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

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ABSTRACT

The aim of the present study was to examine the treatment progress of both adolescent's 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.

1. 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). There are seven categories that were considered for admission:

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

Before the availability of the 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.

1.1. Population characteristics

The population, for which the new treatment program was developed, showed problem behavior on several domains. Of the adolescents themselves 98% showed externalizing problem behavior, of which 67% also showed internalizing problems. The majority (62%) of the adolescents had been diagnosed according to DSM-criteria, of which the most prevalent diagnoses were oppositional defiant disorder (ODD), conduct disorder (CD) and attention deficit hyperactivity disorder (ADHD). About 70% of the adolescents have had police contacts before admittance and 42% used physical violence against family members. Concerning substance use, 59% of the adolescents used soft drugs (e.g., hash) on a regular base, 17% used hard drug (e.g.,

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heroin, cocaine) and 18% engaged in problematic alcohol use. More than one third was suicidal or showed auto mutilation and 42% experienced (serious) traumatic events. Not only were the adolescents engaged in various kinds of problem behaviors, also their families did. Adolescents mostly came from unstable and hazardous parenting environments and 30% experienced abuse by members of the family. Of the adolescents, 22% witnessed violence between parents. Concerning the parents, 36% of the mothers showed serious psychiatric or physical problems and 17% of the fathers. Next to the psychiatric or physical problems, 22% of the parents were addicted to drug and/or alcohol. Moreover, also the peer group could often be seen as problematic. Of the adolescents, over 60% belonged to a high-risk peer group (e.g., pimps, criminal friends) and 12% was abused by persons outside their own family (Van Dam, Nijhof, Scholte, & Veerman, 2010).

1.2. The new compulsory treatment program

The treatment program existed to offer a basic climate within the treatment group, consisting of approximately ten to twelve adolescents 12 to 18 years of age, and complementary individual interventions (e.g., EMDR, cognitive behavioral therapy, or aggression regulation therapy). The basic climate within the groups concerned the care, education, and treatment of the adolescents. Group care workers were responsible for the basic climate. The criteria for a positive basic climate included stimulating independence, rewarding positive behavior of the adolescent, being supportive and understanding, accepting, taking care of safety and a positive atmosphere, offering structure, being consequent, setting boundaries and rules, giving space to practice new learned behavior, and controlling conflicts in the treatment group. These criteria corresponded with the criteria described by Van der Helm, Klapwijk, Stams, and Van der Laan (2009). Next to the basic climate and individual interventions, daily routine, providing leisure activities, and guiding adolescents in their school activities and home work are important aspects of the treatment program.

The main goal of the new treatment program was to offer the adolescents a future perspective. To obtain the main goal of the treatment program some sub goals can be divided, including a decrease of the problem behavior, improving the relationships with others, improving the conscience formation, education and getting a diploma, finding a daily activity, getting insight into the role of parents in the adolescents' life, arranging the after care, and realizing a place to live for the longer term (Van der Poel, Rutten, & Sondeijker, 2008). The new treatment program was divided in four stages ranging from more to less restrictiveness, which means an increase in opportunities and autonomy (such as more time for telephone conversations, time spend on the internet, and longer leaves). The first stage includes describing the future perspective based on the individual needs. The second stage focuses on behavioral change in which pro social behavioral is encouraged and antisocial behavior is discouraged using theories such as operant conditioning, cognitive behavioral approach, and social learning theory (Van der Poel et al., 2008). The third stage includes the preparation of the future perspective. Finally, the fourth stage concerns the transfer to a new living situation.

1.3. Parental involvement

In addition to individual interventions, the new treatment program focused intensively on the adolescents' families to cope with the 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. Moreover, the involvement of parents in the treatment program increases the effectiveness (e.g., Harder, Knorth, & Zandberg, 2006; Gorske, Sebralus, & Walls, 2003; Hair, 2005). Geurts (2010) found that family focused residential treatment was associated with better treatment outcomes than regular residential treatment in terms of adolescents' problem behavior, successful discharge, parental stress, and satisfaction. Prior findings showed that, concerning the new compulsory residential treatment program, 89% of the families were involved in the treatment of their child and that mostly concerned weekly contact (Van Dam et al., 2010).

Especially when the perspective of the adolescent included that he or she could return home, family interventions were offered, for example Functional Family Therapy (FFT) or Multidimensional Family Therapy (MDFT). It appeared that 68% of the families received family interventions, of which 20% received intensive family interventions (Van Dam et al., 2010). The present study is the first to examine the treatment improvement of both adolescents admitted to the new compulsory residential treatment program and their families.

1.4. Informant (dis)agreement

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).

1.5. Treatment improvement

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 et al., 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

(Deater-Deckard & Scarr, 1996; Crawford & Manassis, 2001; Creasey & Reese, 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 et al. (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.

2. Method

2.1. Design

Five 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.

2.2. 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. 49% had both parents 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 sex-mixed or sex non-mixed groups during treatment; 27% of the adolescents were admitted to an all female group, 40% to an all male group, and 34% to a sex-mixed 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 complete the 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.

2.3. Measures

2.3.1. Problem behaviors

Problem behaviors, based on adolescent self-report, were 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.

2.3.2. 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.

2.3.3. Drugs 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., 2008; Van der Laan & Blom, 2005). 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*. Higher scores indicated more problematic drugs use.

2.3.4. 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.

2.3.5. 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 consisted 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.

2.3.6. 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.

2.3.7. 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.

