Effectiveness of residential treatment methods for youngsters with severe behavioural problems: Findings from a one year follow-up study

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Abstract

This study aims to determine the efficacy of recently developed residential treatment programmes in Holland for the treatment of juveniles with severe behavioural problems. The development of youngsters admitted to four different programmes was investigated over a period of one year using residential staff ratings and the CBCL. After one year 74 percent of the juveniles were still attending the programme, six percent had left according to plan and 20 percent had left prematurely. Sizes of programme effectiveness ranged from 0.4-0.8. It is concluded that residential programmes specifically tailored to the needs of severe problematic youngsters are more successful in binding youngsters with severe behavioural problems than general residential care programmes. These programmes also exert a beneficial effect on the behavioural and emotional development of the youngsters after one year, although for many youngsters prolongation of treatment is needed.

Key words: residential treatment, troubled children, behavioural difficulties, treatment outcome, premature leave

Introduction

In the Netherlands each year about nine thousand youngsters live in residential centres, largely for the treatment of serious behavioural and emotional difficulties. In the past the outcome figures were not very optimistic. Both in the Netherlands and in studies from abroad, it was found that about 30 to 50 percent of the youngsters leave the residential institutions prematurely, usually because of unmanageable behavioural problems (Baekeland & Lundvall, 1975; Blotsky, Dimperio & Gosset, 1984; Klingsporn, Force & Burdsal, 1990; Curry, 1991; Scholte, 1997; Jansen et al., 1996). Recently residential institutions in Holland have introduced new programmes using treatment methods specifically designed for the treatment of juveniles with severe behavioural problems. The aim of this study is to collate figures about the nature and outcome of these programmes. To this end the behavioural and emotional development of the youngsters in these programmes was monitored during one year.

In this article the nature of the treatment methods used in these new programmes is described and an analysis of the type of youngsters that were admitted is presented. Next the

development of the youngsters during a one year stay in these programmes is investigated, the effectiveness of the programmes is determined and the findings are discussed. First, the design of the study is briefly addressed.

Methods

Research groups

The sample is composed of all youngsters admitted to seven different residential programmes for the treatment of juveniles with severe behavioural difficulties in Holland in 2002. Programme selection took place according to the following criteria:

- specifically designed for the treatment of behaviourally severe problematic youngsters;
- recently introduced (within the last three years);
- robustly implemented (Van der Ploeg & Scholte, 2001).

The programmes participating in this study belonged to the top ten of programmes that were most robustly implemented according to a previous research (Van der Ploeg & Scholte, 2001). The programmes thus selected used the following four different treatment methods: four programmes relied on behavioural modification as the core treatment method, the other three covered psycho-dynamic treatment, experiential learning and structured group living as means to promote developmental adjustment. Originally two more programmes were also included in the research. However, these programmes were excluded from the analysis, one because it was not residential in nature but community based and the other because it did not participate in the one-year follow-up measurement due to the high work-load of the residential staff members.

At the start the total sample comprised 105 youngsters. The mean age was 14.9 (standard deviation 1.9 years). Twenty-five percent of the sample was female, and 35 per cent had an ethnic minority background. The psycho-social development of these youngsters was tracked over a period of one year. The response rate at the follow-up was 88 youngsters or 83 percent. The mean age at the second follow-up was 15.9 (standard deviation 1.9 years).

Research instruments and procedures

The following research instruments were used to measure the psycho-social characteristics of the youngsters at the admission, the development of the youngsters during the treatment and the effectiveness of the treatment programmes.

The *psycho-social characteristics* were assessed by the residential staff on admittance to the centre. To this end the staff filled in a questionnaire that tracks psycho-social risk factors in the lives of youngsters. Previous research proved this instrument measures multiple psycho-social risk factors in the lives of juveniles reliably and validly (Scholte, 1995; 1998).

The *psycho-social development* of the youngsters was monitored by the residential staff that guided the treatment of the youngsters during the treatment period. To this end the staff members filled in a structured interview covering the psycho-social functioning of the youngsters in the living group and at school/work. They also assessed the progress of the juveniles for psychological (e.g. self-esteem) and behavioural (e.g. delinquency, aggression) adapattion. These measurements took place at the one-year follow-up.

