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Coming on strong: Is Responsive Aggression Regulation Therapy (Re-ART) a promising intervention?

Hoogsteder, L.M.

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Citation for published version (APA):

Hoogsteder, L. M. (2014). *Coming on strong: Is Responsive Aggression Regulation Therapy (Re-ART) a promising intervention?*.

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Chapter 5

The relationship between the level of program integrity and pre-post-test changes of Responsive Aggression Regulation Therapy (Re-ART) Ambulant: A pilot study¹⁰



¹⁰ Hoogsteder, L.M., Van Horn, J.E., Stams, G.J.J.M., Wissink, I.B., & Hendriks, J. (2013). Manuscript submitted for publication.

ABSTRACT: Responsive Aggression Regulation Therapy Ambulant (Re-ART) is a cognitive behavioral-based intervention for adolescents (16 - 24 years) with severe aggressive behavioral problems. This pilot study examined the program integrity of Re-ART. We also investigated the pre- and post-test changes in several outcome variables, and the relation between the level of program integrity and these changes. Participants ($N = 26$) were recruited from three different outpatient forensic settings. Results showed that the program integrity of half of the treatments was not sufficient (e.g., the intensity of the program was too low and some standard modules were not offered). Additionally, this study demonstrated that a high level of program integrity was related to positive changes in aggression, cognitive distortions, social support, coping (reported by therapist) and distrust (responsiveness to treatment).

Introduction

Aggressive behavior of adolescents is a widely acknowledged societal problem. In the Netherlands, adolescents who are struggling with severe aggression problems and who are displaying violent behavior increasingly receive outpatient treatment, instead of residential care (Van der Laan, Blom, Tollenaar, & Kea, 2010). The percentage of criminal prosecutions for violent behavior involving adolescents has increased with four per cent in the Netherlands from 2002 to 2009 (Wartna et al., 2011). Additionally, forensic outpatient care is facing an increase of adolescents with a moderate or high risk for recidivism, struggling with a variety of criminogenic risk factors for aggression problems (Andrews & Bonta, 2010). Aggression problems among these adolescents are often associated with psychosocial problems or a psychiatric disorder (Vreugdenhil, Doreleijers, Vermeiren, Wouters, & Van den Brink, 2004). A proportion of adolescents with severe aggression problems is not suitable for group therapy, because these adolescents are sensitive to negative peer group influences (Dodge, Dishion, & Lansford, 2006), or because group learning is too threatening for these adolescents.

Successful treatment of violence and other types of severe aggressive behavior is difficult (American Academy of Child and Adolescent Psychiatry, 2005). According to Dowden and Andrews (2000) interventions aimed at violent youths only achieve a maximum reduction of the violent behavior if the What Works principles of effective judicial interventions are met. There are three basic What Works principles. The Risk Principle informs therapists about who needs treatment and at what level of intensity. High risk offenders should receive intensive treatment, whereas low risk offenders should be given minimal care (Andrews & Bonta, 2003). The Need Principle refers to the importance of targeting the dynamic criminogenic needs. That is, the treatment goals should be tailored to the criminogenic risk factors present. The Responsivity Principle consists of two

categories: general responsivity and specific responsivity. General responsivity represents the use of the most effective techniques to change the criminogenic needs. Specific responsivity means that the intervention should be tailored to the motivation, learning style and specific capabilities and limitations of the person, and that there should be a match between the client and the therapist (Bonta & Andrews, 2007). Interventions that comply with these principles are more effective than interventions in which these principles are insufficiently met. If one or two of the three principles is omitted, the results are less than optimum (Andrews & Bonta, 2006). Safeguarding program integrity (PI) is another What Works principle. Ensuring a high level of PI results in a higher degree of program effectiveness (Durlak & DuPre, 2008; Landenberger & Lipsey, 2005). Assessment of the level of treatment integrity is also important for the internal, external and construct validity of treatment outcome research (Moncher & Prinz, 1991).

Responsive Aggression Regulation Therapy Ambulant (Re-ART Ambulant) is a newly developed responsive intervention that offers treatment to adolescents with severe aggression problems (Hoogsteder, 2009). Re-ART Ambulant is largely individualized, based on the RNR-model, with a focus on the responsivity principle (Andrews & Bonta, 2010). The program applies Cognitive Behavioral Therapy (CBT) elements combined with techniques from drama therapy (e.g., role-playing games and imitation), and continuously focuses on treatment motivation. To increase the juvenile's responsiveness to the Re-ART treatment, obstructive factors, such as demotivation, distrust, and low-impulse control (Fishbein et al., 2009) are dealt with. Attention to these aspects links in well to the learning style of the judicial target group (Andrews & Bonta, 2006; Sukhodolsky et al., 2004). Re-ART also offers (adapted) mindfulness exercises for stress reduction and for learning to focus attention. The current pilot study examined the relation between the level of program integrity and these pre-post-test changes.

