (YSR), Achenbach, 1991; Achenbach & Rescorla, 2001; Verhulst, Van der Ende, & Koot, 1997). Examples include ‘I have the feeling that I have to be perfect,’ ‘I feel worthless,’ and ‘I am unhappy, sad, or depressed.’ All items were rated on a 3-point scale, ‘0’ not at all to ‘2’ often. Cronbach’s alpha of this subscale was .84. A mean score was calculated and transferred into t-scores. Higher t-scores indicates more problem behaviors (i.e., more feelings of depression/anxiety). Because the t-scores were highly skewed, we transformed the scores into five categories: < 51 (= 0), 51-60 (= 1), 61-70 (= 2), 71-80 (= 3) and > 80 (= 4).

SELF-REPORTED POLICE CONTACTS. All adolescents were asked whether they had police contact since they were discharged. A score of ‘0’ meant the adolescent had had no police contact and a score of ‘1’ meant the adolescent had police contact in the last six months.

OFFICIAL POLICE CONTACTS. Based on the national police systems (HKS and Blue View), adolescents were traced to determine whether they had official police contact in the past six months and the frequency of police contact was registered. A higher score indicated a higher frequency of official police contact. For our chosen method of analysis we recoded the number of contacts as follows (between brackets the new code): 0 (0), 1 (1), 2 (2), 3 (3), 4 or 5 (4), 6 or 7 (5) and > 7 (6).

Statistical analyses
To examine the effects of the number of risk factors and treatment characteristics on post-treatment functioning we used path analyses with age and ethnicity as control (independent) variables and the number of risk factors and treatment characteristics as predictors. Sex was not included as a control variable because one of the predictors was the sex composition of the treatment groups (girls-only, boys-only and mixed-sex). Further, including all post-treatment indicators as dependent variables in one analysis would reduce the power drastically with a large number of parameters to be estimated. For this reason, we decided to estimate ten path models for each post-treatment indicator separately. The software package Mplus version 5.1 (Muthén & Muthén, 1998-2007) was used. To optimize the data, we used the full information estimator. Because the model variables were a mix of binary, ordered categorical, and interval variables, parameters were estimated using the Weighted Least Square with
a Mean and Variance adjusted chi-square test statistic (WLSMV) estimator. Regression weights were expressed in probit coefficients and indicated the change in the z-score (or probit index) for a one unit change in the predictor. For this analysis, the adolescents were living in thirty groups, which meant the data could be dependent of this multilevel structure. To correct for non-independence (complexity) of the data because adolescents were nested within institutions, the COMPLEX procedure in Mplus was used to obtain unbiased estimates of the standard errors of the parameter estimates.

The composition of treatment groups (a structural treatment characteristic) consisted of three categories: girls-only treatment groups (g), boys-only treatment groups (b), and mixed-sex (m) treatment groups. Effects of the three groups were examined using unweighted effects coding (Cohen, Cohen, West & Aiken, 2003). Two codes represented the three groups g, b, m, one coded 1, 0, -1 and the second 0, 1, -1. Regression weights represented the deviation of the outcome variable for each separate group from the grand mean. However, only the effects of g and b were visible in the output. To determine the effect of m, a second analysis was conducted with a different coding system (-1, 1, 0 and -1, 0, 1) (Cohen et al., 2003). If effects were significant, post-hoc tests were applied. Dummy variables were created to compare g (1) with b (0), g (1) with m (0), and b (1) with m (0). Regression weights of the dummy variable were significant if the significance level was lower than .017 (known as Bonferroni correction with α = .05 divided by the number (3) of groups).

Results

Descriptive statistics
Boys and girls differed in the number of individual and environmental risk factors. Girls were characterized by a significantly higher number of individual (t(1, 504) = -4.95, p = .00) and environmental risk factors (t(1, 504) = -6.18, p = .00) than were boys. On the family level, no differences were found between boys and girls. Regarding treatment characteristics, no differences were present between boys (M = 10.24 months, SD = 6.89) and girls (M = 10.39 months, SD = 5.68) for the duration of treatment. Additionally, no differences were found between boys and girls for discharge status (70% and 77%, respectively, were regularly discharged). While the boys-only group consisted exclusively of boys and the girls-only group only of girls, the mixed group consisted of 48.6% boys and 51.4% girls. Table 1 shows the overall and sex-specific means and standard deviations for the ten post-treatment indicators. The results showed that significantly more girls than boys had a structured daily activity. Girls also used soft drugs less often and had fewer self-reported and official police contacts. However, boys experienced significantly fewer depressive symptoms and feelings of anxiety than did girls. Further, no differences were found between boys and girls for living situation, intensity and quality of contact with parents, social network, and alcohol consumption.

Correlations
Table 2 shows the correlations between the study variables. Because the study variables were a mix of interval, ordered categorical (ordinal variables), and binary variables, the correlations in Table 2 include polychoric (ordinal x ordinal and binary x ordinal variables), tetrachoric (binary x binary variables), biserial (interval x binary variables), polyserial (interval x ordinal variables), and Pearson (interval x interval variables) correlations. Additionally, because the full information estimator was used, correlations in
### Table 1
Means and standard deviations of the post-treatment indicators (N = 301)

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<tr>
<th></th>
<th>Total (N = 301)</th>
<th>Boys (N = 174)</th>
<th>Girls (N = 127)</th>
<th>X^2/z/F</th>
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<td>Family</td>
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<td>59%</td>
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<td>Residential/judicial</td>
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<td>24%</td>
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<td>76%</td>
<td>70%</td>
<td>82%</td>
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<tr>
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<td>30%</td>
<td>18%</td>
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<tr>
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<td>28%</td>
<td>36%</td>
<td>16%</td>
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</table>

^This is the z-statistic of the Mann Whitney test.

^To be able to compare official offending with self-reported offending, we dichotomized official offending and included the percentages of adolescents who had police contact and adolescents who did not have police contacts after discharge.

This matrix were based on varying numbers of respondents. This explains why some of the lower correlations are significant and some of the higher correlations are sometimes nonsignificant.

**Path analyses**

To examine the association between structural treatment characteristics and post-treatment functioning, path analyses were applied. The number of risk factors was also included in this model. The fit of the path models was good. Each of the ten path models showed almost identical fit values with chi-square = 21.80, df = 18 and p = .241 for all models. The RMSEA-values were .021 and CFI-values ranged between .948 and .983. Regarding risk factors, only the number of risk factors within the family was related to indicators of post-treatment functioning. The higher the number of family risk factors, the more likely an adolescent was to live on his or her own and the more likely he or she was to have had self-reported police contacts within six months after discharge. The number of individual and environmental risk factors was not predictive of post-treatment functioning when structural treatment characteristics were included in the model (see Table 3).

Concerning structural treatment characteristics, duration of treatment was found to be related to the living situation after discharge, in that adolescents who stayed for a longer period were more likely to live in a residential judicial setting or family situation six months after discharge. For discharge status,
adolescents with a regular discharge showed a higher intensity of family contact and higher alcohol consumption six months later. Concerning the composition of treatment groups, adolescents in the girls-only groups were more likely to live independently, showed less alcohol and drug use, and were more likely to experience feelings of anxiety or depression compared to the overall means on these variables. Adolescents in the boys-only groups used more soft drugs, were less anxious or depressed, and scored higher on self-reported and official offending compared to the overall means on these variables. The mixed groups did not show significant effects for any of the post-treatment indicators (see Table 3).

Based on the above analysis, it was only possible to determine whether the groups differed from the overall mean; therefore, the next step was to examine whether groups differed from each other. For significant results (living situation, alcohol and drug use, feelings of depression or anxiety, self-reported and official offending), we applied post hoc testing to detect significant differences between girls-only (1) and boys-only groups (0), girls-only (1) and mixed groups (0), and boys-only (1) and mixed groups (0). Only significant findings will be presented below. For living situation, the girls-only groups more often lived on their own than did the boys-only groups (B = .26, p = .021) and the mixed groups (B = .20, p = .023). After a Bonferroni correction, these results were not significant. Use of soft drugs and alcohol were significantly higher for the boys-only groups than for the girls-only groups (B = -.41, p = .003, for soft drugs; B = -.19, p = .002, for alcohol use). Feelings of anxiety or depression were significantly higher for the girls-only groups compared to the boys-only groups (B = .43, p = .000) and significantly higher for the mixed groups compared to the boys-only groups (B = -.27, p = .006). Self-reported offending revealed a significant effect for the boys-only groups compared to the mixed groups (B = .29, p = .012), indicating that the boys-only groups self-reported more offending. For official offending, the boys-only groups showed more official police contacts after treatment than did the girls-only groups (B = -.41, p = .000) and the mixed groups (B = .38, p = .000).

For the variable internalizing problems (anxiety/depression), self-reported offending, and official offending findings suggest significant effects between single-sex and mixed-sex treatment groups. The question then arises whether, besides sex effects, a group composition effect existed. We compared the girls-only (1) with the girls from the mixed groups (0) and the boys-only (1) with the boys from the mixed groups (0). For internalizing problems and self-reported offending, no significant differences between the two groups were found. This means that the effects of these two variables are probably sex effects and not group composition effects. For the variable official offending, results revealed that girls in the mixed groups showed significantly fewer police contacts than did the girls in the girls-only groups (B = .64, p = .000). No significant differences between the boys in the single-sex and boys in the mixed-sex groups (B = .09, p = .465) were found. These results indicate that a positive group composition effect existed: 4% of girls in the mixed groups had official police contact compared to 21% of girls in the girls-only groups.

**Discussion**

The primary aim of the present study was to examine the effects of structural treatment characteristics (duration of treatment, discharge status, and group composition) on post-treatment functioning six months after discharge. Maintaining positive treatment outcomes after discharge has been found to be difficult (Epstein, 2004; Leichtman & Leichtman, 2001). Our findings showed that six months after
Table 2
Correlations between all study variables

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Note. RF = risk factors. Living Situation I = individual versus family and residential/judicial; Living Situation II = family versus individual and residential/judicial. *p < .05, **p < .01, ***p < .001.

Table 3
Regression analyses regarding the association between structural treatment characteristics and post-treatment functioning (N = 301)

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<th>Living situation II</th>
<th>Intensity family contact</th>
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Note. RF = risk factors. Living Situation I = individual versus family and residential/judicial; Living Situation II = family versus individual and residential/judicial. *p < .05, **p < .01, ***p < .001.
### Structural treatment characteristics

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discharge, many of the adolescents lived independently or with the family, had intensive contact with their parents, and were positive about their parental relationships. Two thirds of the adolescents had a daily activity and adolescents had on average relatively frequent contact with their social networks. Concerning problem behaviors, adolescents’ feelings of depression or anxiety were generally not in the clinical range and most adolescents had no police contact; however, they did report relatively frequent drug and alcohol use.

Findings of Casey et al. (2010) suggest that adolescents have some concerns about the transition from a treatment institution to society; primarily whether contact with their parents will be positive. The results of our study revealed an overall positive contact with parents six months after discharge. Nevertheless, adolescents who were confronted with a higher number of family risk factors were found to live independently more often. Furthermore, when adolescents reported lower quality of contact with parents, they more often lived on their own and had less frequent contact with their parents. To conclude, the adolescents in our study were, in general, positive about the contact with their parents; however, this depended on the number of family risk factors at time of entrance.