In addition to the assessments made by the members of the residential staff, effect-research should use standardized, objective outcome measures, not only to allow for internal and external comparability of the outcome findings, but also to reduce the influence of such threats as 'self-justifying' assessment by the residential staff members (Lyman & Campbell, 1966). In this study the *behavioural and emotional development* of the youngsters was therefore also measured by means of a standardised test. To this end the Dutch version of the Child Behav-

iour Checklist was used (Achenbach, 1991; Dutch Version: Verhulst, Van der Ende & Koot, 1996). In this questionnaire the primary caretakers assess the youngsters on externalizing behavioural items, such as "I like to attract attention" and "I am often disobedient", as well as on internalizing items, such as "I often feel sad and lonely" etc., using three point rating scales (not applicable, sometimes applicable and often applicable). The CBCL covers of the following problem behaviours of juveniles:

- *Aggressive behaviour*, covering items like easily irritable, pestering, quarrelling, fighting, short-tempered, restless, disobedient and oppositional.
- *Antisocial behaviour*, covering items like vandalism, truancy, theft and running away.
- *Social withdrawn behaviour*, covering items like shyness and avoiding company.
- *Anxious-depressed behaviour*, covering items like feeling sad, lonely and insecure.
- *Attention problems*, covering items like lack of concentration and being overactive.
- *Social problems*, covering items like lack of being often nagged or avoided by others.

The first two subscales are combined into one measure to assess the development of externalizing behavioural problems, while the third and fourth subscale are combined to assess the development of the internalizing behavioural problems. All the items of the CBCL together constitute the scale "Total Problems", which can be used as a measure for overall adapattion. Furthermore, the CBCL-measures are normalised for the Dutch youth population and thus present a measure whereby the behavioural and emotional developmental status of youngsters can be conceptualized as "normal" and "clinical (or in need of professional help)". Hereby the term "clinical" is reserved for youngsters scoring in the 80th or higher percentile in the normal Dutch youth population (Verhulst et al., 1996).

The CBCL was filled in by the group-workers that guided the youngsters in their daily living situation during their stay in the residential treatment centre. A first assessment took place during the first month of the treatment, and a second assessment took place twelve months later.

Quasi experimental design

To assess the effectiveness of interventions over time the use of a control-group-experimental group design with random assignment of individuals to both groups is recommended. This way the influence of other factors than the treatment on the development of the treated individuals is ruled out. However, in field settings random assignment of individuals to experimental and control conditions is not feasible, as for ethical reasons practitioners never are willing to withhold treatment from individuals in need. In these kinds of settings non-experimental designs are recommended (Shadish et al., 2002). We therefore used a quasi-experimental design in which the developmental measures of the treated individuals on the pre-test and the post-test are compared with the development of the youngsters in the normal Dutch population. In this way bias due to age and gender is ruled out as these normative samples can be viewed as a control group. However, this strategy does not correct for the natural course of the behavioural and emotional development taking place among youngsters with severe behavioural problems. To rule out the possible influence of this factor, the development of the youngsters receiving treatment must additionally be compared with a reference group of youngsters with behavioural and emotional difficulties not receiving treatment. In this study this reference group was arrived at by using the youngsters who left the residential programmes prematurely and who did not receive a behavioural or emotional treatment after their premature leave as a reference group.

Findings

First, we will describe the nature of the residential treatment programmes. Then we will present the characteristics of the youngsters who were admitted to these programmes.

Next we will focus on the efficacy of the programmes. To this end we first present the drop-out ratio during the treatment. Second, we will investigate the psycho-social functioning of the youngsters as perceived by the residential staff that guided the youngsters during the treatment. Third, we will depict the behavioural and emotional development of the youngsters using the standardised behavioural measures of the CBCL at the start of the treatment and at the follow-up.

The nature of the residential treatment programmes

The nature of the residential treatment programmes participating in the study can be characterised as follows.

Enhancement of social competence by behaviour modification

The programmes using this method of treatment aim to resolve social-interactional difficulties and antisocial and aggressive behaviour in both male and female youngsters of twelve years and older.

The youngsters who qualify for the treatment display maladaptive social and interactional behaviour both in the family, at school, with peers and during leisure time. The treatment itself is guided by the principles of behaviour modification, wherein maladaptive behaviours are viewed as largely resulting from past social dysfunctional learning experiences. Re-mediation takes place by a systematic management of positive and negative behavioural consequences by the on-line child care workers in the residential social learning environment. Daily-living, school and social interactive tasks are tailored to the individual cognitive and social capabilities of the youngsters and the reinforcement schedules fit the specific maladaptive behaviours of the individual youngsters to gain optimum individual learning curves promoting the adequate taxation of social situations and the expression of (pro-)social behaviour appropriate to the situation.