Re-ART uses cognitive-behavioral techniques, because international research shows that CBT effectively reduces severe aggressive behavior (e.g., Hollin & Palmer, 2009; Litschge et al., 2010; Oudhof & Van der Steege, 2007; Özabaci, 2011). Re-ART Ambulant particularly focuses on developing cognitive skills, such as cognitive restructuring (recognizing and adapting adequate rational cognitions), and training interpersonal problem solving skills (Landenberger & Lipsey, 2005; Lipsey, Landenberger, & Wilson, 2007; McGuire, 2008; Wilson, Bouffard, & MacKenzie, 2005). Re-ART also focuses on stress management, as the addition of stress reduction and “mindfulness” components to CBT appears to contribute positively to the effectiveness of interventions for aggression problems (Deffenbacher, 2011; Kelly 2007; Novaco, 2001; Pellegrino 2012; Singh et al., 2007). It is evident from research that mindfulness exercises with delinquent aggressive youths can lead to an improvement in self-regulation and to a reduction in stress (Himmelstein, Hastings, Shapiro, & Heery, 2011).

In order to satisfy the risk principle, the risk for violent recidivism in Re-ART Ambulant is estimated using a valid instrument (RAF MH; see instruments). The duration and frequency of the Re-ART treatment increase when the risk of recidivism is higher. In addition, the duration of treatment is also determined by the person’s learning style and pace (besides by the risk for recidivism). The duration of Re-ART Ambulant may therefore vary from 5 months to 18 months, where the frequency is at least once per week up to a maximum of three times per week (Hoogsteder, 2009). The need principle is satisfied through providing a set of standard and optional modules treating various criminogenic risk factors pertaining to personal, family and environmental domains.

Re-ART Ambulant has a particular focus on the responsibility principle. CBT-techniques are used that appear to be effective for the target group. Furthermore, the person implementing the treatment needs to be able to tailor the content of the treatment to the

juvenile's treatment motivation, cognitive capacities, learning style and personality characteristics. Ensuring there is a good atmosphere and treatment contact is also of great importance. The material used is suitable for both young people with a low intelligence (IQ > 70), as well as those with higher levels of intelligence. Role-playing and exercises can be varied in level of complexity and the frequency at which they are practised. Additional (alternative) exercises can be selected if the treatment aims have not been achieved or when they prove to be a better match with the learning style (Hoogsteder, 2009).

Studies have shown a clear positive relation between program integrity and intervention outcome (e.g., Arkoosh et al., 2007; Durlak & DuPre, 2008; Landenberger & Lipsey, 2005; Wilder, Atwell, & Wine, 2006). In order to assess the level of program integrity and quality assurance it has been recommended to measure different elements of the program integrity, such as the level of exposure, adherence, participant responsiveness and quality of delivery (Carroll et al., 2007; Durlak & DuPre, 2008). Exposure pertains to the duration and frequency of the treatment sessions and the total treatment duration (also risk principle). Adherence refers to the extent to which all indicated modules and program meetings are conducted as described (also need principle). Participant responsiveness deals with the degree to which participants are engaged and involved in the meetings (responsiveness principle). Participants' level of engagement and involvement can be changed depending on which motivation techniques are applied, but also depending on the degree to which treatment sufficiently fits the learning style and possibilities of the participants. Quality of delivery is the manner in which therapists use the techniques and methods as prescribed in the program. The program integrity of Re-ART Ambulant was investigated in this study by analysing the aforementioned elements.

Response to intervention is only a true measure of intervention effectiveness if the intervention is conducted as intended (Noell, Gresham, & Gansle, 2002). This has led to the

following main research questions: (1) What is the program integrity of Re-ART Ambulant?, (2) Is Re-ART Ambulant associated with positive changes in risk for recidivism, aggression, coping skills, cognitive distortions, responsiveness to treatment and family functioning? (3) What is the relation between the level of program integrity and pre-post-test changes? Given the result found by Özabaci (2011) that a reduction in violent behavior in adolescents followed outpatient cognitive behavioral therapy, it is anticipated that positive changes will be found at post-test. Furthermore, research into the effectiveness of the residential version of Re-ART demonstrated significant improvements (moderate to large effects) in terms of the risk for recidivism, aggressive behavior, coping skills, cognitive biases (with the exception of negative attitude) and responsiveness to treatment (Hoogsteder, Hendriks, Van Horn, & Wissink, 2012a). We also assumed that higher program integrity resulted in larger changes between pre- and post-test (e.g., Durlak & DuPre, 2008).