A second concern of adolescents leaving treatment is the influence of deviant friends (Casey et al., 2010). We found that adolescents who committed crimes after treatment were more often male, more likely to report lower quality of contact with their parents, had less contact with their parents, and had more frequent contact with their social network other than parents. This might indicate that adolescents, especially those who do not have a good relationship with parents in terms of frequency and quality of contact, are more likely to focus on their social network after discharge, which possibly includes a deviant network. Based on previous studies, it is known that the parenting environment is related to involvement in deviant peer groups (Dishion, Nelson, & Bullock, 2004; Dishion, Spracklen, Andrews, & Patterson, 1996). Low parental monitoring is related to a higher likelihood of becoming involved with deviant friends (Dishion et al., 2004). Additionally, Ary et al. (1999) found that a high level of family conflict leads to less parental involvement and inadequate parental monitoring, which increases the involvement in deviant peer groups. Overall, this suggests that it is important to intensively intervene on family risk factors within the new treatment program. Despite the availability of various family interventions (e.g., FFT, MST) within the new treatment program, future studies should explore specific family risk factors that exert a large impact and are related to post-treatment functioning, in order to better develop appropriate interventions on the family level.

Adolescents appeared to do relatively well six months after discharge on several post-treatment indicators. Examining the influence of treatment characteristics on this post-treatment functioning indicated that the duration of treatment was not related to how well the adolescents did after treatment, except for the living situation. Adolescents in treatment for shorter durations were more likely to live on their own six months after discharge. Findings also revealed that living independently was related to higher levels of family risk factors. It might be that adolescents who have family risk factors, rather than individual risk factors, may be less in need of intensive treatment and may be discharged earlier than adolescents who are characterized by high levels of individual risk factors. Our findings contrast with those of Trout et al. (2010), who found that adolescents living on their own after discharge underwent a longer duration of treatment. The fact that adolescents in treatment for shorter durations were more likely to live on their own in the Netherlands, as opposed to the U.S., might be due to the fact that the Dutch welfare system provides financial support and can offer housing to adolescents who...
cannot return to their parents. These possibilities offered by the Dutch welfare system may shorten the treatment period for adolescents in the Netherlands.

The effect of group composition on treatment outcomes is largely understudied in the field of residential youth care. Studies including adult females have suggested that sex differences are not adequately taken into account in mixed-sex treatment groups and treatment needs are better met in single-sex treatment programs (Kauffman et al., 2010). On the other hand, one developmental task during adolescence is to instigate and develop (sexual) romantic relationships (Verhofstadt-Denève, Van Geert, & Vyt, 1995), which might be better met in mixed-sex treatment groups. One major finding of our study is that few differences were found in post-treatment outcomes between the treatment groups. Although differences were found for anxiety and depression and self-reported offending, these differences could be explained by sex rather than group composition effects. One important difference between treatment groups, not due to sex effects, did emerge: girls in mixed-sex treatment groups had significantly fewer official police contacts than did girls in single-sex groups. Examining this compelling finding more closely reveals that, compared to girls in mixed-sex groups, significantly more girls in single-sex groups started to commit crimes after treatment (‘starters’). It is possible that deviancy training, in which peers reinforce one another’s deviant behaviors (Dishion, Eddy, Haas, Li, & Spracklen, 1997; Dishion, Poulin, & Buraston, 2001; Dishion et al., 1996) is stronger in single-sex treatment groups than in mixed-sex groups. It is known that deviancy training within girls-only groups occurs in the new residential treatment program (De Haan, Nijhof, Engels, & Overbeek, 2010); however, whether it also takes place in mixed-sex groups remains to be answered (T. J. Dishion, personal communication, January 25, 2011). It should be noted that there are indications that the institutions under study placed girls in single-sex or mixed-sex treatment groups based on these girls’ problem behaviors and vulnerability. Girls who are more traumatized, that is, girls who have a history of a sexual abuse or who are victims of prostitution, are more likely to be placed in girls-only treatment groups rather than in mixed-sex groups. This difference in placement criteria for girls might be related to our finding, in that the specific problem behaviors are related to a higher vulnerability for peer contagion. More research on deviancy training within treatment groups is needed and should include both single-sex and mixed-sex treatment groups to compare boys and girls in the different types of treatment groups.

Some limitations need to be mentioned. First, a well-known and common limitation in evaluating a treatment program, like ours, is that the study includes a single sample design (e.g., Kazdin, 1993; Little, Kohm, & Thompson, 2005). Because no control group was included, no conclusions can be drawn about causality between treatment characteristics and outcomes. Therefore, it still remains unknown whether the adolescents would show similar results if they did not receive residential treatment. A second limitation of this study was that some adolescents in the treatment program did not participate. While the adolescents who participated did not differ on the number of risk factors before admittance from those who did not participate, they did differ in duration and discharge status. Adolescents who did not participate in the current study stayed in treatment for shorter periods and were more often non-regularly discharged. According to Sunseri (2001) some factors associated with non-completion of the program include parental illnesses, legal status of the child, history of residential care, a combination of problem behaviors, and a diagnosis of post traumatic stress disorder. Except for parental illness, which was one of the family risk factors in the current study, we did not include these factors in the risk model. It is possible that adolescents who did not participated in the present study differed on the factors
Chapter II

mentioned by Sunseri. Third, according to Hair (2005), there are three distinctive factors positively related to the maintenance of treatment improvement: involvement of parents during treatment, stability of the post-treatment environment, and after care for both the adolescent and the family. Although parents were involved in the new treatment program and contact with parents remained positive six months after treatment, stability of the post-treatment environment and aftercare were not considered.

To conclude, our study showed that a few treatment characteristics are predictive for post-treatment functioning. The associations found suggest an intensive focus on the family level, especially for families demonstrating a high level of family risk factors. Moreover, our study adds to our understanding of the impact of placing boys and girls in single-sex versus mixed-sex treatment groups on individual development and functioning. Further research is needed to better understand the mechanism and various possible impact of peer contagion, in boys-only, girls-only and mixed-sex treatment groups.
CHAPTER 12

GENERAL DISCUSSION
Compulsory residential care implies a radical change in both the lives of the adolescent and the family; therefore, it is important to gain insight into the effectiveness of residential care. The main aim of the current thesis was to evaluate a new Dutch compulsory residential treatment program specifically developed for adolescents with severe problem behaviors in need of protection against themselves or their environment. Prior to the availability of this new treatment program, adolescents were placed in juvenile detention centers. The aggregation of these behavioral disturbed adolescents with convicted criminal adolescents led to political and societal discussions and, resulted in the development of a new treatment program.7

More specifically, the current thesis examined adolescent, family, environmental, and treatment characteristics, treatment improvement, post-treatment functioning, and the relationship between these concepts. To evaluate such a treatment program it is necessary to determine characteristics of the adolescents admitted and their social environment. Based on a study by Boendermaker, Eijgenraam and Geurts (2004), it was expected that adolescents, eligible for the new treatment program, would have a severely problematic background. Population characteristics of admitted adolescents were, however, unknown. Both improvement during treatment and post-treatment functioning of the adolescents and their environment was evaluated to understand whether the new residential treatment program achieved its goals (i.e., offering better future perspectives and reducing problem behaviors). While treatment itself can currently be viewed as a so called ‘black box,’ treatment characteristics were included to examine their impact. Following a discussion of the findings, limitations, implications for practice, and suggestions for future research are presented.

Population characteristics

Problem behaviors

Previous studies (e.g., Connor, Doerfler, Toscano, Volungis, & Steingard, 2004; Griffith Ingram, Barth, Trout, Duppong Hurley, Thompson et al., 2009a; Park, Jordan, Epstein, Mandell, & Lyons, 2009) examining adolescents in residential care have found a range of problem behaviors in different areas. One aim of the current thesis was to investigate the extent of problem behaviors of adolescents admitted to the new residential treatment program. Our results indicated those admitted to the new residential treatment program comprised of a severely problematic group (see Chapter 2). Almost all adolescents demonstrated externalizing problems and the comorbidity rate between externalizing and internalizing problems was 67%. Being classified with a DSM-IV classification and engagement in risky behaviors (e.g., alcohol, drugs use) was also common. In addition, 20% of adolescents, mostly girls, were victims of forced prostitution or were at risk to becoming a victim. The parents of the admitted adolescents showed a diversity of problems as well; that is psychiatric or physical problems, addictions, and parental criminality. The parenting environment was also found to be unstable and seriously threatening for some adolescents who may have witnessed or been victims of violence and abuse. Moreover, of the adolescents examined, 60% were involved in high-risk peer groups prior to their entry into the new residential treatment program (see Chapter 2).

7 The highest urgency for admittance to the new treatment program includes being a victim of (forced) prostitution, followed by being a victim of sexual offenses, of psychological or physical abuse, and by needing protection against themselves to prevent further escalation, being vulnerable to becoming a victim in one of the aforementioned situations, being in need of police involvement to prevent further escalation, and being in need of protection to prevent further escalation in their own environment (Van Dam, Nijhof, Veerman, Engels, & Scholte, 2010; Van der Poel, Rutten, & Sondeijker, 2008).
Surprisingly, a large proportion of adolescents had police contacts, although the reason for placement was protection and a high rate of criminal activities was not expected. Based on both treatment files and national police systems, 70% of the adolescents were found to have had police contact before entering the new residential treatment program; of which 51% had police contact in the year before admittance (see Chapter 2; Appendix I; Van Dam, Nijhof, Scholte, & Veerman, 2010). Possibly, with the availability of a new residential treatment program, judges will be more inclined to send an adolescent to the treatment program rather than a juvenile detention center, assuming that the adolescent receives appropriate treatment; in particular, when police contact was a result of minor offences. Based on the official police contacts over time, the adolescents were divided into four criminal subgroups: non-delinquents (39%), starters (9%), desisters (32%), and persisters (18%). Two of these criminal subgroups raise concerns in that they had police contacts within one year after treatment (28%), of which 67% were persisters (i.e., committed crimes before and after treatment), while the other 33% started to commit crimes after treatment (i.e., starters).