Psycho-dynamic treatment

This programme is specifically designed for youngsters who show severely emotional and behavioural problems due to parental neglect during early childhood socialisation. The target youngsters are strongly self-centred and unable to maintain healthy relationships with adults and peers. They are permanently in conflict with their social environment and are usually unable to postpone the fulfilment of needs.

The psycho-dynamic treatment aims to reinforce ego-strength and ego-resilience. To this end a daily living environment is offered wherein the group-workers express loyalty towards the youngsters and at the same time instruct the youngsters how to test reality and how to learn to control impulses.

Adventurous learning

This programme aims to serve youngsters of an older age (16 years and older) with multiple developmental problems. The youngsters qualifying for treatment display severe problems at all three core domains of personal development (emotional, behavioural and personality). Furthermore, they cope with severe disturbances in all social areas (both in the family, at school/work and with friends/during leisure time). Moreover, they have dropped out of the regular programmes of the Dutch juvenile welfare system so often prematurely that the alternative approach of adventure-based learning is offered as a last resort.

The adventurous learning programme models active self-supporting adaptive behaviour and aims to restructure self-esteem, self-respect and self-insight. To reach these goals the youngsters are transplanted to a completely new social learning environment, like an outdoor farm abroad, where challenging conditions of living urge the youngsters to take care of themselves and to work and live together as a self-supporting group. To internalise the new experiences of

self-supportive living periodically individual and group-therapeutic sessions take place at the outdoor location.

Structured group living

This programme offers a structured, highly predictive environment specifically tailored to male and female youngsters of twelve years and older coping with severe behavioural and emotional difficulties with undertones of attention deficits, hyperactive-impulsive behaviour and problem behaviours related to autism or the pervasive developmental disordered spectrum. The youngsters are subjected to intensive permanent guidance with consistent structure and predictable daily living tasks combined with a structured stimulation of learning in a special need educational setting. Here the learning tasks are tailored towards the individual needs of the children and a positive learning curve is established by gradual introduction of independent task accomplishment.

The characteristics of the youngsters in the programmes

How can the youngsters in the various programmes be characterised? Table 1 presents the socio-demographic characteristics of the youngsters and the behavioural and emotional problems at the start of the treatment. The characteristics of the youngsters that left programmes prematurely are also presented, as this group will be used as a reference group to determine the effectiveness of the programmes mutually.

Table 1
Socio-demographic characteristics of youngsters and behavioural and emotional problems at the start of the treatment

	total sample (N = 105)	*reference group* (N = 22)	*behaviour modification* (N = 52)	*psycho-dynamic* (N = 11)	*structured group living* (N = 9)	*adventurous learning* (N = 11)
Age (mean & sd)	14.9 (1.9)	15.3 (1.7)[1]	14.7 (1.5)	15.9 (1.8)	12.0 (1.3)	16.6 (1.3)
Gender (% males)	75%	73%[2]	72%	67%	100%	80%
Ethnicity (% Dutch)	65%	60%[2]	67%	34%	92%	60%
CBCL-Total problems	90/84%[3]	95[4]/91%[5]	86/77%	92/88%	95/100%	91/90%
CBCL-Externalizing	88/80%[3]	90[4]/86%[5]	85/77%	89/75%	93/79%	90/90%
CBCL-Internalizing	84/74%[3]	87[4]/81%[5]	83/73%	79/63%	92/89%	81/60%

[1] $p < 0.05$, Scheffé multiple range test across reference group and programmes; [2] $p < 0.05$, $\chi 2$-test; [3] first figure: mean CBCL-percentile score in general Dutch youth population, second: percent clinical cases; [4] p = non-significant, Scheffé multiple range test across reference group and programmes; [5] p = non-significant, $\chi 2$-test across reference group and programmes.