Method

Participants

The sample consisted of two groups of juvenile offenders between 16 and 23 years of age, who received Re-ART within an outpatient forensic setting: The Program Integrity+ group (PI+; $n = 13$) and the Program Integrity - group (PI-; $n = 13$). The PI+ group comprised adolescents receiving Re-ART with sufficient treatment integrity. For adolescents in the PI- group, treatment integrity was insufficient (for information about the classification, see section instruments and statistical analysis). A series of *t*-tests were conducted to determine if the PI+ group differed significantly from the PI- group on various background variables (age, gender, cultural background), treatment motivation, risk for recidivism, mental disorders (diagnosed by therapist or psychiatrist: oppositional defiant disorder [ODD], CD

or not otherwise specified [NOS], or attention deficit hyperactivity disorder [ADHD]), mental disability, substance abuse, poor impulse control, level of education (level finalized or following), offense type, and duration of treatment (see Table 1). Sixteen therapists from three forensic settings were involved in assessing program integrity (male $n = 4$; female $n = 12$).

Procedure

Program integrity

The examination of program integrity was undertaken in the period from February 2012 to August 2013. The program integrity was measured by means of self-report, interviews and direct observation by three independent observers. The observers received information on the Re-ART program, and were trained by observing the Re-ART sessions with a checklist. Re-ART therapists from 3 settings ($n = 16$) were interviewed in order to determine to what extent the preconditions and criteria for maintaining quality control were satisfied. The therapists were observed during the implementation of the Re-ART sessions by sample.

The program integrity across the entire treatment program for one specific client was also assessed, this included, amongst others, whether the RNR principles and Re-ART techniques were applied. Therefore, the researchers used the Re-ART final evaluation lists (structural component of Re-ART), which the therapists and clients completed at the end of treatment and also the score on the session checklist (see instruments). All these results (of the interviews and evaluation forms) were compared with information from the regular client registration system (EZIS). The Re-ART supervisors' judgments, investigators' interview data and the final evaluation forms were used to assess whether the program had been fully implemented for any treatment that had already been started prior to February 2012 (for more information, see the instruments section).

Intervention study

Data collected between March 2011 and September 2013 were used for the intervention study. Adolescents who had been treated within this period and for whom a baseline and a final assessment were available were included. The adolescents and the therapist filled in questionnaires during the intake procedure and again after finishing the program, but before aftercare; this resulted in pre- and post-intervention data. The average time between the pre- and post-test was 49 weeks ($SD = 18.23$) for the Re-ART group PI+ and 46 weeks ($SD = 22.29$) for the Re-ART group PI-.

Table 1.
Characteristics PI+ Group and PI- Group

	Re-ART group PI+ (n = 13)	TAU-group PI- (n = 13)
Average age (by start intervention)	18.54 (1.7)	18.54 (2.2)
Gender (male)	76.9% (n = 10)	92.3% (n = 12)
Non native Dutch+	15.4% (n = 2)	23.1% (n = 3)
Motivation treatment pretest (< = better)	2.46 (1.05)	2.08 (1.04)
Risk of recidivism	4.08 (.50)	3.85 (.90)
Disorder / criminogenic factors		
CD	30.8% (n = 4)	38.5% (n = 5)
ODD	23.1% (n = 3)	0%
ADHD	15.4% (n = 2)	0%
NOS	38.5% (n = 5)	46.2% (n = 6)
PTSS	15.4% (n = 2)	0%
Poor impulse control	46.2% (n = 6)	61.5% (n = 8)
Mental disability	7.7% (n = 1)	15.4% (n = 2)
Substance abuse	38.5% (n = 5)	38.5% (n = 5)
Other disorder	46.2% (n = 6)	38.5% (n = 5)
Education (finalized or following)		
<i>Special Education</i>	7.7% (n = 1)	7.7% (n = 1)
<i>Pre-vocational Education</i>	30.8% (n = 4)	53.8% (n = 7)
<i>Secondary Vocational Education level 1</i>	23.1% (n = 3)	7.7% (n = 1)
<i>Secondary Vocational Education level 2</i>	15.4% (n = 2)	15.4% (n = 2)
<i>No education finalized or following</i>	23.1% (n = 3)	15.4% (n = 2)
Offense type		
Reporting violence crimes	92.3% (n = 12)	76.9% (n = 10)
Reporting other crimes	69.2% (n = 9)	69.2% (n = 9)
Conviction for violence	61.5% (n = 8)	46.2% (n = 6)
Confiction for domestic violence	7.7% (n = 1)	7.7% (n = 1)
Confiction for crime against property with violence	0%	15.4% (n = 2)
Confiction for crime against property	15.4% (n = 2)	15.4% (n = 2)
Confiction other	0%	7.7% (n = 1)
Duration treatment		
Average duration treatment in weeks	45.69 (18.23)	49.08 (22.29)

+Adolescents were defined as not being native Dutch if at least one of their parents was born in a country other than the Netherlands.