Psychopathic traits and criminal behaviors
There are several risk factors related to criminal and other deviant behaviors of adolescents. On the individual level, psychopathy is related to concurrent and future offending (e.g., Hare, 1993; 1999; Salekin, 2008). We examined whether subgroups of adolescents, based on psychopathic traits, could be distinguished within our residential sample and to what extent these subgroups were related to the criminal subgroups (see Chapter 3 and Appendix I). In line with Andershed, Kerr, Stattin and Levander (2001), three subgroups, based on psychopathic traits, were found: a normal group, a non-psychopathic impulsive group, and a psychopathy-like group. Whereas the psychopathy-like group exhibited the highest self-reported offending at time of entry into the treatment program, based on official police records, this group did not differ in frequency of offending compared to the normal and non-psychopathic impulsive subgroup, both at time of entry and one year after treatment. There may be several explanations for the lack of differences over time between the psychopathic subgroups. First, psychopathic traits may not predict future offending after an adolescent has had treatment. Possibly, these individuals resisted future offending. Second, and probably more likely, the time interval used in our study (i.e., one year) may not have been adequate. Cauffman, Kimonis, Dmitrieva, and Monahan (2009) and Odgers, Reppucci, and Moretti (2005) showed comparable findings. Specifically, Cauffman et al. (2009), Odgers et al. (2005), and the current study included a 3 versus 12-month follow-up. Conversely, Salekin (2008), who did find a relation between psychopathic traits and future offending, used police contacts after a minimum of three years. The above mentioned studies suggest the inclusion of criminal behavior on the longer term in future research when examining the relationship between psychopathic traits and delinquent activities. It is also possible that adolescents with psychopathic traits benefited from the treatment program and this improvement was maintained for only a short period. It might also be the case that adolescents become more clever in offending during treatment, and therefore, do not have official police contact on short term; however, over time, the frequency or seriousness of their offending increases and as a result the chance to be caught becomes higher. Overall, based on our study, we can conclude that psychopathic traits are not predictive of official offending within one year after treatment and adolescents with psychopathic traits were almost equally distributed over the criminal subgroups.
The role of parents and peers in criminal behavior

Two major risk factors for delinquency in the immediate social environment of adolescents include criminal behaviors of parents (e.g., Farrington, 1995; 2002) and peers (e.g., Elliot & Menard, 1996; Garnier & Stein, 2002; Haynie, 2001; Haynie & Osgood, 2005). For the adolescents admitted to the new treatment program, 24% had at least one family member involved in criminal activities (Van Dam et al., 2010) and 60% of adolescents were involved in a risky peer group (see Chapter 2). While a substantial amount of research suggests that adolescents who have a criminal parent are more likely to become involved in criminal activities, we were interested in whether the frequency and seriousness of parental offending was related to the frequency and seriousness of the offending of their child. Our results, including a sample of delinquent young adolescents, showed that the frequency of parental offending was positively related to the offending of their child (see Chapter 4). Concerning the seriousness of offending, the seriousness of crimes committed by fathers was positively related to the seriousness of the child’s offending, whereas for mothers, a negative relation was found.

Concerning the influence of friends, one of our studies (see Chapter 5) included a normative sample and found that both the type of offence and friendship characteristics influenced the association between the friends and the adolescent’s delinquency. Cross-sectionally, for violent offending, adolescents who had a reciprocal friend with a high social status were more likely to commit violent crimes. For vandalism, a low status friend increased the likelihood of adolescents engaging in vandalism. Longitudinally, the results revealed that having a reciprocal friend who engaged in property offences increased the likelihood of the adolescent to commit property offences. For vandalism, it was found that an adolescent was more likely to engage in vandalism if he or she had a high status friend who committed vandalism.

As discussed, two subgroups of adolescents (i.e., starters andpersisters), admitted to the new treatment program, raised concerns because they showed criminal activities after treatment. The literature shows that, particularly, persistent offenders come from families with parents who exhibit criminal behaviors. Moreover, it is known that delinquency is partly generationally transmitted (e.g., Farrington, Jolliffe, Loeber, Stouthamer-Loeber, & Kalb, 2001; Van de Rakt, 2011). This raises the question of whether adolescents who still committed crimes after receiving the new treatment program include those youths with criminal parents. It might be that treatment was less effective or the effects of treatment were not maintained for adolescents raised in a criminal home environment and returned to that same criminal environment. Criminal parents often have relatively positive attitudes toward criminality and, consequently, the criminal activities of the child are not discouraged by parents or, at least, are not in conflict with parental norms and values (e.g., Gorman-Smith, Tolan, Loeber, & Henry, 1998). Unfortunately, our data provided no information about official offending of parents and, as a result, we were not able to verify whether persistent offenders were more likely to have parents with official police contacts compared to the others admitted. Another explanation for persistent offending can be found in a study by Raine et al. (2005), who describe that persistent offenders demonstrate neurocognitive (e.g., IQ, verbal memory) and psychosocial impairments (e.g., poverty, low SES) compared to a control group with low levels of antisocial behavior over time, whereas the adolescence-limited offenders did not differ from the control group. Possibly, adolescents who continued to commit offences after treatment have neurocognitive and psychosocial impairments that place them at a higher risk for future offending. Additionally, it is possible that these adolescents profit less from treatment.
Still, remarkably there was a group of adolescents, admitted to the new treatment program, who began their delinquent activities after treatment (i.e., starters) and can, therefore, not be described as persistent offenders according to Moffit’s taxonomy (1993; 2008; Moffit & Caspi, 2001). Possibly, these adolescents can be seen as the adolescence-limited offenders. According to Moffitt, the adolescence-limited offenders imitate the deviant styles of life-course-persistent offenders, which can be seen as normative, common behavior in puberty to overcome the maturity gap. It might be that the influence of (life-course-persistent) peers was more profound for the starters (i.e., adolescents who start their offending after treatment) in our sample. According to Dishion and Dodge (2005), especially (late) starters or minor delinquents are vulnerable to peer contagion (see also Patterson, Dishion, & Yoerger, 2000). Further, Vitaro, Tremblay, Kerr, Pagani, and Bukowski (2006) revealed that moderate delinquents are influenced by delinquent friends, whereas high delinquents are not affected by their friends’ delinquency. Family disruption is also not related to deviant peer influence for late starters, whereas it is for the persistent offenders (Simons, Wu, Conger, & Lorenz, 1994). Future studies should investigate the mechanisms contributing to a possibly higher vulnerability of peer contagion experienced by some adolescents admitted to the new treatment program. Despite the fact that the findings of our study are based on a normative sample, knowing that the influence of friends’ criminal behaviors on an individual’s criminality depends on the type of crime and friendship characteristics (i.e., social status and reciprocity of the friendship) can be helpful in understanding and preventing deviancy training in group-care interventions. In addition, adolescents in treatment groups often have strong and long lasting friendship relations with each other. Knowing that peer contagion is more likely to occur in relationships that have specific characteristics based on reciprocity and status, specific intervention or prevention strategies to decrease the risk of peer contagion within residential settings can be applied.

In general, based on the role parents and friends play in criminal careers, our findings point to the importance of having insight into possible criminal behaviors of parents and friendships or peer networks in treatment groups for adolescents admitted to the new treatment program. Important to note is that both studies investigating the influence of offending of parents and friends did not include adolescents admitted to the new treatment program. As a consequence, we can not generalize our findings to the target group of the new treatment program. It might be that the influence of friends is somewhat different in a normative sample compared to a clinical sample in which delinquency is much more common. Still, our studies add to increase the understanding about the relationship between parental offending and having deviant peers and the adolescent’s own criminal activities. Further research is needed to identify adolescent offending after treatment, to understand the mechanisms for why some adolescents are (still) involved in criminal activities after treatment, and the role of criminal behaviors of parents and peers. Understanding these mechanisms might contribute to developing interventions to decrease the risk of future delinquent behaviors.

Traumatic experiences
Relevant to this discussion is the high rate of traumatic events (42%) experienced by the admitted adolescents, in which dual or repeated traumatic events were common. For example, 30% of adolescents appeared to be victims of abuse (mentally, physically or sexually) by parents, brothers or sister; 22% witnessed domestic violence within the family; 12% were sexually abused by a person outside the family; and almost one third of the girls were involved in prostitution (see Chapter 2 and 7). However, it
is remarkable that only 3% of adolescents were diagnosed with post-traumatic stress disorder (PTSD; Van Dam et al., 2010). This low rate of diagnosed PTSD can be questioned and might even suggest that PTSD is often not recognized or is under diagnosed (see also Mueser and Taub, 2008).

Adolescents are admitted to the new treatment program because of severe problem behaviors (internalizing and externalizing), which can be an expression of PTSD (Jongedijk, 2008). In addition, adolescents with severe behavioral problems and a PTSD diagnosis showed significantly higher rates of internalizing and externalizing problems and more functional impairment than adolescents with severe problem behavior without PTSD (Mueser & Taub, 2008). The comorbidity of PTSD with other disorders is also high (Drake, Bush, & Van Gorp, 2001). Because some psychiatric disorders, such as ADHD, show comparable symptoms to those experienced with PTSD (Rosenberg, 2001), awareness of the potential risk of misidentification of PTSD in clinical practice is therefore pivotal. A consequence of this misidentification may be that inappropriate interventions are applied or that interventions are given that intervene on other problems. Based on our results as well as prior studies, it is suggested that the experience of traumatic events within adolescents entering the new residential treatment program should be better assessed. Specifically, different assessments can be used to measure PTSD (e.g., CAPA-PTSD, CAPS-CA, TSCC; Drake et al., 2001; Lindauer, 2010). Currently, the CAPA is translated in Dutch (Lindauer, 2010). Further, research should provide more detailed insight into the traumatic events experienced by adolescents admitted to the new treatment program and to what extent their problem behaviors are caused by these traumatic events to be able to offer the adolescents more appropriate (trauma related) interventions.

TREATMENT

Treatment improvement

Our findings showed that both the adolescents and their families demonstrated a diversity of problems. Based on these findings, it is suggested that the treatment program focus on adolescents and their parents. The new residential treatment program indeed focuses on both the adolescents and their families, in that parents are involved in treatment as well as intensive individual and family interventions are available. The present thesis examined the treatment improvement at the individual and family level. According to the adolescents and their parents' perceptions, significant improvement of the adolescent problem behaviors was found. It should, however, be mentioned that previous studies have shown that problematic adolescents tend to overestimate their competence, which is referred to as positive illusionary bias (see Casey et al., 2010). To address this bias, we also acknowledged the group care workers' perceptions about the adolescents' problem behaviors. Including group care workers' perceptions is vital (e.g., Ferdinand et al., 2003) to get a complete picture of the adolescents' improvement. Our findings indicated that, according to the group care workers' perceptions, no improvement of the adolescents' problems was found. This is comparable with the findings of Scholte and Van der Ploeg (2003). Nickerson, Colby, Brooks, Rickert, and Salamone (2007) also found that group care workers in residential care expressed more concerns about an adolescent's discharge than the adolescents themselves or their parents. An explanation for the different perceptions of the group care workers, compared to those of adolescents and parents, might be that during treatment group care workers' expectations change (often becoming higher) and adolescents do not fulfil these
expectations. It might also be that, as Nickerson et al. found, group care workers have more concerns than do adolescents, who want to leave, or the parents, who are not properly confronted with the problem behaviors of their child when admitted. It is possible that group care workers unconsciously report higher levels of problem behaviors to point to the importance of after care services or even longer durations of treatment.

