

## Efficacy of Aggression Replacement Training among Children from North-West Russia

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The aim of the study was to assess whether the Aggression Replacement Training (ART) programme is effective in increasing social skills and decreasing problem behaviour. The sample consisted of 232 children (mean age 10.9 yrs, SD = 2.32), their parents and teachers. The study had a quasi-experimental design with intervention and control groups. Children were recruited from six schools and four social institutions from four regions in North-West Russia from 2010 to 2013. Social skills and externalizing behaviour were assessed with the *Social Skills Rating Scale* and analyzed by repeated measures ANOVA (GLM). In a pre and post-test assessment, the 30-hour ART programme was associated with a significant increase in social skills when assessed by children's self-reports. The most reliable effects of the intervention were demonstrated in the two age groups of 6-9 and 10-14 years old. When both pre and post-test were assessed by parents and teachers, children from both the intervention and control groups demonstrated more social skills and less problem behaviour. Overall results point to a significant improvement of social skills among children from the intervention groups, but an improvement in social skills and reduction of problem behaviour have also been indicated among children from the control group. Findings are discussed in view to possible diffusion of treatment from children participating in an intervention to children from control groups.

**Keywords:** Aggression Replacement Training, evaluation, efficacy, behavior, social skills

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## Introduction

Children and young people with behavioural problems constitute between one third and a half of all referrals to support services in the USA (Kazdin & De Los Reyes, 2009). High prevalence of behavioural problems is also the case for the Russian Federation where from 15 to 20% of children were reported as having serious mental health problems according to Goodman, Slobodskaya & Knyazev (2005). Even if the population of children and young people with behaviour problems differs from country to country, overall it is a cause of concern both for the children themselves and for their surroundings. For example, in Norway, 7-12 % of all children aged 10-17 demonstrate such a high degree of undesirable behaviours that can be considered as behavioural problems. Of these, about 2% have severe antisocial behaviour (Nordahl, Sørлие, Manger & Tveit, 2005). According to the largest Scandinavian independent research organisation SINTEF, 40% of children and young people referred to the psychiatric services in Norway, also have behavioural problems (SINTEF, 2004). As for the Russian Federation, in a study by Vermeiren, Deboutte, Ruchkin & Schwab-Stone (2002) it was found that 69% of the studied adolescents from the general population were reported as manifesting from moderate to severe antisocial behaviour.

Among the factors that may prevent the development of behavioural problems is the ability to generate pro-social behaviour in general and especially in stressful situations. Thus, intervention programmes, which aim at increasing social competence, also have been found to decrease problem behaviour (Sørлие, 2000). As social competence involves a number of different aspects including developing empathy, cooperation, self-control and assertiveness, programmes with multiple focuses and different modules seem to be more effective and successful than programmes orientated only towards one aspect of the problems (Dowden & Andrews, 2000).

Among such multi-focused programmes aimed to increase social competence is Aggression Replacement Training (ART) (Glick & Gibbs, 2011; Goldstein, Glick & Gibbs, 1998). The programme consists of three equal components: social skills training, anger control training and moral reasoning training. Each component is taught on a weekly basis (3 sessions per week) over a 10-week period. Social skills training is the behavioural component in which participants learn how they ought to behave in social situations. Anger control training is the emotional component where participants learn strategies to manage anger. Moral reasoning training is concerned with cognitive behaviour and moral values where participants learn to take perspective of others. The programme has a fixed structure and makes considerable use of role-playing and exercises. There are also various strategies for the transfer and maintenance of the skills that have been developed. In the present study, character education was included in the moral reasoning component and the concept of setting events was incorporated in the anger control training component (Gundersen, Olsen & Finne, 2008). In addition, rehearsals and selected pedagogical techniques described by Gundersen and Moynahan (2006) were included. The programme can thus be seen as an extended version of ART.

Several studies have documented the empirical efficacy of the ART programme both with children and adolescents (Currie, Wood, Williams, & Bates, 2012; Goldstein & Glick, 1994; Nugent & Bruley, 1998)

and with incarcerated youths (Barnoski & Aos, 2004). In Norway outcome effects have been positive (Gundersen & Svartdal, 2006, 2010; Langeveld, Gundersen, & Svartdal, 2012). Some of these evaluations have observed diffusion of treatment effect, i.e., that interventions intended for participants in the treatment group have also affected participants in the control group (Gundersen & Svartdal, 2010; Kazdin, 1998) threatening conclusions about treatment efficacy. This problem is often an experimenter-related issue because it is an effect of the improper implementation of the intervention (e.g. Kazdin, 1998). However, treatment diffusion can occur even if the implementation is properly executed, such as when the intervention changes children's behaviour in the intervention group and then indirectly affects members of the control group. Such "secondary diffusion" is particularly likely when interventions are implemented in situations with a high degree of interaction between participants in intervention and control groups, as is the case in schools and institutions involved in the present study.