* $p < .05$

Instruments

Program integrity

The program integrity was measured using self-report, interviews and direct observation by the researchers (Durlak & DuPre, 2008; Lillehoj et al., 2004; Vartuli & Rohs, 2009). The instruments used to test the PI provided information on four domains (exposure, adherence, participant responsiveness and quality of delivery), which were relevant for assessing the PI. Firstly, based on case file data the Re-ART indication criteria checklist was completed for each adolescent to investigate whether the indication criteria were met (i.e., a moderate or high recidivism risk, dealing with anger, poor coping, and negative attitude (measured with the RAF MH; see instruments), as well as aggressive behavior in different settings). Secondly, all Re-ART therapists ($n = 16$, including 3 Re-ART supervisors) were interviewed using a structured questionnaire (Duivenbode, 2012) in order to assess to what extent they met the Re-ART pre-conditions (i.e., the extent to which they met the caseload, training and role requirements) and quality assurance at a meta-level (quality of delivery: i.e., whether the duration and intensity of the treatment satisfied the risk principle, monthly provision and completion of supervision, provision of aftercare according to the protocol, completion of the required evaluation instruments, and ensuring baseline and final assessments). The information obtained was supplemented by the information recorded in the standard registration system.

Exposure was measured by controlling whether the average duration and frequency (intensity) of a treatment corresponded to the severity of the risk for recidivism (risk principle). Subsequently, the manner in which the Re-ART sessions were conducted was assessed by the investigators (adherence and quality of delivery). The Re-ART session checklist was used for this and consists of twelve important components that need to be applied during a session in order to safeguard the PI (e.g., ‘Does the therapist validate the

adolescent sufficiently?’, ‘Does the therapist’s language sufficiently match that of the adolescent when providing an explanation?’, ‘Was at least one situation or skill practised or another action-exercise undertaken?’). The inter-rater reliability of this list was good with Kappa values ranging from .62 to 1 (Cyr & Francis, 1992). Finally, the Re-ART final evaluation forms (completed by the therapists and adolescents) were used to measure the quality of treatment delivery at an individual level. This form was used (again) to test whether the principles in the RNR model, the application of action exercises, the realisation of a constructive treatment relationship were satisfactorily met. On the evaluation form therapists also registered whether the treatment consisted of the standard and indicated optional modules (adherence).

A PI score for an individual treatment was deemed inadequate if the therapist did not satisfy the preconditions and/or exceed the cut-off score, and/or if there were negative responses to more than three items in the final evaluation form, and/or the final evaluation forms had not been completed and the relevant data could not be retrieved from the standard registration system. Adolescents receiving Re-ART with sufficient treatment integrity were divided into the PI+ group, adolescents receiving insufficient treatment integrity came into the PI- group.

The participant responsiveness was evaluated on the basis of specific components of the Re-ART checklist (i.e., ‘Did the therapist adapt to the adolescent’s learning style?’, ‘Use language that was comprehensible to the adolescent?’), and the Re-ART final evaluation form (i.e., ‘Did the adolescent feel he was taken seriously?’). In addition, the degree of motivation was monitored during the intervention study using the RAF MH (treatment domain).

Risk for recidivism

The Risk Assessment for outpatient Forensic Mental Health (RAF MH; Van Horn, Wilpert, Bos, & Mulder, 2008; Van Horn, Wilpert, Scholing, & Mulder, 2008) consists of a youth and adult version. RAF MH is a structured professional judgment risk assessment instrument, which was developed to assess the recidivism risk for juveniles. It combines several actuarial and structured professional judgment instruments, supplemented with factors relevant for an outpatient treatment population. Both versions of the RAF MH consist of twelve domains: Previous and current offenses (8 items), School/Job (9 items), Finances (3 items), Accommodation/Living environment (3 items), Family (12 items), Social network (5 items), Leisure time (3 items), Substance (7 items), Emotional/Personal (16 items), Attitude (5 items), Motivation for treatment (8 items), and Sexual problems (15 items). Items are scored according to explicit guidelines provided in the accompanying manual. The instrument does require a background in child studies and special training in administering, scoring, and interpreting. The extended classification scale of five categories (low, low-moderate, moderate, moderate-high, high) instead of the customary three (low, moderate, high) results in a more differentiated risk profile over time. For this study, the total risk score was used as an indication of the youth's risk level for re-offending with a violent offense. Only adolescents with a moderate and high recidivism risk were referred to Re-ART. Results show reliable agreement between evaluators and good predictive validity of general and violent recidivism within one year after treatment (Van Horn, Wilpert, Bos, Eisenberg, & Mulder, 2009).