On the family level, parents' ratings showed a decrease in parental stress over the course of treatment. This might, however, be explained by the fact that the adolescent was not living at home at the time and the parents were not directly confronted with the adolescent's behaviors. It should be questioned whether this improvement in parental stress is maintained after treatment, when the adolescent returns home. While adolescent problem behaviors and parental stress improved, according to the parents, improvement of family functioning was not found. Different family interventions are available with the new treatment program, ranging from less intensive interventions (i.e., family conversations, practical parenting support) to more intensive interventions (i.e., Functional Family Therapy, Multi System Therapy). It was reported that 68% of all families received family interventions, of which 20% received intensive family interventions (Van Dam et al., 2010). Given the high severity of problems within the families of the admitted adolescents, it is surprising that one third did not receive family interventions at all. In addition, of those families receiving interventions, only a small percentage received intensive family interventions. Perhaps significant differences exist between the level of family problems and, in this study only a part of the sample demonstrated severe family problems and needed intensive family interventions. Unfortunately, due to low response rates, we were not able to distinguish between subgroups based on family problems. If it is true that only some families are in need of intensive interventions, this can also explain the average positive family functioning, indicating few family problems. It is also possible that families overestimate their own functioning. Further, there may also be a methodological reason at stake. The instrument used in the current studies included positive valued answer categories and informants might be more likely to score higher on positively worded items. A final explanation might be that the parents who did not complete family functioning questionnaires could be from the most problematic families.

Group care worker behaviors

A study by Harder, Knorth, and Zandberg (2006) and a review of Boendermaker, Van Rooijen, and Berg (2010) point to the variety of tasks group care workers have; for example, listening to and showing compassion for the adolescents, paying attention to safety and interrelationships, and offering educational support. While understudied in previous research, one aim of the current study was to examine the influence of group care workers' behaviors toward the adolescents on the treatment improvement (see Chapter 8). Based on the levels of problem behaviors according to the adolescents' ratings, findings suggest that group care workers were more controlling toward adolescents demonstrating higher levels of externalizing problems at the time of entry compared to adolescents with lower levels of externalizing problems. Concerning internalizing problems, group care workers were both more controlling and showed more warmth toward adolescents with higher levels of internalizing problems at time of entry. Based on the group care workers' perceptions, it only appeared that group care workers showed more warmth toward adolescents entering with higher levels of internalizing problems. Apparently, group care workers adjust their behavior to the nature of problem behaviors of adolescents at time of entrance. According to
Colyar (1992), the behavior of group care workers also elicits specific behaviors from adolescents. Staff expressing an aggressive style, results in adolescents being more likely to show rebellious behaviors. Staff showing an assertive style will elicit limit-testing behaviors by the adolescents. Those staff who use a permissive style toward the adolescents, elicit more cooperative behavior and adolescents are more likely to show passive behaviors when the staff use a passive style (Colyar, 1992). The author states that the optimal staff behavior style lies between a permissive and assertive style, which is also called a supportive style. According to Colyar, using this style will elicit a combination of cooperative and limit-testing behaviors by the adolescents. The adolescents participating in our study provided some remarks about their relationships with group care workers. Some adolescents stated that they were thankful to their guardian for listening and always being ready, which, to them, was important during their admittance. Some even had contact with group care workers six months after discharge, of which they said was important because they had someone they could rely on. The small amount of studies that have examined the relationship between group care workers and adolescents in residential care mostly focused on unidirectional relationships; however, it must be noted that adolescents and group care workers mutually influence each other. Therefore, it is important to include the mutual interactions between group care workers and adolescents on a more dyadic level to explore how they react to each other and to what extent this influences treatment improvement and post-treatment functioning.

Girls' treatment improvement

For girls, a higher number of individual and environmental risk factors prior to admission to the new treatment program were found compared to boys (see Chapters 3 and 11). Previous studies also found that girls show more troubled behavior at the time of entry into residential care in terms of externalizing and internalizing problems, comorbidity, suicidal behavior, feelings of depression and anxiety, self-esteem, and history of sexual abuse (Connor et al., 2004; Handwerk, Clopton, Huefner, Smith, Hoff, Lucas, 2006). These risk factors place girls at an increased risk for sexual dysfunction, sexual abuse, and youth prostitution; of which, (forced) youth prostitution might be considered the most disturbing consequence due to serious mental and physical consequences (Willis & Levy, 2002). Concerning the new treatment program, victims of forced prostitution are categorized as the highest urgency group for admittance. Despite the high risks and disturbing consequences for girls as well as almost equally for the boys to girls ratio, little attention has been paid to girls in previous research (e.g., Griffith, Trout, Chmelka, Farmer, Epstein, Reid, 2009b), which motivated us to examine the girls' admitted into the new residential treatment program more specifically.

Of the girls admitted to the new residential treatment program, 29% had a history of forced prostitution, 29% showed sexual normative behaviors, and 43% showed promiscuous behavior (see Chapter 7). This relatively high number of victims of forced prostitution was not surprising considering that this group of girls was classified into the highest urgency category for admittance to the new treatment program. Our results also showed that girls with a history of forced prostitution did not come from more problematic families compared to other admitted girls. This finding was also revealed by Cusick (2002) who found lower levels of internalizing problems among this group. However, this group of girls were more likely to live outside the home before admittance, were significantly more often homeless, and more often born abroad (see Chapter 7). Both victims of prostitution and promiscuous girls were also more likely to have ran away from home before admittance, were more often involved in
a risky peer group, and were more often sexually abused by persons outside the family. The difference between promiscuous girls and victims of prostitution is that victims of prostitution experienced less traumatic events and physical violence in the family and had fewer financial problems.

Examining the treatment improvement of the three girls' subgroups, it was found that all girls entered the institutions with the same level of problem behaviors. Over time, differences were, however, found between the three subgroups. Due to the relatively low number of participants in the subgroups, we must be careful in our conclusions. Despite this, our findings imply different treatment needs for the girls in the three subgroups. For example, victims of forced prostitution showed an increase in internalizing problems. This might suggest an increase of insight into their internalizing problems during treatment; however it also might indicate that, during treatment, they suffer more from internalizing problems and treatment should focus intensively on these internalizing problems. This is especially the case for this subgroup of girls as it is expected that they suffer from traumatic experiences more often than the other girls’ subgroups and that PTSD is more common. Further research, including larger subsamples, is needed to examine the underlying mechanisms and specific treatment needs for these subgroups.

Deviancy training
One of the main reasons to stop the aggregation of behaviorally disturbed adolescents with criminally convicted adolescents in juvenile detention centers and to develop a new residential treatment program was because of the high risk of criminal contagion (Boendermaker et al., 2004; Dishion, Eddy, Haas, Li, & Spracklen, 1997; Dishion, Poulin, & Burraston, 2001). Finding high rates of delinquency and deviant friendships within the sample admitted to the compulsory residential treatment program raises the question of whether peer contagion is operating within the new treatment program. Therefore, we conducted an exploratory examination of the process of deviancy training within girls' treatment groups with one of the participating organizations. Chapter 9 indeed reveals the occurrence of criminal contagion in a small sample of girls in treatment. This finding is especially interesting because a girls sample was included, which has not been done in prior studies. Non-delinquent girls showed more frequent rule-break talk when they interacted with a delinquent partner compared to a non-delinquent partner. In addition, delinquent and mixed dyads engaged more often in rule-break talk than did non-delinquent dyads. Dishion and Dodge (2005) and Patterson et al. (2000) suggested that peer contagion might be stronger among adolescents who just started to show deviant behaviors or who could be defined as moderately deviant; while, for adolescents showing no deviant behavior at all, peer contagion is minor. Although the girls in the present thesis were classified as non-delinquent, some were engaged in minor deviancy. In conclusion, our findings suggest the same for girls' treatment groups as stated by Dishion and Dodge (2005), which supports the iatrogenic effects of deviancy training in treatment groups. Other studies have not found harmful effects of deviancy training during treatment (Huefner, Handwerk, Ringle, & Field, 2009). Specifically, Huefner et al. correctly noted that there are other important risk factors related to delinquency, such as ineffective parenting and negative peer associations that can not be ignored when examining peer contagion. Still, Huefner et al. based their conclusions on comparing adolescents with highly versus less severe problem behaviors on treatment improvement. Of note, to better understand the process of peer contagion on the interactional level, observations are a better suitable methodology. Therefore, we observed and visualized the course of
dyadic interaction patterns in delinquent, non-delinquent, and mixed dyads.

That deviancy training plays a role in the new treatment program does not mean that nothing can be done about it. There are factors that can minimize deviancy training in treatment groups. Specifically, positive relationships with parents and performing well at school can buffer the detrimental influence of deviant friends (e.g., Crosnoe, Erickson, & Dornbusch, 2002; Handwerk, Field, & Friman, 2001). In addition, positive peer reporting, in which antisocial adolescents are rewarded for reporting positive social behaviors of peers has been found to increase positive social behaviors of those peers in residential settings where antisocial behaviors predominate (Bowers, Woods, Carlyon, & Friman, 2000). Treatment can adapt to these factors in that treatment focuses on improving family relationships, educational achievement, and positive peer reporting. The new treatment program indeed focuses on improving family relationships and education is also an important goal. Within the new treatment program, interventions based on a positive peer culture are available (e.g., EQUIP). However, the effectiveness of these interventions has rarely been examined and not all institutions explicitly concentrate, systematically, on increasing positive peer behaviors. These factors might suggest some first steps to reducing the influence of deviant friends. Further research should reveal whether these treatment aspects indeed decrease the involvement and influence of deviant friends in and after treatment within a larger sample.

**POST-TREATMENT FUNCTIONING**

While the adolescents admitted to the new treatment program seemed to have improved their problem behaviors, the question remains whether this improvement was maintained after treatment. Our results showed that most adolescents lived independently or with the family six months after treatment, had a daily activity, were satisfied about the relationship with their parents, and did not show criminal activities (anymore). These findings suggest that living situation is relatively stable, in that a large part of the adolescents returned home. Based on previous studies it is known that the post-treatment environment is an important factor in maintaining treatment improvement (Bates, English & Kouidou, 1997); however, levels of drug and alcohol use were quite high. Concerning post-treatment functioning, the impact of the number of pre-treatment risk factors and some structural treatment characteristics on post-treatment functioning were examined. Several post-treatment indicators were measured six months after discharge via telephone interviews with the adolescents. The numbers of individual and family risk factors before admittance were found to be related to post-treatment functioning. Specifically, adolescents entering the treatment program with higher levels of individual risk factors were more likely to live in a family setting during follow-up, had less positive contacts with the family, and had more self-reported police contacts. Concerning the number of risk factors at the family level, adolescents who were admitted with higher levels of family risk factors were more likely to live independently after treatment, had more positive contacts with the family, and were more likely to have self-reported police contacts. Further, the number of environmental risk factors did not add any predictive value (see Chapter 10). In adding structural treatment characteristics (i.e., duration of treatment, discharge status, group composition) to the model, only the number of family risk factors was found to be predictive of post-treatment functioning (see Chapter 11). Concerning the association between pre-treatment family risk factors and post-treatment functioning, the results suggest that a higher number of family risk
factors is related to the adolescent being more likely to live on their own or within a residential or judicial setting after treatment (see Chapters 3 and 11). This might imply that institutions do have appropriate insight into the family background and the decision of where the adolescent should live after treatment is well considered. Still, some adolescents with a more problematic family background ended up in residential institutions or juvenile detention centers. While those still in residential care often moved to less restrictive forms of care, which can be seen as a positive step forward, those in juvenile detention centers raises more concerns because a juvenile detention center can be seen as a negative outcome six months after treatment. As discussed, persisters were more likely to come from more disruptive families (Simons et al., 1994). It might be that adolescents with higher family risk factors who end up in a juvenile detention center after treatment were the persisters in the current sample.