2.3.8. Statistical analyses

Before conducting the main analyses, attrition analyses were performed. To test whether there was selective attrition in our study, adolescents who participated at time of entry (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 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).

3. Results

The treatment progress of internalizing problem behaviors, according to the adolescents, parents, and group care workers is illustrated in Fig. 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 Fig. 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 Fig. 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 Fig. 3).

In addition to adolescents' functioning an improvement on family functioning was revealed. As seen in Fig. 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.

4. 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,

Table 1
T-tests concerning the selective attrition of participating informants based on the number of risk factors.

		Adolescents						Parents						Group care workers					
		NP		*P*				*NP*		*P*				*NP*		*P*			
		M	*SD*	*M*	*SD*	*F*	*p*	*M*	*SD*	*M*	*SD*	*F*	*p*	*M*	*SD*	*M*	*SD*	*F*	*p*
T1	Individual RF	7.84	2.12	7.43	2.12	.15	.10	7.49	2.12	7.73	2.13	.10	.33	7.48	2.17	7.67	2.08	.01	.40
	Family RF	6.00	2.59	6.09	2.82	1.00	.77	6.38	2.80	5.40	2.52	2.05	.00	5.93	2.59	6.20	2.90	2.71	.36

Note. RF = risk factors, NP = non-participating informants, P = participating informants.

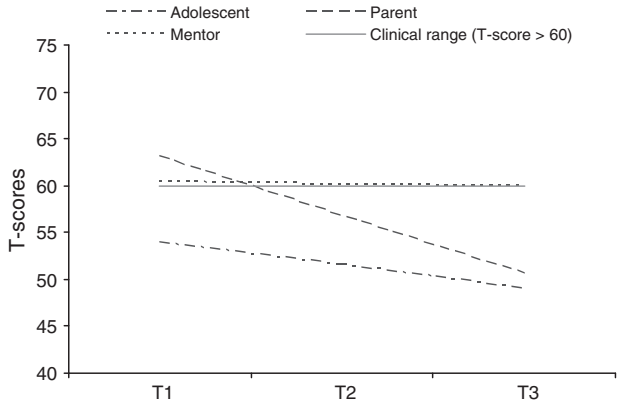

Fig. 1. Treatment progress of internalizing problems in *t*-scores according to adolescent, parent, and group care worker's perceptions.

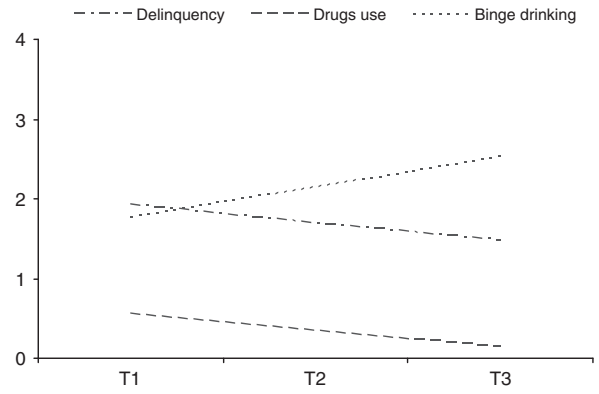

Fig. 3. Treatment progress of criminal behavior and substance use according to adolescent perceptions.

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. Although these findings concerning the improvement confirmed prior studies, this study makes a contribution to the existing literature in that also the perceptions of the group care workers were included and because the treatment concerned a new residential treatment not evaluated before. 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 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 intervene 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) emphasises 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 et al., 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 overemphasise problems

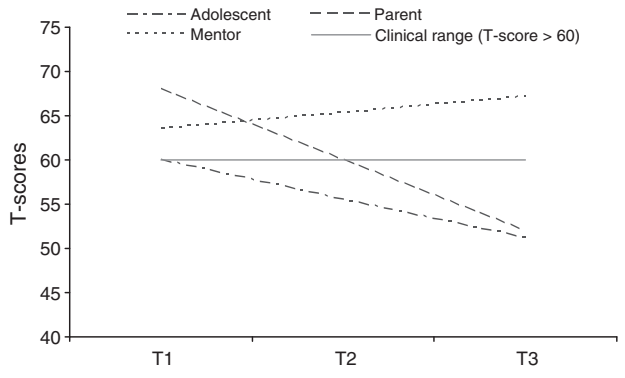

Fig. 2. Treatment progress of externalizing problems in *t*-scores according to adolescent, parent, and group care worker perceptions.

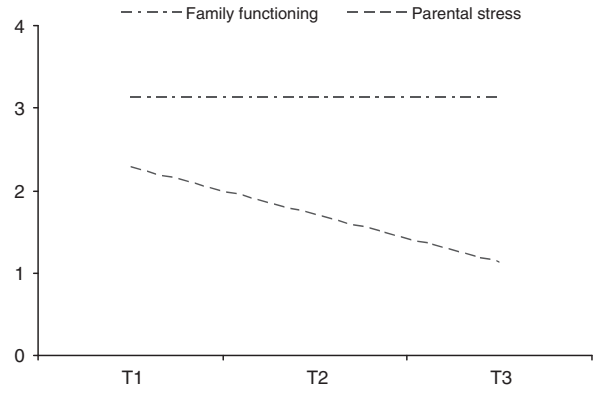

Fig. 4. Treatment progress of family functioning and stress according to parent perceptions.

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 et al., 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 are 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, and 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. The third limitation is that no differentiation between subgroups could be made. The sample was too small to reliably differentiate, with a lack of statistical power as a result.

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 et al., 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.

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