Aggression

Aggression related skills: Self-control and Assertiveness

Cognitive and social skills related to aggression were assessed with the adolescent-report and therapist-report versions of the Re-ART List (Hoogsteder, 2012a). The Re-ART List assesses skills that are needed to decrease an aggression problem according to the theoretical model of Re-ART. These skills are divided into the Self-control scale (adolescents: 10 items; T1: $\alpha = .92$, T2: $\alpha = .96$, therapist: 10 items; T1: $\alpha = .88$, T2: $\alpha = .74$) and the Assertiveness scale (adolescents: 8 items; T1: $\alpha = .77$, T2: $\alpha = .83$, therapist: 6 items; T1: $\alpha = .73$, T2: $\alpha = .74$). Each item is rated on a five-point Likert scale ranging 1 (This is not true at all) to 5 (This is completely true). Examples of items from the therapist-report version are ‘The adolescent is able to control his aggressive feelings’ (self-control), and ‘The adolescent handles conflicts in an assertive manner’ (assertiveness).

Dealing with Anger

The item of the RAF MH ‘Dealing with Anger’ was also used to measure externalizing behavior.

Coping skills

The Utrecht Coping List (UCL; Schreurs, Van de Willige, Brosschot, Tellegen, & Graus, 1993) was used to measure coping behaviors. The UCL is a 47-item Dutch self-report questionnaire that assesses coping on seven scales with sufficient reliability (Schreurs, Willige, Van de Brosschot, Tellegen, & Graus, 1993), and satisfactory construct and predictive validity (Schaufeli & Van Dierendonck, 1992). Each item is rated on a four-point Likert scale ranging from 1 (never) to 4 (very often). Four of these styles were used in the present study: Problem-Focused (active) Coping (7 items; T1: $\alpha = .69$, T2: $\alpha = 0.71$),

Palliative Coping (8 items; T1 $\alpha = .59$, T2 $\alpha = .74$), Social Support (6 items; T1: $\alpha = .76$, T2: $\alpha = .71$), and Reassuring Thoughts (5 items; T1 $\alpha = .68$, T2 $\alpha = .59$).

Cognitive distortions

The Brief Irrational Thoughts Inventory (BITI) was used to measure cognitive distortions. The BITI is a self-report questionnaire that consists of 18 statements describing different kinds of irrational (dysfunctional) thoughts (Hoogsteder, 2012b). Each item of the BITI is rated on a six-point Likert scale ranging from 1 (I totally disagree) to 6 (I totally agree). A recent study showed favorable psychometric properties of the BITI. Convergent, divergent, and concurrent validity were established, while measurement invariance was indicated across gender and different ethnic origin groups (native versus non-native Dutch respondents) by means of confirmatory factor analysis, supporting construct validity of the BITI (Hoogsteder, 2012b). In the current study, reliability was established for Aggression and Justification (9 items; e.g., 'If someone touches me, I should hit him'; T1: $\alpha = .80$, T2: $\alpha = .87$), Sub-Assertiveness (5 items; e.g., 'I think that people get angry with me because I often say no'; T1: $\alpha = .86$, T2: $\alpha = .82$) and Distrust (4 items; e.g., 'Everyone is against me').

Responsiveness to treatment

The domain Motivation for treatment (8 items; e.g., motivation for treatment; commitment to treatment) and the item Impulsivity of the RAF MH and the Distrust scale (4 items; T1: $\alpha = .80$, T2: $\alpha = .90$) of the BITI were used to measure responsiveness to treatment.

Family functioning

The domain Family of the RAF MH was used to measure family functioning (12 items; e.g., relationship with parents).