In addition to the influence of number of risk factors on post-treatment functioning, the influence of structural treatment characteristics on how well the adolescents were doing six months after discharge was also considered. The results revealed few associations between duration of treatment, discharge status, and group composition (i.e., girls-only, boys-only, mixed-sex treatment groups) and post-treatment functioning. Adolescents who were in treatment for shorter durations were more likely to live independently. Additionally, adolescents who were regularly discharged, in that they completed the treatment program, had more intensive contact with parents and were also more likely to use alcohol compared to adolescents who were non-regularly discharged (i.e., the client ran away, discharge due to misbehavior, treatment was ended based on the age of the adolescent (18+), or because the judicial approval expired). Finally, group composition was predictive of feelings of depression and/or anxiety, self-reported offending, and official offending after treatment. Findings were, however, sex related for feelings of depression and/or anxiety, with girls in single-sex and mixed-sex treatment groups showing no difference in the extent of feelings of depression and anxiety and boys in the boys-only treatment groups showing no difference compared to boys in mixed-sex groups. The same helds for girls and boys concerning self-reported offending. For official offending, the association was related to group composition: girls in a girls-only treatment group showed significantly more official offending than did girls in a mixed-sex group. This is an interesting finding and might suggest stronger deviancy training within girls-only treatment groups. As previously discussed, deviancy training within girls-only treatment groups in the new treatment program did occur. This might also be related to characteristics of the girls placed in girls-only treatment groups. According to the participating institutions, more vulnerable girls (e.g., victims of forced prostitution, victims of sexual abuse) are placed in girls-only groups rather than in mixed-sex groups. The differences in official offending was, however, the only significant finding when comparing boys-only, girls-only, and mixed-sex treatment groups. For all other variables, no differences in post-treatment functioning were found, which suggests that, in our study, group composition is hardly predictive for treatment outcomes after discharge.

**Sex Differences**

Prior studies (e.g., Connor et al., 2004; Doerfler, Toscano, & Connor, 2009), as well as the current investigation, point to a possible differential approach for treatment between boys and girls based on their different admission characteristics. Based on our findings, girls entered with significantly more individual and environmental risk factors (see Chapters 3 and 11). At the time of admittance, girls
reported higher levels of internalizing problems based on the Youth Self Report (YSR, see Chapter 3), this difference was, however, not significant as reported in Chapter 8. Concerning externalizing problems and the use of both soft and hard drugs, boys and girls did not differ (see Chapters 3 and 8). Boys, however, entered with more self-reported property and violent offending and vandalism (see Chapter 3).

Once admitted to the new treatment program, group care workers were found to differentiate between boys and girls in their behaviors toward them: group workers exerted more control in their interactions with boys compared to their interactions with girls concerning internalizing problems. For externalizing problems these effects were not, or were only marginally, significant (see Chapter 8). As such, after being discharged from the treatment program, boys were more likely to have police contacts and have fewer social contacts, whereas girls were more likely to live independently and report higher levels of anxious and depressed behaviors. Moreover, it was found that boys were more likely to be non-engaged in structured daily activities (i.e., school engagement or a job), and more often used soft drugs (see Chapters 10 and 11). Our findings suggest that acknowledgement of these sex differences in treatment is important. Covington and Bloom (2006) concentrating on women in detention centers and stated that sex-responsive treatment is needed. According to these authors, women are in higher need of a safe, supporting environment and treatment must include trauma interventions, social network must be considered, sex-responsive screening and assessment is needed to meet women’s needs in treatment, and a strength-based model must be used because most woman often have a poor self-esteem (Covington & Bloom, 2006). Future research should systematically and thoroughly examine whether boys and girls within the new residential treatment program also have different needs in treatment. It might be that some interventions are better suitable and needed for girls than for boys, and vise versa.

STRENGTHS AND LIMITATIONS

In addition to a number of positive aspects of the current project (i.e., practice related research, frequent meetings with the participating institutions, providing profiles regarding the development of the adolescents, analyses of the treatment files of a large sample of adolescents, relatively high response rates on the follow-up by interviewing the adolescents), there are also several limitations that should be considered. The present thesis included a single-sample design; no control group was available, which is a well-known problem in studies examining residential treatment programs (Curry, 1991). Yet Hair (2005) described the common limitations in examining the effectiveness of residential treatment and suggested that, within such complex settings, qualitative approaches can be a solution to meet this complexity. On the other hand, Veerman and Van Yperen (2007) pointed to the importance of quantitative evidence in situations where little is known about the effectiveness of treatment. In their view, information of changes in pre-post studies, without a control group, give some initial insight into the effectiveness of interventions and enables us to make conclusions about whether the treatment program reached its intended outcomes. When these outcomes are promising, decisions can then be

Possibly the different findings between the two chapters can be explained by the samples used. In Chapter 3, all admitted adolescents who participated included a sample of 101 girls and 113 boys. In Chapter 8, only boys and girls were included of which the group care workers completed in the Group Care Worker Intervention Checklist, which resulted in a sample of 71 boys and 65 girls. In addition to the much smaller sample in Chapter 8, it might also be that a selective sample was included in that the willingness of group care workers to participate might depend on characteristics of the adolescent.
made to design a study that uses a control group. Another limitation of this thesis is that we did not look at differences between the participating institutions and the thirty treatment groups involved. One institutional difference, for example, can be found in the remoteness of the institutions. Whereas one institution was situated in the middle of the woods with an open environment, another institution was an old gated juvenile detention center. Despite the fact that we controlled for multilevel effects in our analyses, the results are likely to differ between institutions and even between treatment groups within one institution.

Furthermore, attrition levels were high, both at baseline and over time. Especially a large number of parents did not or could not participate. Reasons for this lack of participation might include a lack of understanding, distrust of mental health providers, or the feeling of being judged. Moreover, many adolescents, parents, and group care workers did not participate due to organizational reasons. The high attrition levels are probably also related to the way the study was implemented. Our study included a top-down implementation. Of note, findings suggest that a top-down implementation is related to higher levels of resistance within institutions. On the contrary, a bottom-up implementation is based on questions from the practical field. Bottom-up implementation is easier because the people who work with the youth on a daily basis, such as group workers and treatment coordinators, are more willing to cooperate, which in turn often increases response rate (Collins, Amodeo, & Clay, 2007; Lambert, 2010; Van Yperen & Veerman, 2008). Despite that this attrition analyses showed few differences in the number of risk factors between participants and non-participants, the consequence of the high attrition levels were of course smaller samples. As a result, we were not able to compare subgroups, for example, between families with lower and higher risk factors before entrance or between the participating institutions or treatment groups. To avoid being completely dependent of the participants and partly overcome the low response rates, treatment files and official police contacts were included in our dataset. Since the collection of this data could be monitored by the researchers themselves, higher response rates were achieved.

Post-treatment functioning was measured after a relatively short period following discharge (six months). A large number of studies have stated that results on the longer term are less investigated and these studies have showed mixed findings (e.g., Frensch & Cameron, 2002; Little, Kohm & Thompson, 2005). Moreover, for psychopathic traits, the results of ours and prior studies suggest different outcomes between short-term and longer-term follow-up. Future research should include additional and longer term follow-ups to investigate whether the same patterns are found when including follow-up on the long-term. Hence, with respect to post-treatment functioning, after-care was not considered. Of note, after care is often mentioned as an important factor related to positive outcomes (e.g., Frensch & Cameron, 2002; Wells, 1991). Based on telephone interviews with the adolescents, many reported that they needed more help with practical things, such as finances and applying for a job. Although many adolescents did well six months after discharge (Van Dam et al., 2010), the influence of after care services on post-treatment functioning remains unknown and should be included in future studies.

**Practical implications**

For institutions, some implications of our study findings can be provided. First, it is important to give attention and be aware of the adolescents’ criminal behaviors and peer contagion within treatment
groups. While some adolescents did not demonstrate any criminal activity and some adolescents stopped their criminal behaviors after treatment, some did engage in criminal activities after treatment. Our findings revealed some factors that can decrease the risk of offending after treatment, including a high quality of the relationship with parents, having a structured daily activity, and less use of soft drugs. Treatment can be helpful in this; specifically when it involves parents and focuses on improving the adolescent-parent relationship. Treatment also should include intervention programs for adolescents who use drugs and, for those not using, prevention programs might be useful. At the time of discharge, it is important that the adolescent has a daily structured activity (i.e., school engagement or a job) and it is the responsibility of the institutions to assist in this process. After-care services can play a pivotal role in the maintenance of a daily activity as well as the satisfaction and performance of the adolescent. Despite the fact that we already know all this, these measures are often not implemented or not implemented adequately into treatment programs. Institutions must verify to what extent these treatment needs are met and when they are not met, the institutions must consider their implementation.

A second implication concerns the few adolescents who demonstrated psychopathic traits (10%). According to Farrington (2005), the distinctiveness and persistency of psychopathy, its biological causes, and specific characteristics, such as lack of empathy and manipulative behaviors, make these adolescents difficult to treat. Still, adolescents with psychopathic traits can benefit from treatment when this treatment is intensive and takes place in a residential setting to overcome resistance and non-completion of treatment (Caldwell, Skeem, Salekin, & Van Rybroek, 2006; O’Neill, Lidz, Heilbrun, 2003). Based on a review of Salekin (2002), intensive cognitive-behavioral and psychoanalytic interventions have been found to be most successful for psychopaths. Moreover, combining individual and group psychotherapy as well as family involvement are success factors in the treatment of psychopaths.

Third, many adolescents admitted to the new treatment program entered with traumatic experiences; however, PTSD was rarely diagnosed. This indicates that PTSD might be underdiagnosed or underestimated. Diagnostics in this area and improving the knowledge of the symptoms and treatment of PTSD among staff members are, therefore, vital.

RESEARCH SUGGESTIONS

Design
Although the initial results are promising, future research should include a control group to provide causal evidence for the effectiveness of the new treatment program. A potential control group might involve adolescents admitted to juvenile detention centers, especially when examining criminal behavior or recidivism. Both adolescents admitted to the new residential treatment program (see Chapter 2) and those in juvenile detention centers (e.g., Lederman, Dakof, Larrea, & Li, 2004) demonstrate serious problematic backgrounds. Another potential control group might be adolescents admitted to other residential institutions. To overcome institutional differences, a solution can be found in including institutions that offer both the new treatment program and treatment for juvenile offenders or other residentially admitted adolescents. Regardless, the analyses should control for multilevel complexities (i.e., different treatment groups).