The mean age of the children in the total sample was about fifteen years, three quarters were male and one third had non-Dutch ethnic backgrounds. With regard to these demographic factors differences are found between the programmes, with the programme for structured group living serving the youngest children, only males and relatively few youngsters with a non-Dutch background, and the other programmes providing services for older youngsters, both males and females and both with Dutch and non-Dutch ethnic backgrounds.
In all programmes the mean severity scores of both the total and of the internalizing and externalizing behavioural end emotional problems fell within the clinical range of the CBCL. The

vast majority of the children had behavioural and emotional difficulties in the clinical range at the start of the treatment, although small proportions of the youngsters also had non-clinical scores. This suggests that also some children with less severe behavioural and emotional problems were admitted to the programmes, implying that the programmes are in need of tightening up their intake procedures. In particular in the behavioural modification programmes the percentage of youngsters with fewer severe overall problems was relatively high, as can be deducted from the relatively low clinical range percentage on the CBCL scale 'Total problems'.

Attending and leaving

As was stipulated in the introduction, a major problem in residential care is the high proportion of nearly half of the youngsters leaving the institutions before the intended treatment goals are reached. Concerning premature leave it was found in this study that 74 percent of the youngsters were still attending the treatment programme at the one year follow-up and that 6 percent had ended the treatment according to plans. Treatment ending according to plan was equally dispersed across the various programmes ($\chi 2 = 2.24$, df = 3, $p > 0.05$).
The remaining 20 percent had left the treatment programmes prematurely. Premature leave was also about equally dispersed across the various programmes ($\chi 2 = 1.45$, df = 3, $p > 0.05$) and took on average place within the first six months of the treatment.
More than a fourth of these drop-out youngsters went back to their families of origin, a third were admitted to another residential setting and a tenth started to live independently. Of the remaining fifth the primary living environment remained unsettled after the leave.

Residential staff ratings

To trace the development of the youngsters during programme delivery the residential staff was asked to assess the behavioural, emotional and personality development of the youngsters, as well as the psycho-social functioning of the youngsters with peers, adults, at school/work and during leisure time. Ratings were made on a five-point scale with rating one depicting "very much progress", rating three depicting the neutral position and rating five depicting "a severe backslide". Table 2 presents the findings in this respect.

Table 2
Development of the youngsters as perceived by the residential staff

	total sample (N = 105)	*reference group (N = 22)*	*behaviour modification (N = 52)*	*psycho-dynamic (N = 11)*	*structured group living (N = 9)*	*adventurous learning (N = 11)*
mean growth of self-esteem	2.8	2.9[1]	2.8	3.0	2.8	2.4
mean progress in relations with peers	2.5	2.9[1]	2.4	2.6	2.2	2.4
mean progress in relations with staff	2.3	2.5[1]	2.2	2.6	2.4	2.2
mean progress in relations with parents	2.5	2.8[1]	2.4	2.2	2.2	2.6
mean school/work motivation	2.8	3.1[1]	2.8	2.8	2.6	2.3
positive overall developmental progress	83%	56%[2]	91%	100%	88%	89%
expression of problem behaviours	43%	60%[2]	46%	27%	30%	25%

[1] p = non-significant, F-test across reference group and programmes; [2] $p < 0.05$, $\chi 2$-test across reference group and programmes.

The residential staff rated the overall psycho-social development of the youngsters during treatment delivery in more than 80 percent of the cases as positive. Progress was in particular reported among youngsters who continued the treatment, as 88-100% of the youngsters in the four programmes developed well according to the staff ratings. Less progress was reported among the drop-out youngsters in the reference group, where only 56% developed well. The difference between the reference group and the programmes was statistically significant.
Most progress was perceived in the domain of social relationships, in particular with regard to the interactions with staff-members, peers and parents. Less progress was perceived in self-esteem and motivation for school/work, although the mean overall ratings in these domains were still at the positive side of the scales. No significant differences were found in the mean ratings of the residential staff across the various programmes, suggesting that in all programmes equal numbers of youngsters progressed in these respects.
Regarding the display of problem behaviours like involvement in fights, vandalism, delinquency, truancy, aggression, drugs-abuse and rule-disobedience, the residential staff of the psychodynamic treatment, structured group living and adventurous learning programmes reported about 75 percent of the youngsters not showing these problem behaviours during programme delivery, while the staff of the behaviour modification programme reported 54 percent of youngsters not showing such problem behaviours. The behaviour of the youngsters in the reference group was rated the least favourable. According to the staff ratings only 40% of these youngsters did not display problem behaviours during the treatment. These differences between the programmes and the reference group were statistically significant.
Summarizing, it is found that in nearly all programmes the residential staff perceived substantial progress among the vast majority of the youngsters who regularly stayed in the treatment programmes, while less developmental progress was perceived among the youngsters who had left programmes prematurely. Although in comparison with the reference group all programmes thus were rather successful in re-mediating the behavioural problems of the youngsters, the behaviour modification programme was found least successful in this respect.