Statistical analysis

Descriptive statistics (frequencies and percentages) were used to describe the degree of program integrity. The adherence and quality of delivery was assessed by scoring the Re-ART checklist, the following formula was used for this: total score per guideline satisfied / total score for all guidelines * 100. A percentage $\geq 60\%$ was interpreted as sufficient (Durlak & DuPre, 2008). The quality assurance at a meta-level was scored in the same way (i.e., exposure, participant responsiveness, and quality of delivery) using a cut-off score $< 80\%$ given that this concerned relevant, integral quality requirements. A paired *t*-test was used to determine whether there was a statistically significant difference between the T1 and T2 scores. We used analysis of covariance (ANCOVA) to examine the relation between program integrity and pre-post-test changes in the outcome variables between the PI- and PI+. Covariance analysis (ANCOVA) was undertaken on the T2 scores, controlling for T1 scores and with PI as the main effect. Effect sizes were computed in terms of Cohen's *d*, based on post-test means and standard deviations of the Re-ART PI+ and the Re-ART PI- group, corrected for pretest means and standard deviations of these groups. Cohen (1992) categorized ES as follows: $.19 < d < .49$ = small effect, $.50 < d < .79$ = moderate effect, $d > .80$ = large effect.

Results

Program integrity

Basic pre-conditions

The results of the interview (which were also checked by using the information in the standard registration systems) demonstrated that all therapists satisfied the minimal educational requirements (academic or post professional training) and had sufficient knowledge of and experience with CBT techniques. All therapists ($n = 16$) had followed and been certified in the Re-ART training program, and all therapists had undergone an annual performance review; their treatment skills were deemed sufficient at a minimum. Three therapists indicated that they had not received an adequate instruction and had missed the structural work guidance program. A total of 24 adolescents from the total study group ($N = 26$) satisfied the Re-ART indication criteria. In two cases it was decided to deviate from the general inclusion criteria: two adolescents were still 15 years old when they started the intervention. These youngsters were admitted to Re-ART because the therapists – based on their clinical judgment – concluded that they had sufficient cognitive capacities to profit from the treatment.

Quality assurance (quality of delivery, adherence, exposure and participant responsiveness)

It was established from the interview (checked in the standard registration system) that an average score of 70.3% (range 33% to 100%) was achieved on the quality assurance component at a meta-level (e.g., adherence and exposure). Only six therapists (37.5%) scored sufficiently on this component ($> 80\%$). Therapists (31.3%) explicitly indicated that – against protocol guidelines - they did not provide any aftercare. Five therapists (31.3%) indicated that they had not yet reached this stage.

In total 16 (PI+: 100%; PI- 23.1%) of the final evaluation lists had been completed. However, lists from only three treatments did not meet the PI. The scores on the final evaluation forms completed by the adolescents were positive (some had scored a single item as negative). The results of the 16 final evaluation forms completed by therapists were also positive with the exception of two items. However, it is noticeable that a number of questions were scored negatively by numerous therapists. Five therapists (31.1%) indicated that there were no conducted structural action exercises during the Re-ART sessions, and 50% indicated that there was insufficient knowledge transfer between collaborators.

In respect of “the exposure”, five therapists (31.1%) reached an insufficient score (self-report) in terms of tailoring treatment duration and frequency to the severity of the recidivism risk. However, data from the standard registration system revealed that - irrespective of recidivism risk - adolescents were treated once per week (or less) in the majority of all the cases. The adolescents in the PI+ group differed significantly (*t*-test) in terms of frequency of treatment (average hour of treatment per week) from the PI- group (PI+: 1.12; PI- 0.77).

The standard registration system revealed that all adolescents of the PI- group did not receive the standard and/or indicated optional modules. The most remarkable finding was that no one of the PI- group had been offered the group module (the content of this module was also not individually received) (is necessary) and 84.6% had not been offered the family module.

The results of the Re-ART session checklist quality of delivery can be considered sufficient with an average score of 86.6% (range 63% to 100%). Focal points included the evaluation and summary of the main theme of a meeting. It was also apparent that responsiveness was appropriate. The therapists scored positively in terms of using language that was understandable to the adolescent and linking in to the adolescent's learning style

with the exception of one treatment observed. A total of 78.6% of adolescents felt they were being taken seriously by their therapist.

Pre-and post-test changes in outcome variables and the relation with program integrity

A series of paired *t*-tests (Table 2) showed – as expected - positive changes in the PI+ group on violent recidivism for risk, aggression, coping skills, cognitive distortions, and family functioning. We also found a significant improvement in motivation for treatment. The ANCOVA results (Table 2) showed – as expected – a significant main effect of program integrity (at post-test on all items of aggression and cognitive distortions and on social support, poor coping -coping skills- and motivation for treatment -responsiveness to treatment-). We found no significant main effect of PI on violent recidivism risk, the items problem focused, palliative coping, reassuring thoughts (coping skills), impulsiveness and motivation for treatment (responsiveness to treatment).