Second, it is important to obtain higher response rates in order to generalize the findings and distinguish between subgroups. To obtain higher response rates in future studies, the gap between
practice and research must be bridged. The scientist-practitioner model might be useful as this model implements a practitioner trained as a scientist and clinical practitioner to better integrate science and practice (e.g., Crane & Hafen, 2002; Hayes, Barlow, Nelson-Gray, 1999; Jones & Mehr, 2007). According to Hayes et al. (1999) one reason to implement the scientist-practitioner model is that being both a clinician and a researcher increases engagement in research. This increase in engagement will result in a higher willingness to gather data in practice and, thus, higher response rates. In addition, Routine Outcome Monitoring (ROM) can add to the better implementation of research. Routine Outcome Monitoring provides practitioners with feedback concerning individual or group improvement, which can be supportive in decision-making and improve treatment and accountability to policy makers and financers. Moreover, ROM offers structured, systematic data for research and enables institutions to justify the results toward clients or financers. There is also growing interest in the use of ROM because of external pressures, in that institutions must account for the effectiveness of treatment programs to maintain funding. Still, our experience was that those staff members working directly with the adolescents knew too little about the relevance and usefulness of research and in what way they could use the results in treatment. Although, in our study, the results of the questionnaires were given in manageable profiles, the practitioners often did not use them. Garland, Kruse, and Aarons (2003) described three reasons why clinicians do not always use available results, (1) the measurements are difficult, (2) they have problems interpreting the results, and (3) they are sceptical about the validity of the information. As such, more information toward staff members about the interpretation of the profiles and measurements used is needed. Further, the use of various instruments may increase as practitioners better understand that the client can benefit from monitoring and that outcomes and quality of care can improve (Lambert, 2010; Miller & Duncan, 2004). Additionally, the involvement of a multidisciplinary team, including different organizational levels, when discussing the results is an important factor in improving the use of ROM, in that this type of team can improve the interpretability of the results and increase the staff’s engagement in decision-making based on the results (Patel & Riley, 2007). Ongoing training and supervision of staff can also be helpful (Hair, 2005). Noticing increasing enthusiasm about this study after giving presentations of the results, we also suggest giving presentations more often, maybe in small groups in which only the adolescents of one treatment group are discussed. While the use of ROM can add to better implementation of research instruments, it is also possible that participating organizations simply need more time for the implementation of such research. Specifically, concerning the participating institutions in our thesis, in which some began offering the new treatment program at the same time our study begin; therefore, it might be that it was just too much to begin implementing the new treatment program and implement our research.

Content

Our thesis largely focused on externalizing problems; however internalizing problems were also common among the adolescents admitted to the new treatment program. A comorbidity rate was measured at 67%. Whereas externalizing problems are more visible and easier to measure, internalizing problems can have important consequences for an adolescent’s functioning. Future research should focus on the role of internalizing problems and the comorbidity of internalizing and externalizing problems on treatment outcomes and post-treatment functioning. This is especially important because there is a lack of research in the area of comorbidity in relation to treatment. This line of study may be able
to distinguish between adolescents only showing internalizing problems, adolescents only showing externalizing problems, and adolescents showing both internalizing and externalizing problems. Because a few of the admitted adolescents demonstrated internalizing problems only, a large sample should be included.

Concerning traumatic events, as discussed earlier, this should be a specific component included in further research. Based on our thesis, researchers should attempt to gain better insight into the experienced traumatic events and to what extent these traumatic events are related to problem behaviors for which the adolescents are admitted into residential treatment. It might be that problem behaviors are an outcome of experienced trauma and these behaviors moderate the relationship between trauma and treatment outcomes. A better understanding of experienced traumatic events can be useful in starting appropriate interventions to optimize treatment and outcomes.

Regarding psychopathic traits, three subgroups were found; however, it remains unknown whether these psychopathic subgroups differed in treatment outcomes and post-treatment functioning. The same holds for sex differences: the present thesis revealed differences in the number of risk factors between boys and girls and a different approach by group care workers toward boys and girls. Moreover, sex differences were found in post-treatment functioning. These findings imply a differential approach for boys and girls. Future studies should focus specifically on possible differences in treatment improvement. Finally, qualitative research can be helpful in understanding the treatment needs of boys and girls and whether these treatment needs differ.

Concerning treatment period, it was found that peer contagion occurs within girls-only treatment groups. This finding implies that some female adolescents (starters) might be more vulnerable for peer contagion than are others. Based on the four criminal subgroups (i.e., non-delinquents, starters, desisters, and persisters), it will be interesting to examine whether differences in peer contagion exist. Moreover, future research should investigate to what extent friendship characteristics influence peer contagion, not only in girls-only treatment groups, but also in boys-only treatment groups and mixed-sex groups in order to compare these three types of treatment groups. Whereas previous studies have found that peer contagion occurs in boys-only groups and our study found that it occurs in girls-only groups, nothing is known whether deviancy training plays a role in mixed-sex groups. From intimate relationships, it is known that deviancy training does not occur between boys and girls (Dishion, personal communication, January 25th, 2011). Conversely, studies have also found that boys are more likely to be influenced by same-sex peers, while girls are more likely to be influenced by male friends (Simons et al., 1994). Future studies can add to a better understanding of deviancy training within different sex-composed treatment groups.

Unfortunately, no data concerning the mutual interactions between the adolescents and group care workers and behavior toward each other was available. Future research should obtain more information about the relationships between adolescents and group care workers, important aspects of these relationships (e.g., trust, listening), and to what extent these relationships affect treatment outcomes and post-treatment functioning. Both questionnaires and observations can be useful in gaining insight into the interactions between adolescents and group care workers. The advantage of conducting observations is the ability to look at interactional patterns on the dyadic level. Moreover, observations may help overcome biases due to, for example, social desirability. Observational studies can include nonverbal (e.g., interactional synchrony, Koss & Rosenthal, 1997; Lakin & Chartrand, 2003; Valdesolo,
Ouyang, & DeSteno, 2010) and verbal (e.g., empathy, expectations, Colyar, 1992) communication between a mentor and adolescent. Additionally, researchers should consider conducting observations at different time points during treatment to be able to look at the processes of change in interactions over time. Finally, questionnaires can provide extensive information about the adolescents’ and group care workers’ own perceptions of their relationship; for example, satisfaction about a relationship does not have to be reciprocal.
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Y


Z


Nederlandse samenvatting
Na jarenlange politieke en maatschappelijke discussie over de samenplaatsing van straf- en
civilrechtelijke jongeren in justitiële jeugdinrichtingen, is er in 2005 in een aantal jeugdzorginstellingen
gestart met het aanbieden van een nieuw residentieel zorgaanbod, ook wel gesloten jeugdzorg of
Jeugdzorg+ genoemd. Twee hoofdredenen voor de scheiding van straf- en civilrechtelijke jongeren
waren 1) dat de civilrechtelijke jongeren niet de gewenste hulp kregen in de justitiële jeugdinrichtingen
en 2) dat civilrechtelijke jongeren het risico liepen deviant gedrag van strafrechtelijke jongeren te
imiteren. Aangezien gesloten plaatsing binnen de jeugdzorg niet mogelijk was, is sinds 1 januari 2008
de Wet op de Jeugdzorg gewijzigd om gesloten plaatsing binnen de jeugdzorg mogelijk te maken. Dit
proefschrift richt zich op de evaluatie van de gesloten jeugdzorg. Achtereenvolgens zullen de kenmerken
de opgenomen jongeren, de rol van ouders en vrienden, de kenmerken van de behandeling en de
uitkomsten op korte en lange termijn worden besproken. De participerende jeugdzorginstellingen waren
De Juiste Hulp (De Hoenderloo Groep), Paljas Plus (Bijzonder Jeugdwerk Brabant&Tender Lievenshove),
De Koppeling (Altra, De Bascule & Spirit) en Hand in Hand (Avenier & Horizon).

Voor ons onderzoek is data verzameld op verschillende momenten bij verschillende informanten
van in totaal 514 opgenomen jongeren. Op het moment dat een jongere werd geplaatst binnen één
van de betrokken instellingen, is het dossier, bestaande uit onder andere psychologisch onderzoek en
juridische rapporten, geanalyseerd over de periode voorafgaande aan opname (N = 514) om zicht te
krijgen op de problematiek van de doelgroep. Vervolgens werd bij opname van 339 jongeren aan zowel
de jongere, de ouders als de mentor gevraagd een vragenlijst in te vullen (T1) om het probleemgedrag
de jongere en het gezin in kaart te brengen. Hetzelfde vond plaats halverwege de behandeling (T2)
en aan het einde van de behandeling (T3), zodat het mogelijk werd de verandering tijdens behandeling
tekijken. De responspercentages op de drie meetmomenten waren 67%, 47% en 33% voor de
jongeren. Voor de ouders lagen de responspercentages op 38%, 28% en 17% en voor de mentoren
op respectievelijk 55%, 45% en 47%. Aan het einde van de behandeling werd aan de mentoren tevens
gevraagd een behandelingschecklist in te vullen (responspercentage 37%). Een half jaar na vertrek
werd aan 420 jongeren gevraagd mee te werken aan een telefonisch interview om inzicht te krijgen in
het functioneren na behandeling (responspercentage 72%). Dat niet alle jongeren zijn benaderd voor
een telefonisch interview kwam doordat sommige jongeren al geruime tijd waren uitgestroomd of omdat
jongeren nog niet waren uitgestroomd aan het einde van het onderzoek. Naast deze zelfrapportages zijn
ook de officiële politiecontacten van alle 514 jongeren getraceerd door gebruik te maken van nationale
politiesystemen. Officiële politiecontacten zijn nagegaan in de periode voor opname van de jongere en
één jaar na opname.

Deel 1 De doelgroep

Problematiek van de doelgroep
Naar aanleiding van de discussie rond de samenplaatsing van civil- en strafrechtelijk geplaatste
jongeren is in 2004 doo het Nederlands Jeugd Instituut (Boendermaker et al., 2004) onderzoek gedaan
naar de kenmerken en zorgbehoeften van civilrechtelijke jongeren in de justitiële jeugdinrichtingen. Dit
onderzoek van Boendermaker leverde een beschrijving op van de potentiële doelgroep voor de gesloten
jeugdzorg. In hoofdstuk 2 is de daadwerkelijk opgenomen doelgroep van de in het huidige onderzoek
participerende instellingen voor gesloten jeugdzorg onderzocht en vergeleken met de potentiële
doelgroep beschreven door Boendermaker et al. (2004). Uit de resultaten kwam naar voren dat de jongeren op verschillende gebieden problemen ervaren. Op het individuele gebied bleek dat 98% van de jongeren externaliserend probleemgedrag liet zien, waarvan 67% ook internaliserend probleemgedrag (comorbiditeit). Van de jongeren had 70% vóór opname contact met de politie gehad en gebruikte 42% fysiek geweld tegen gezinsleden. Omtrent middelengebruik bleek dat 41% van de jongeren rookte, 18% problematisch alcoholgebruik liet zien, 59% softdrugs en 17% harddrugs gebruikte. Tevens bleek 42% van de jongeren negatieve gebeurtenissen te hebben meegemaakt. Ook op het gezinsniveau kwamen problemen naar voren. Van alle jongeren bleek 30% mishandeld te zijn binnen het gezin. Daarnaast bleek de stabiliteit en kwaliteit van de opvoedingsomgeving veelal zorgelijk. Geweld tussen ouders, waarvan de jongere getuige was, kwam voor in 22% van de gezinnen. Ook de ouders zelf ervaarden problemen zoals lichamelijke of psychische problemen en verslavingen aan alcohol en/of drugs. Op het gebied van de omgeving bleek dat 60% van de jongeren contacten had met deviante vriendengroepen. Op seksueel gebied bleek dat 12% van de jongeren was misbruikt door een persoon buiten het gezin. De helft van de jongeren liet promiscue gedrag zien. Daarnaast bleek dat 20%, vooral meiden, contacten hadden met pooiers, danwel slachtoffers waren van (gedwongen) prostitutie.