Programme effectiveness

As was stipulated in the methods section, assessments made by residential staff members bear the risk of being influenced by self-justification. This poses a threat on the validity of the outcome-figures. In other words, the developmental picture presented before could have been positively biased by optimistic attitudes of staff members.
Assessing outcomes by means of standardized tests can account for this threat. Therefore, the externalizing and internalizing scales of the Child Behaviour Checklist were used in this study as additional measures to trace the behavioural and emotional development of the youngsters.

To compare the developmental outcomes of the youngsters across programmes the progress gained by treatment programmes is usually expressed as a standardised effect size score or ES (Lipsey & Wilson, 1993). In random experimental-control group designs with equal means and standard-deviations on the pre-test scores in the experimental and control group this ES is calculated as the post-treatment means of the control group subtracted from the post-treatment mean in the experimental group divided by the standard deviation of the control group. Positive scores indicate that the experimental group was superior to the control group. Because ES's are standardized, they are comparable across studies. An intervention yielding an ES of .60 is twice as powerful as an intervention yielding an ES of .30.
Rosenthal & Rubin (1982) developed a method to translate the ES into a measure of practical significance. Dividing the ES by a factor two yields the relative difference in success rates between the experimental group and the control group. For example, an ES of .40 indicates that the experimental group had a 20 percent higher success rate than the control group.

In quasi-experimental designs using a non-randomized group of non-treated youngsters as a reference group the ES can be arrived at by correcting the mean post-test scores for between group differences on the pre-test scores using regression analysis (Tabachnick & Fidell, 1989) and subtracting the corrected post-test scores in the reference group from the corrected post-test scores in the treatment groups divided by the standard deviation of the reference group. Table 3 present the outcome figures for the various treatment programmes thus arrived at.

Table 3
Programme effects after one year as standardized effect sizes related to the non-treated group

	total sample (N = 105)	*reference group (N = 22)*	*behaviour modification (N = 52)*	*psycho-dynamical (N = 11)*	*structured group living (N = 9)*	*adventurous learning (N = 11)*
CBCL-Total problems	0.45	0	0.46	0.68	0.91	0.81
CBCL-Externalizing	0.43	0	0.38	0.64	0.97	0.87
CBCL-Internalizing	0.28	0	0.31	0.47	0.40	0.47

A mean effect size of .45 was found with regard to the CBCL dimension of total problems, suggesting that compared with the reference youngsters about 20 percent more youngsters improved in their overall behavioural and emotional problems.
The ES figures further show that programmes were most effective in the domain of externalizing behavioural problems (delinquency and aggression) and least effective in the domain of internalizing behavioural problems (anxious-depressed and social withdrawn behaviour).
The table further shows that the effectiveness varied across programmes. Structured group living and adventurous learning were nearby twice as effective as behaviour modification, and psycho-dynamic treatment performed in between these extremes.
However, in the ES the effectiveness of a programme is calculated over the total range of the measurements, thus including improvements made by youngsters who displayed both clinical and nonclinical problem behaviour at the start of the treatment. This measure thus does not give insight into the number of youngsters who during their treatment moved from the clinical to the normal domain with regard to their problem behaviour. An additional method to gain insight in the effectiveness of a programme in clinical settings is to calculate the net amount of clinical significant change, for instance the number of individuals of which reliably can be stated that they have moved from the clinical range to the normal range on the outcome measures. This measure is arrived at by calculating the Reliable Change Index of Jacobson & Truax (1991). Table 4 summarizes the effects when this measure is applied to the CBCL-outcome scales.