Table 2.

Means, SDs and Effect Size on Recidivism Risk, Aggression, Coping Skills, Cognitive distortions, Responsiveness to Treatment and Family Functioning for Re-ART Group PI+ and Re-ART Group PI- Pre-Post-Test.

	PI+				PI-				PI Mean Effect		
	T1		T2		T1		T2		F	ES	ES+++
	M	SD	M	SD	M	SD	M	SD			
									(1, 23)		
Risk of recidivism on violence											
<i>RAF MH</i> Risk for recidivisme	4.08	0.50	2.00**	0.82	3.85	0.90	2.38 *	0.65	2.21	0.51	0.83
Aggression											
<i>AR-list</i> <i>Adolescent</i> Self-control	51.85	14.4	67.85**	12.5	48.00	7.83	55.46 *	8.12	8.25 *	1.17	0.84
Assertiveness	19.38	5.11	24.92 *	3.09	18.85	4.69	21.38	3.48	7.78 *	1.08	0.97
<i>Therapist</i> Self-control	30.15	3.39	42.15**	3.58	23.08	4.48	32.85	4.51	22.16**	2.29	0.51
Assertiveness	12.23	3.22	19.00**	1.58	13.23	3.27	16.15	2.82	20.90**	1.25	1.56
<i>RAF MH</i> Dealing with anger+	1.85	0.38	1.00**	0.00	1.85	0.38	1.31 *	0.48	5.33 *	0.91	0.91
Coping Skills											
<i>UCL++</i> Problem focused	15.38	3.04	19.31 *	2.29	16.31	3.73	18.31*	2.75	2.17	0.40	0.67
Palliative coping	17.00	3.00	20.77**	3.14	19.00	2.89	19.46	4.37	2.34	0.34	1.02
Social support	10.69	3.04	15.15 *	2.15	11.00	3.00	11.77	2.24	15.90 *	1.54	1.64
Reassuring Thoughts	11.15	2.48	13.46 *	1.90	11.15	3.00	12.46	2.44	1.56	0.46	0.46
<i>RAF MH</i> Poor Coping+	1.38	0.65	0.69 *	0.48	1.38	0.51	1.23	0.44	9.90 *	1.17	1.17
Cognitive Distortions											
<i>BITI</i> Aggression and Justification	26.23	8.14	18.54**	6.44	27.69	8.05	27.92	4.84	42.48**	1.65	1.44
Sub-Assertiveness	14.08	5.69	10.54 *	3.84	11.85	6.34	13.38	3.84	14.32 *	0.74	1.11
<i>RAF MH</i> Negative thoughts+	0.85	0.69	0.31 *	0.48	1.08	0.76	1.15	0.56	24.46 *	1.61	1.29
Responsiveness to treatment											
<i>RAF MH</i> Impulsiveness+	1.00	0.91	0.69	0.48	1.31	0.75	1.23	0.73	3.79	0.87	0.50
Motivation	2.46	1.05	1.23 *	0.73	2.08	1.04	1.54	0.66	1.79	0.45	0.81
<i>BITI</i> Distrust	8.38	3.48	6.85	2.12	9.85	4.93	11.38	3.84	14.87 *	1.46	1.35
Family functioning											
<i>RAF MH</i> Family functioning	3.08	1.26	1.77 *	0.60	2.85	0.80	2.23	0.73	2.68	0.69	0.91

+scoring range 0-2, +++ higher score is better, +++ES on adjusted means

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

Discussion

This study investigated the level of program integrity of Re-ART. Subsequently, we examined changes in outcomes variables between pre-test and post-test, and the relation between the level of program integrity and the effect size of these changes. The results showed that program integrity was not adequate on all points. The preconditions (e.g., the extent to which the therapists met the caseload, training and role requirements) were sufficient. However, the criteria for quality assurance (e.g., exposure and adherence) were not properly observed (70.3%). Only six therapists (37.5%) achieved a score above 80%. In particular, the treatment did not appear to be adequate in terms of exposure (the intensity of the program was too low) and adherence (not all of the standard and indicated optional modules were offered). This means that two of the RNR principles had not been sufficiently applied. The treatment sessions, however, had been carried out as intended (the quality of delivery was adequate), and the same applied to participant responsiveness. All in all the results of this study show that the program integrity of half of the treatments was not sufficient.