Als onze onderzoeksgroep wordt vergeleken met de potentiële doelgroep op basis van de studie van Boendermaker et al. (2004), dan blijkt dat de percentages in de huidige studie op een aantal gebieden significant hoger liggen dan bij de studie van Boendermaker et al. Het gaat dan om externaliserende en internaliserende problemen, suicide en automutilatie, huiselijk geweld, politiecontacten en het gebruik van softdrugs. Hieruit kan geconcludeerd worden dat de daadwerkelijk opgenomen doelgroep zwaarder is dan de door Boendermaker et al. beschreven verwachte doelgroep. Dat de doelgroep voor de gesloten jeugdzorg zwaarder is dan in eerste instantie werd verwacht, kan consequenties hebben voor de inhoud en organisatie van de behandeling. Met name de hoge mate van comorbiditeit vraagt om uitgebreide expertise omtrent psychopathologie bij professionals in het werkveld.

**Crimineel gedrag**

Zowel op basis van de analyses van de dossiers als op basis van de officiële politieregistraties bleek dat 70% van de jongeren contacten heeft gehad met de politie voorafgaand aan opname binnen de gesloten jeugdzorg. Als alleen naar politiecontacten in het jaar voorafgaand aan de opname wordt gekeken, dan blijkt dat 51% van de jongeren contact met de politie heeft gehad. Aangezien de officiële politiecontacten van de jongeren zowel voor als na behandeling zijn getraceerd, konden de jongeren in vier groepen worden ingedeeld: niet-delinquenten (geen delicten voor en na behandeling), starters (geen delicten voor, maar wel na behandeling), stoppers (wel delicten voor, maar niet na behandeling) en persistente criminelen (delicten voor én na behandeling). Uit de resultaten bleek dat 39% van de jongeren beschouwd kan worden als niet-delinquent, 9% als starter, 32% als stopper en 18% als persistente crimineel. Met name de starters en de persistente criminelen vormen zorgwekkende groepen, aangezien zij na behandeling (nog) contact hebben gehad met de politie. Naar aanleiding van deze bevindingen heeft dit proefschrift zich gericht op factoren die kunnen bijdragen aan crimineel gedrag. In hoofdstuk 3 en Appendix I is de mate van psychopathische trekken bij de jongeren, opgenomen binnen de gesloten jeugdzorg, onderzocht. Uit de resultaten bleek dat er drie subgroepen kunnen worden onderscheiden: een niet-psychopathische groep (51%), een niet-psychopathische, impulsieve groep (38%), en een groep met psychopathische trekken (10%). Aan de hand van zelfgerapporteerde crimineel gedrag bij aanvang
bleek dat de jongeren met psychopathische trekken significant meer vermogens -en geweldsdelicten hebben gepleegd. Wat betreft probleemgedrag blijken zowel de niet-psychopathische, impulsieve als de psychopathische groep hogere scores te laten zien op externaliserend probleemgedrag vergeleken met de niet-psychopathische groep. Als het gaat om internaliserende problemen, dan komt naar voren dat de niet-psychopathische, impulsieve groep significant hogere scores laat zien dan de andere twee groepen. Ten aanzien van drugsgebruik bleek dat de niet-psychopathische, impulsieve groep en de psychopathische groep meer softdrugsgebruik lieten zien dan de niet-psychopathische groep. Terwijl op basis van zelfgerapporteerde crimineel gedrag de psychopathische groep de meeste delicten pleegde voor opname, komt uit de officiële politiegegevens naar voren dat er geen verschil in frequentie van delictgedrag is tussen de drie groepen. Ook over tijd laten de drie groepen geen verschillen zien in de frequentie van hun delictgedrag. De conclusie die kan worden getrokken is dat in ons onderzoek de mate van psychopathische trekken bij jongeren niet voorspellend was voor crimineel gedrag binnen één jaar na behandeling.

De rol van ouders en vrienden op crimineel gedrag
Eerder onderzoek heeft duidelijk aangetoond dat crimineel gedrag van ouders en vrienden van invloed is op het criminele gedrag van jongeren. In hoofdstuk 4 en 5 is specifiek ingegaan op de relatie tussen crimineel gedrag van ouders en vrienden en crimineel gedrag van de jongeren. Ten eerste is onderzocht in hoeverre de frequentie en ernst van crimineel gedrag van ouders van invloed was op de frequentie en ernst van de delicten gepleegd door hun kinderen. Hiervoor is een andere groep jongeren geïncludeerd dan de jongeren opgenomen binnen de gesloten jeugdzorg. Er is voor gekozen een jonge groep kinderen te includeren (8-14 jaar) die met de politie in contact kwamen vanwege delictgedrag. Vervolgens zijn van deze kinderen de ouders getraceerd in de politiesystemen. De resultaten gaven weer dat de frequentie van crimineel gedrag van ouders positief samenhangt met crimineel gedrag van hun kinderen. Dit betekent dat als ouders een hogere frequentie in hun delictgedrag lieten zien, hun kinderen ook een hogere frequentie lieten zien. Aangaande de ernst van de gepleegde delicten bleek dat vaders van kinderen die ernstiger delicten pleegden zelf ook ernstiger delicten pleegden. Voor moeders daarentegen bleek dat kinderen van moeders die ernstiger delicten pleegden juist minder ernstiger delicten pleegden. Deze laatste bevinding is verrassend. Een mogelijke verklaring is dat bij het plegen van ernstiger delicten de kans aanwezig is dat de moeder wordt veroordeeld tot een gevangenisstraf. Aangezien moeders veelal de primaire opvoeders zijn, worden kinderen van deze moeders mogelijk eerder uithuisgeplaatst dan wanneer vader ernstige delicten pleegt. Mogelijk voorkomt een plaatsing in een andere opvoedingssituatie (ernstiger) delictgedrag van het kind.

Naast de ouders hebben ook de vrienden, zeker in de adolescente, een belangrijke invloed op jongeren, ook als het gaat om deviant gedrag. In dit proefschrift is gekeken naar de relatie tussen crimineel gedrag van vrienden op crimineel gedrag van jongeren en in hoeverre het type delict, de status van de vriend(in) en wederkerigheid van de vriendschapsrelatie hierop van invloed waren. Ook hier is ervoor gekozen een andere groep te includeren dan de groep jongeren opgenomen binnen de gesloten jeugdzorg. In deze studie was een normatieve groep jongeren opgenomen, aangezien uit eerdere bevindingen bleek dat de mate van externaliserend probleemgedrag en delictgedrag hoog is binnen de jongeren opgenomen binnen de gesloten jeugdzorg en dus de invloed van vrienden minder goed te onderzoeken was. De bevindingen toonden aan dat, longitudinaal, jongeren die een vriend
hadden die vermogensdelicten pleegde en waarbij de vriendschap wederkerig was meer kans liepen om zelf ook vermogensdelicten te plegen. Wat betreft vandalisme bleek dat het hebben van een vriend met een hoge status die zich schuldig maakte aan vandalisme de kans verhoogde dat de jongeren zelf ook vandalisme pleegden. Voor geweldsdelicten werd geen verband gevonden. Dat de invloed van criminell gedrag van vrienden af blijkt te hangen van het type delict en vriendschapskenmerken kan behulpzaam zijn bij preventie- en interventieprogramma’s.

**DEEL 2 DE BEHANDELING**

Verandering tijdens behandeling
De eerdere bevindingen toonden aan dat niet alleen de jongeren een diversiteit aan problematiek laten zien, maar ook het gezin. Eén van de belangrijke aspecten van het nieuwe zorgaanbod is het betrekken van de ouders bij de behandeling. Dit was aanleiding om de voortgang van zowel de jongeren als hun ouders tijdens behandeling te bekijken (hoofdstuk 6). Volgens de rapportages van de jongeren zelf en hun ouders lieten de jongeren vooruitgang zien in zowel internaliserende als externaliserende problemen. Volgens de perceptie van de jongeren was er ook een significante afname van delinquent gedrag en drugsgebruik tijdens behandeling, terwijl het alcoholgebruik een stijging liet zien. Volgens de perceptie van de mentoren werd daarentegen geen vooruitgang ervaren op internaliserende en externaliserende problemen. Op het gebied van het gezin is de ouders ook gevraagd naar opvoedingsstress en gezinsfunctioneren. Tijdens de behandeling bleek de opvoedingsstress af te nemen. Er werd geen verandering gevonden in het gezinsfunctioneren. Hierbij moet vermeld worden dat de scores op gezinsfunctioneren bij aanvang van de behandeling volgens de ouders hoog waren, wat inhoudt dat er weinig problemen werden ervaren in het gezinsfunctioneren. Hierdoor bleef er weinig ruimte over voor verbetering tijdens behandeling.