This paper presents the results of an evaluation of the ART programme in north-western Russia. ART has been implemented in north-western Russian schools and institutions since 2009, but it has not yet been evaluated. Programme implementation runs on the lines of "Children and Youth at Risk" in the Barents region 2008 - 2015, a cooperation programme within the framework of the Barents Euro-Arctic Council. The overall goal of the study was to examine the efficacy of ART in relation to pro-social skill acquisition and decrease of externalizing problems. We expected significant changes in skills acquisition and decrease of externalizing problems among children in the intervention group when compared to children in the control group. Due to close day-to-day communication between the participants in the study, possible diffusion of treatment effect from the intervention group and hence corresponding changes in skills acquisition and some decrease of externalizing problems among participants in the control group could be expected.

## **Methods and procedure**

### *Participants*

The participants in the study were children from four social institutions and six elementary schools located in the north-western part of Russia. A total of 232 children participated, 145 (44% girls) in the intervention and 90 (63% girls) in the control group. The mean age of the ART group was 10.6 yrs (SD=.20) and 11.3 yrs (SD=.23) for the control group. The study also involved teachers (41 in the ART group and 48 in the control group) and parents (29 in the ART group and 41 in the control group). The response rate in the study was very high with only 3 participants (2 in the ART and 1 in the control group) not completing the questionnaires at post-test.

### *ART trainers and intervention*

The ART intervention was provided by teachers from related institutions and schools, trained by authorised programme trainers. Before the intervention, they received 72 hours of educational training, spread over three meetings. In addition, they had to accomplish 18 training sessions with colleagues before training took place with the youth groups. Children from the intervention group received the extended ART course, including 30 sessions in each of the three components spread over ten weeks. Each session lasted from 45 to

90 minutes and was led by two qualified ART trainers. The number of children in the intervention and control groups varied from 4 to 6. Children in the control groups did not receive any other intervention at the time of the study other than the standard school or institution curriculum.

The ART trainers' responsibility was to provide the intervention with the children and they were not involved in completing the questionnaires. Children received a detailed description of the study and were informed about the voluntary and confidential nature of their involvement with the study. They were also assured that neither parents nor school or institution staff would obtain any individualized information about their responses.

### *Assessment*

The *Social Skills Rating System* (SSRS) (Gresham & Elliot, 1990) was selected to assess social skills and problem behaviour among children. SSRS draws on multiple sources of information and questionnaires were completed by children themselves, parents and teachers not involved in ART trainings.

*Social Skills Rating System* (SSRS) (Gresham & Elliot, 1990) (assessment by teachers/staff members and self-report). The Social Skills Rating System allows for acquiring a more complete picture of social behaviours from teachers, parents, and even students themselves. Items of the child's version of the questionnaire are combined in four scales – Cooperation, Assertion, Empathy and Self-control. Answer options vary from 1=never to 4=very often (Ogden, 2003).

The parental and teacher versions of the SSRS assess the domains of social skills, problem behaviour, and academic competence. The Social Skills Scale has five subscales: Cooperation, Assertion, Responsibility, Empathy, and Self-Control. The Problem Behaviours Scale has three subscales that measure Externalizing Problems and Internalizing Problems.

The reliability and validity of the subscales of social competence and behavioural problems have been assessed in several studies (Demary, Maray, Ruffalo, et al., 1995; Gresham & Elliot, 1990), supporting the use of the instrument in research settings. In our study, internal consistency coefficients for the four scales of the children's version of the questionnaire ranged from acceptable to good, including 0.86 for Cooperation, 0.82 for Assertion, 0.83 for Empathy and 0.66 for Self-control,

Internal consistency coefficients for the seven scales of the parental version of the questionnaire ranged from acceptable to good, including 0.82 for Cooperation, 0.86 for Assertion, 0.85 for Responsibility, 0.80 for Self-control, 0.89 for Externalizing Problems and 0.65 for Internalizing Problems.