Table 4
Programme effects after one year as percentages clinical change

	total sample (N = 105)	*reference group (N = 22)*	*behaviour modification (N = 52)*	*psycho-dynamic (N = 11)*	*structured group living (N = 9)*	*adventurous learning (N = 11)*
CBCL-Total problems	17%/11%[1]	6%/6%[2]	11%/17%[2]	14%/0%[2]	50%/0%[2]	44%/11%[2]
CBCL-Externalizing	12%/8%	0%/6%[2]	6%/8%[2]	14%/0%[2]	25%/12%[2]	56%/11%[2]
CBCL-Internalizing	17%/14%	11%/17%[3]	19%/15%[3]	14%/14%[3]	13%/0%[3]	22%/11%[3]

[1] first figure: percentage clinical range – > normal range, second figure: percentage normal range – > clinical range; [2] $p < 0.05$, $\chi 2$-test; [3] p = non-significant, $\chi 2$-test.

About a fifth of the cases that were clinical at the start of the programme became nonclinical on the CBCL total problems scale during the first year of programme delivery, a tenth worsened and moved from the nonclinical into the clinical range, and the remaining cases did not change. This suggests that the net amount of clinical change in the total sample was only modest. However, the outcome figures of the individual programmes diverged considerably in this respect. Adventurous learning and structured group living have rather large percentages of positive clinical change, psycho-dynamic treatment also has a substantial percentage of net positive clinical change, but the three programmes relying on behaviour modification show only a small net positive gain on the CBCL-internalizing scale.

The ES's findings thus suggest that the youngsters in the treatment programmes indeed considerably progressed over a period of one year. However, the findings with regard to the amount of clinical change suggest that after one year still a considerable number of youngsters display behavioural problems in the clinical range, specifically in the programmes that used behaviour modification as a method to remedy the problems of the youngsters.

Conclusion and discussion

In the last decades rather high rates of youngsters leaving residential institutions before their planned stay was finished were witnessed in the domain of residential care for juveniles with behavioural and emotional difficulties in Holland. This drop out was largely caused by unmanageable problem behaviours of the youngsters, like delinquency, aggression, rule-disobedience and running away. To redress this unwanted phenomenon new residential programmes were developed specifically designed to treat youngsters displaying severe behavioural problems. The treatment methods applied by these new programmes include enhancement of social competence by behavioural modification, psycho-dynamic treatment, structured group living and adventurous learning. In this study the efficacy of these new programmes was investigated.

Reaching the target group

The study of the psycho-social characteristics of the youngsters participating in the programmes showed that the vast majority of the admitted youngsters displayed behavioural and emotional difficulties in the clinical range according to the Child Behaviour Checklist. This suggests that most youngsters admitted to the new treatment programmes fall within the scope of the target population of youngsters with severe behavioural difficulties. The behaviour modification programmes show a slight exception to this, as in these programmes a quarter of the admitted youngsters did not display behavioural difficulties in the clinical range at the start of the treatment. This suggests that particularly the behavioural modification programmes are in need of tightening up their intake-procedures.

Stayers and premature leavers

It was found that about 20 percent of the youngsters dropped out of the programmes. Although this figure implies that still one out of every five youngsters did leave the new residential programmes prematurely due to negative reasons, this drop-out rate compares favourably with the 51 percent premature leaves from residential care found in previous studies of the efficacy of residential care in Holland (Scholte & Van der Ploeg, 2000). In this respect the new residential programmes investigated in this study display a considerable gain in performance compared with the residential programmes studied in previous years. Moreover, the youngsters participating in this study belonged to the target group of youngsters with severe behavioural problems that formerly dropped out of residential care, which makes the relatively low drop-out figure of 20 percent even more impressive.

The development of the youngsters as perceived by the residential staff

In all programmes the residential staff reported a considerable progress in psycho-social development for nearby all of the youngsters. Progress was perceived in many areas of socialisation, in particular with regard to self-esteem, the relationships with parents, peers and residential staff and in the domain of school/work.

According to the residential staff about three-quarters of the youngsters in the psycho-dynamic treatment, structured group living and adventurous learning programmes did not display problem behaviours like aggression, delinquency and drugs-abuse during the one year treatment period investigated here. In this respect, the behaviour modification programmes performed less well, as here only a little more than half of the youngsters did not show such problem behaviours. It was further found that the development of the youngsters who had left prematurely was rated worst, as about two thirds of these youngsters showed no improvement in behavioural problems during their stay in the programme according to the residential staff ratings.

Overall programme effectiveness

To account for possible influences related to psychological mechanisms like self-justification, the developmental ratings of the residential staff were put on trial by additionally assessing the behavioural and emotional development of the youngsters by means of the Child Behaviour Checklist. Using this measure mutually comparable, standardised effect sizes were calculated regarding the developmental progress of the youngsters.