Additionally, it was found that the Re-ART PI+ group showed positive changes in risk for recidivism, aggression, coping, cognitive distortions and family functioning. Changes in responsiveness to treatment were only found in motivation (not in a decrease of impulsiveness or distrust). Finally, this study showed that a high level of program integrity was related to positive changes in aggression, cognitive distortions, social support, coping and distrust for treatment (responsiveness to treatment). Despite the fact that the level of PI did not affect the results on all components, a moderate or large effect was found for the majority of outcome measures (only for one item there was a small to moderate effect). The results of this study confirm the findings of Durlak and DuPre (2008) that higher levels of program integrity are related to higher levels of program effectiveness.

The examination of the level of program integrity indicated that participant responsiveness was present in both groups. Participant responsiveness deals with the degree to which participants are engaged and involved in the meetings, this can depend of the level of motivation, impulsiveness and distrust (responsiveness principle). Nevertheless, the level of PI was related to the level of distrust. The level of distrust increased in the PI- group, whereas the degree of distrust decreased in the PI+ group. A possible explanation for this could be that a higher level of treatment intensity (PI+ group) leads to a better treatment contact. A better contact has been shown to result in more motivation and less distrust (Van der Helm, Klapwijk, Stams, & Van der Laan, 2009).

Noteworthy is that the family module was not significantly related to family functioning (e.g., having a better relationship with family members and less conflicts). It is possible that the inclusion of family members in the treatment is related to other outcome variables. For instance, inclusion of family members with the family module can be related to greater continuity in treatment. This module focused also on a better relationship (with fewer conflicts) between parent and adolescent, which is associated with less risk for delinquent behavior in adolescents (Hair et al., 2005; Hoeve et al., 2009; Keijsers et al., 2011).

The results of this study also demonstrated that a high level of program integrity is associated with more positive changes in some treatment targets. However, the number of the participants was too small to demonstrate whether specific components of the program are essential for achieving better results. Parts of the program integrity can moderate or mediate the treatment results (Berkel, Mauricio, Schoenfelder, & Sandler, 2011). It is nevertheless apparent that noncompliance with the risk- and the need principle (providing standard and indicated modules), lack of monthly supervision (including practising specific

AR skills) and not ensuring a sufficient transfer between various partners in the network were associated with poorer (or even no) results.

The group module is primarily aimed at the reduction of persistent cognitive distortions related to aggression problems. It is likely that the absence of the group module at the PI- group negatively influenced the reduction in cognitive distortions, because we found difference in cognitive distortions between the PI+ group and PI- group proved to be moderate to (very) large. This can be means that the content of the group module is important to reach positive results.

Higher levels of program integrity were found particularly in more experienced Re-ART therapists, indicating that an organisation/therapist needs a great deal of time to achieve high levels of PI. This can be also a potential explanation that different scores (also low) were encountered for different interventions (Durlak & Dupre, 2008; Helmond, Overbeek, & Brugman, 2012).

It is noticeable that a large reduction in the risk of recidivism was found in both groups. This can be explained for the PI+ group as there were positive changes on virtually all of the program objectives. However, this change is less easily explained for the PI- group, as positive changes were only found on a number of program objectives (i.e., self-control, dealing with anger, and problem focused coping).

There are some methodological limitations of the present study that should be taken into account. The main limitation concerns the sample size, which reduces the statistical power and restricts the generalizability of the findings. This also means that it is not possible to determine with certainty that the differences in outcomes found between the two groups were (only) caused by the level of program integrity. It is possible that any as yet unknown variable(s) may have had an effect on the results, such as gender or mental disorders. The second limitation is the lack of a control group for assessing efficacy. An appropriate control

group may not be available in the forensic outpatient setting, because almost all therapists who treated adolescents with severe aggression problems with difference programs, were also educated in Re-ART. Despite, this limitation we have received valuable information about the quality and influence of program-integrity, and whether Re-ART Ambulant can be reached improvements in some treatment targets. A third limitation is that the post-test reliability for Palliative Coping and Reassuring Thoughts was relatively low.

This pilot study demonstrated that the level of PI is related to positive treatment results. This supports the argument that more attention should be paid to PI (both the operationalization and observance) when implementing interventions. Furthermore, high levels of program integrity are necessary to draw valid conclusions regarding the effectiveness of intervention programs (Carroll et al., 2007). Given that more positive changes were achieved in the PI+ group, there is some indication that the changes observed were caused by the Re-ART methods and techniques employed (Tennyson, 2009). It seems relevant for Re-ART Ambulant to invest in improving PI and in determining which specific components of the program are essential for achieving positive intervention effects. Furthermore, more convincing evidence is required: this may be achieved through increasing the sample size and the use of a control group. However, this is only possible if a higher level of PI is reached.

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