De groep jongeren met de hoogste urgentie voor opname binnen de gesloten jeugdzorg omvat de groep meiden die slachtoffer zijn geworden van (gedwongen) prostitutie. Onderzoek naar meiden opgenomen binnen de residentiële jeugdzorg is tot op heden schaars. Gebaseerd op onze eerdere bevindingen dat er verschillen zijn tussen aanvangsproblematiek van jongens en meiden, richtte hoofdstuk 7 zich specifiek op risicofactoren van meiden voor opname en de vooruitgang tijdens behandeling. Hierbij zijn de meiden ingedeeld in drie groepen op basis van hun seksueel gedrag, resulterend in een groep meiden die slachtoffer is geweest van gedwongen prostitutie (28.7%), een groep meiden die promiscue gedrag vertoonde (42.5%) en een groep meiden die geen afwijkend seksueel gedrag vertoonde (28.7%). Slachtoffers van gedwongen prostitutie bleken vaker in het buitenland te zijn geboren en ze bleken vaker zwervend te zijn voor opname vergeleken met de twee andere subgroepen. Als gekeken wordt naar de risicofactoren voor opname aan de hand van analyses van de dossiers, dan komt naar voren dat slachtoffers van gedwongen prostitutie minder vaak internaliserende problemen lieten zien dan de twee andere groepen. Meiden die promiscue gedrag vertoonden, bleken minder vaak te spijbelen vergeleken met de meiden die geen afwijkend seksueel gedrag vertoonden. Echter, binnen het gezin was vaker sprake van geweld tussen de ouders. Ook hadden de meiden met promiscue gedrag meer negatieve gebeurtenissen meegemaakt en waren er vaker financiële problemen binnen het gezin vergeleken met de twee andere subgroepen. Wegloopgedrag, het zich bevinden in een deviatie vriendengroep en seksueel misbruik door personen buiten het gezin kwamen meer voor bij
zowel slachtoffers van gedwongen prostitutie als meiden die promiscue gedrag vertoonden. Naast de risicofactoren is ook gekeken naar het behandelverloop van de meiden in de drie subgroepen. Hieruit bleek dat ten tijde van opname er geen verschillen waren tussen de groepen met betrekking tot internaliserende en externaliserende problemen, drugsgebruik, binge drinking, zelfbeeld en coping. Wel bleek dat meiden die geen seksueel afwijkend gedrag vertoonden, significant hoger scoorden op zelfgerapporteerde crimineel gedrag vergeleken met de twee andere groepen. Als gekeken wordt naar het behandelverloop, dan komen significante verschillen naar voren tussen de groepen. Slachtoffers van gedwongen prostitutie laten een toename zien in internaliserende problemen, waar beide andere groepen een afname lieten zien. Daarnaast vertoonden deze meiden een afname in henzelfbeeld en maakten ze minder gebruik van emotionele coping. Deze bevindingen suggereren dat bij slachtoffers van gedwongen prostitutie de behandeling zich met name moet richten op internaliserende problemen, coping en zelfbeeld. Terwijl de bevindingen suggereren dat de primaire reden voor opname voor meiden die geen seksueel afwijkend gedrag lieten zien crimineel gedrag is, lieten deze meiden een duidelijke afname in crimineel gedrag zien. Daarentegen vertoonden ze een toename in drugsgebruik en een afname in zelfbeeld. De behandeling bij deze meiden zou aandacht moeten besteden aan drugsgebruik en zelfbeeld. Over het algemeen kan geconcludeerd worden dat onze bevindingen suggereren dat de meiden in de drie groepen verschillende behandelbehoeftes hebben. Toekomstig onderzoek onder een grotere groep meiden zal meer duidelijkheid moeten geven.

De groepsleiding

Terwijl groepsleiding een belangrijk deel uitmaakt van de behandeling van jongeren binnen de gesloten jeugdzorg is er in voorgaande studies weinig aandacht geweest voor de invloed van groepsleiding. Dit leidde ertoe dat in hoofdstuk 8 de invloed van het gedrag van groepsleiding is onderzocht. De resultaten gaven aan dat groepsleiding meer structurerend en controlerend gedrag liet zien naar jongeren met meer externaliserende problemen bij aanvang. Tevens lieten ze meer warmte en ondersteunend gedrag zien naar jongeren met meer internaliserende problemen bij aanvang van de behandeling. Daarnaast werden er geslachts- en leeftijdsverschillen gevonden. Groepsleiding liet meer controlerend gedrag zien naar jongens en oudere jongeren, terwijl ze naar meisjes en jongere adolescenten meer warmte en ondersteuning boden. Geconcludeerd kan worden dat groepsleiding haar gedrag naar de jongeren aanpast aan het probleemgedrag van de jongeren bij de start van de behandeling. Voor toekomstig onderzoek is het interessant om het gedrag van groepsleiding ook te koppelen aan de ontwikkeling van de jongeren gedurende de behandeling.

Deviancy training

Eén van de risico’s van groepsbehandeling, zoals uit eerdere studies is gebleken, is ‘deviancy training’. Deviancy training is het mechanisme waarbij jongeren elkaars deviante gedrag aanmoedigen. Eerdere literatuur heeft echter alleen deviancy training onderzocht bij jongens in residentiële settings. In hoofdstuk 9 is daarom deviancy training in meidengroepen binnen de gesloten jeugdzorg onderzocht door middel van een observatiestudie. Op basis van het criminele gedrag waren er drie mogelijke dyades: criminele, niet-criminele en gemixte dyades. Naast meiden opgenomen binnen de gesloten jeugdzorg, werd ook een controlegroep bestaande uit meiden van een middelbare school geïncludeerd. De resultaten naar aanleiding van de observaties lieten zien dat alle dyades normoverschrijdend
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DEEL 3 FUNCTIONEREN NA BEHANDELING

Een half jaar na behandeling zijn verschillende prestatie-indicatoren gemeten aan de hand van een telefonisch interview met de jongeren om inzicht te krijgen in hun functioneren na behandeling (follow-up onderzoek). Deze prestatie-indicatoren omvatten woonsituatie, contact met het gezin, sociaal netwerk, dagbesteding, politiecontacten, welzijn en middelengebruik. Uit dit follow-up onderzoek bleek dat een groot deel van de jongeren op zichzelf of in een gezinsituatie woonde na behandeling (75%), tevreden was over het contact met het gezin, een dagbesteding (school/werk) had en geen politiecontacten (meer) had. De hieropvolgende vraag was in hoeverre het functioneren van de jongeren na behandeling beïnvloed wordt door de problematiek voor aanvang van de behandeling en structurele behandelkenmerken. Uit de resultaten bleek dat zowel het aantal individuele- als gezinsrisicofactoren van invloed waren op het functioneren na behandeling (hoofdstuk 10). Adolescenten met meer individuele risicofactoren woonden vaker binnen een gezin na behandeling, maar hadden minder goed contact met hun gezin en lieten meer contacten met de politie zien binnen een half jaar na vertrek dan adolescenten met minder risicofactoren. Voor wat betreft de risicofactoren binnen het gezin bleek dat jongeren met meer risicofactoren voor opname, vaker op zichzelf woonden en tevens goede contacten hadden met het gezin na behandeling. Jongeren met meer risicofactoren op het gebied van het gezin voor opname hadden daarnaast vaker contacten met politie. Voor risicofactoren op het gebied van de omgeving voor opname werd geen relatie gevonden met het functioneren van de jongeren een half jaar na vertrek.

Naast de invloed van het aantal risicofactoren voor opname is in hoofdstuk 11 ook gekeken naar de invloed van structurele behandelkenmerken op het functioneren van de jongeren na vertrek. De structurele behandelkenmerken die hierin zijn meegenomen, waren de duur van de behandeling, reguliere danwel niet-reguliere uitstroom en het zich bevinden in een, op basis van geslacht, gemengde danwel ongemengde leefgroep. Onder reguliere uitstroom werd verstaan dat de behandeldoelen waren behaald (en de behandeling daarmee een natuurlijk einde kende), of dat de behandeling was beëindigd in overeenstemming met alle betrokken partijen. Niet-reguliere uitstroom hield in dat de jongere was weggelopen, de behandeling was beëindigd vanwege ongepast/agressief gedrag van de jongere, de behandeling was beëindigd vanwege de leeftijd van de jongere (18+) of omdat de gesloten machtiging was verlopen. De bevindingen lieten zien dat de structurele behandelkenmerken nauwelijks voorspellend waren voor het functioneren van de jongeren na behandeling. De duur van de behandeling bleek alleen gerelateerd aan de woonsituatie na behandeling: jongeren met een kortere behandelduur bleken vaker op zichzelf te wonen dan jongeren met een langere behandelduur. Wat betreft uitstroom,
bleek dat jongeren die regulier uitstroomden vaker contact hadden met ouders, maar ook een hogere frequentie van alcoholgebruik lieten zien. Daarnaast kwam naar voren dat meiden die opgenomen waren in ongemengde leefgroepen op basis van geslacht significant vaker politiecontacten hadden vergeleken met meiden die opgenomen waren in gemengde leefgroepen. Specifiekere analyses toonden aan dat meiden opgenomen in ongemengde leefgroepen vaker geclasseificeerd konden worden als starters op het gebied van crimineel gedrag. Dit vormt een aanwijzing dat deviancy training wellicht sterker is binnen meidengroepen. Eén van onze eerdere studies toonde al aan dat deviancy training binnen meidengroep voorkomt. Verder onderzoek zal moeten aantonen of deviancy training een groter risico vormt voor meiden binnen ongemengde leefgroepen dan in gemengde leefgroepen. Het is ook mogelijk dat meiden die opgenomen worden binnen ongemengde leefgroepen andere problematiek laten zien dan meiden die opgenomen worden binnen gemengde leefgroepen.


Tot slot zijn in hoofdstuk 12 alle bevindingen geïntegreerd en bediscussieerd. Over het algemeen kan worden geconcludeerd dat de in dit proefschrift eerste bevindingen naar gesloten jeugdzorg hoopgevend zijn. Ondanks de zwaarte van de problematiek en de hoge mate van comorbiditeit van probleemgedrag is er een positieve verandering te zien in het gedrag van de jongeren en ook na behandeling functioneert het merendeel van de jongeren goed. Desondanks had 28% van de jongeren na behandeling contact met de politie en scoorde 10% van de jongeren hoog op psychopathische trekken. Van de 28% van de jongeren met politiecontacten na behandeling, kon 33% gezien worden als startende delictplegers. Dit houdt in dat zij zijn begonnen met het plegen van delicten na behandeling. Deviancy training vormt een risico binnen de gesloten jeugdzorg en aanleiding om hier in de behandeling rekening mee te houden. Wellicht al bij de toewijzing van jongeren aan bepaalde leefgroepen op basis van bijvoorbeeld geslacht. Ook kwamen verschillen tussen jongens en meiden naar voren, welke een aanwijzing vormen dat beide groepen verschillende behandelbehoeften hebben. Meer onderzoek zal moeten plaatsvinden binnen de gesloten jeugdzorg om de behandeling aan deze problematische doelgroep te kunnen optimaliseren en een risico als deviancy training te minimaliseren.
This thesis (in order of appearance)


Other publications


onderzoek naar effectief handelen van politie ter voorkoming van recidive. Radboud Universiteit Nijmegen/Politie Gelderland-Midden: Final report.
Dankwoord
Dankwoord

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Curriculum Vitae
Karin Nijhof was born on June 29, 1982, in Apeldoorn, The Netherlands. She finished her secondary education (VWO) in 2000 at the Veluws College in Apeldoorn. She continued her study at the Radboud University in Nijmegen and received her master degree in Pedagogical Sciences in 2004. After her study, she started as a junior researcher on a project at the Radboud University Nijmegen, department of Developmental Psychopathology, in collaboration with the police department Arnhem. This two-year project focused on risk factors for future criminal behavior of underaged youth (8-14 years) and the effectiveness of actions taken by the police and judicial system. After she completed this project, she started as a PhD student on a ZonMw project at the same department. This project was in collaboration with Praktikon and involved the evaluation of a new compulsory residential treatment program for adolescents with severe behavior problems. She presented her research at international (EARA, ECDP) and national (Jeugd in Onderzoek) conferences. She also attended different international workshops and national courses. During these years she also evaluated a specific treatment program for victims of forced prostitution for a residential institution. Next to her research, she supervised master students with their thesis and she was teaching first year students in developmental psychopathology. Currently, she is working as a researcher at De Hoenderloo Groep, a Dutch institution for residential youth care. Together with several residential institutions, high schools, and universities she is also involved in the development of a national platform concerning the treatment of girls admitted to compulsory residential treatment.