The grand mean of the effect size of all programmes was .45. In meta-analytic studies of the effects of treatment programmes for youngsters with serious adjustment problems in behaviour a grand mean of about .40 is reported (Lipsey & Wilson, 1993; 1998). The effect size found in this study thus suggests that the treatment programmes investigated in this study were all together about equally effective. However, looking at the development of the youngsters using the criterion of the number of individuals moving from the clinical to the nonclinical or 'normal' range showed only a small percentage of youngsters improving. This suggests that, although the programmes succeed in turning the behavioural and emotional development of the youngsters for the better, after one year of treatment many youngsters still display serious behavioural problems. This suggests that a continuance of the treatment is still needed for these youngsters.

The CBCL developmental measures showed smaller percentages of youngsters improving than the direct assessments of the residential staff members. This suggests that, compared with the outcome of the objective standardised measures, the residential staff rated the development of the youngsters indeed rather optimistically. During residential treatment the development of the individual youngsters is usually periodically monitored using assessment by staff-members as a criterion to decide whether the treatment goals are reached or adjustment of treatment is needed (Lyman & Campbell, 1996; Scholte & van der Ploeg, 2000). The gap between the assessments of the staff members and the outcomes of standardized measures found in this study stresses the importance of using both the judgements of residential staff members and the outcomes of standardised measures at these periodical evaluations to assess the progress of the treatment of individual cases.

Effectiveness of the specific programmes

The effect sizes of the individual programmes ranged from .30-.90. The behaviour modification programme displayed the lowest effect size and the programmes relying on structured group living and adventurous learning displayed the highest. The psycho-dynamic treatment programme fell in between these extremes. Although all residential treatment programmes thus positively influenced the behavioural and emotional development of the youngsters, the outcome figures suggest that the programmes directed at enhancement of social competence by behaviour modification performed least well.

In all programmes the effect sizes in the domain of the externalizing problems were about twice the effect sizes in the domain of the internalizing problems, suggesting that the programmes were particularly effective with regard to externalizing behavioural problems like delinquent and aggressive behaviour. This compares well with the nature of the programmes, as these were primarily intended to adjust severe behavioural problems.

In a recent meta-analysis of the effects of residential treatment programmes for non-institutionalized juvenile offenders, behaviour modification turns out to be one of the most effective treatment methods while wilderness/challenge/adventurous learning is subsumed under the least effective (Lipsey & Wilson, 1998). In this study the contrary is found. This could be due to the fact that the target populations of the programmes investigated in the cited meta-analysis comprised non-institutionalized juvenile offenders, while the target-populations of the programmes investigated in this study comprised youngsters with severe behavioural problems, of which many had dropped out of the regular residential treatment programmes before. Bearing this in mind the findings of our study suggest that treatments like structured group living and adventurous learning are more effective types of intervention than the method of enhancement of social competence using behaviour modification when dealing with behaviourally disturbed youngsters. However, further research has to show whether this hypothesis is true or not.

Summarizing, this study shows that recently introduced residential treatment programmes for severely disturbed youngsters in Holland succeed in keeping up to 80 percent of the youngsters within the programmes. Moreover, many of the youngsters in the new programmes show a significant improvement with regard to their behavioural and emotional development. These findings compare favourably with the outcome figures of previous research on the effectiveness of residential care for youngsters with behavioural and emotional problems done both in the Netherlands (Scholte, 1997; Jansen et al., 1996) and abroad (Baekeland & Lundvall, 1975; Blotsky, Dimperio & Gosset, 1984; Klingsporn, Force & Burdsal, 1990; Pfeiffer & Strzelecki, 1990; Curry, 1991; Bullock, Little & Millham, 1993).

The fact that after one year a substantial number of youngsters still not qualify for the criterion "having moved to the normal range with regard to their problem behaviour" does not deny the effectiveness of the programmes, as it only calls for a prolongation of the treatment of the youngsters still in care. The findings of this study thus clearly suggest that the recently introduced residential treatment programmes in the Netherlands specifically tailored to the needs of severe problematic youngsters are better equipped to bind and re-socialise such youngsters than were the former residential programmes, although a prolongation of the specific treatment after one year is still needed for many youngsters.

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