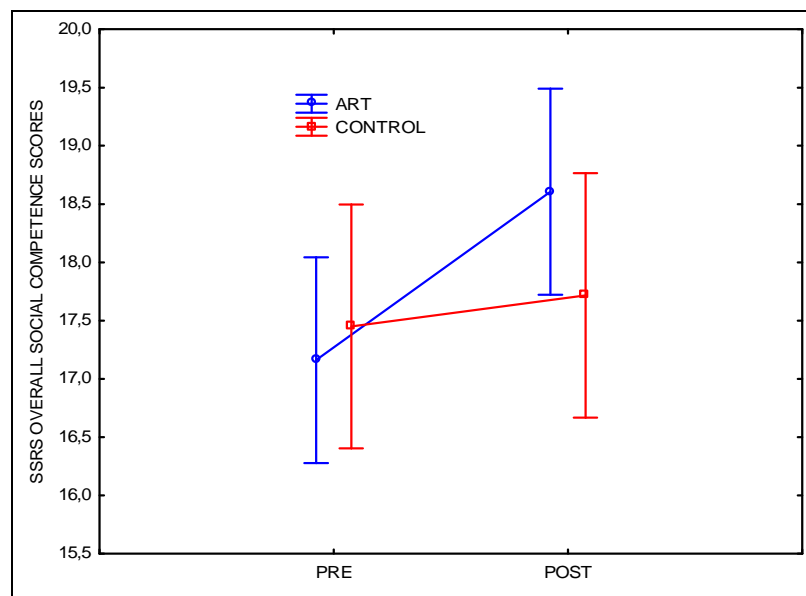
Internal consistency coefficients for the six scales of the teachers' version of the questionnaire ranged from acceptable to good, including 0.89 for Cooperation, 0.84 for Assertion, 0.87 for Self-control, 0.86 for Externalizing Problems and 0.62 for Internalizing Problems.

The translations of the questionnaire into Russian followed established guidelines, including appropriate use of independent back-translations (Sartorius & Kuyken, 1994). Finally, an official interpreter made independent back-translations. The versions obtained were compared with originals, and inconsistencies were analyzed and corrected.

To ensure the validity of the collected data, institutions and schools which participated in the study obtained recommendations about randomized allocation of participants to intervention and control groups. Children, parents and teachers completed the SSRS questionnaire at the institution or at school while parents were also given the opportunity to do it at home. Institution and school staff involved in completing the questionnaires were different from those who were trained in ART. Completion of the questionnaire was conducted one week prior to a start of the ART implementation (pre-test). Post-test was performed within one week after the ART intervention.

## Results and discussion

*Children: Overall effects.* An overall prediction for the SSRS pre vs. post scores was that the scores should increase in the ART group and remain relatively stable in the control group. We therefore subjected the overall pre and post SSRS scores to repeated measures ANOVA with intervention (ART vs. control) as between group factors and the pre-post scores as the repeated factor. The specific predictions were tested by contrast analyses (Rosenthal & Rosnow, 1985). The first contrast (i.e. pre vs. post scores within the ART group) indicated a significant effect,  $F(1, 208) = 4.75, p < .05$ . The second contrast (i.e. pre vs. post scores within the control group) was not significant,  $F(1, 208) = 1.34, p = .25$ . This indicates that the ART intervention was associated with a significant positive change, and no change in the control group. These results are shown in Figure 1.

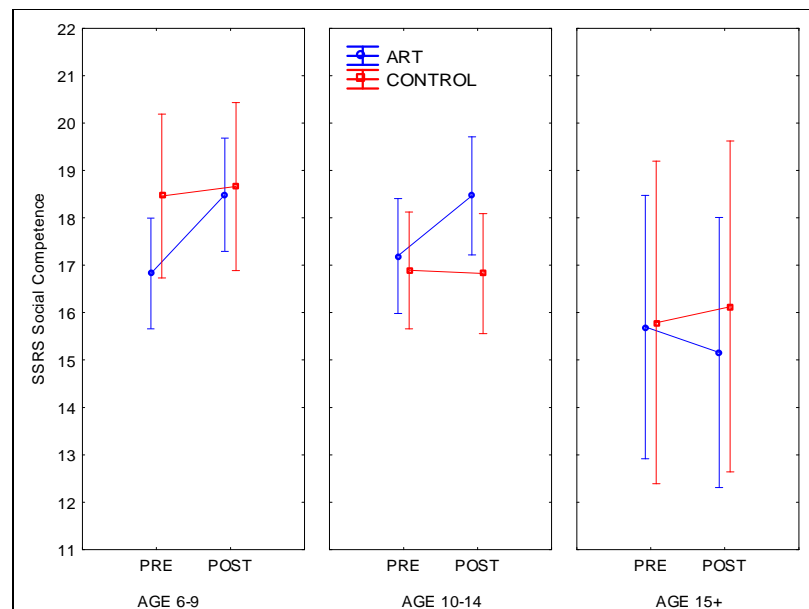


**Figure 1. Change in overall SSRS competence scores between PRE and POST in the ART and control groups (students' self-report data).**

Because intervention effects are often modulated by personal characteristics (age, sex) and factors related to the intervention (implementation quality that may differ between institutions), we subjected the effect data to an overall ANCOVA (GLM) with these factors as discrete (intervention, sex) and continuous

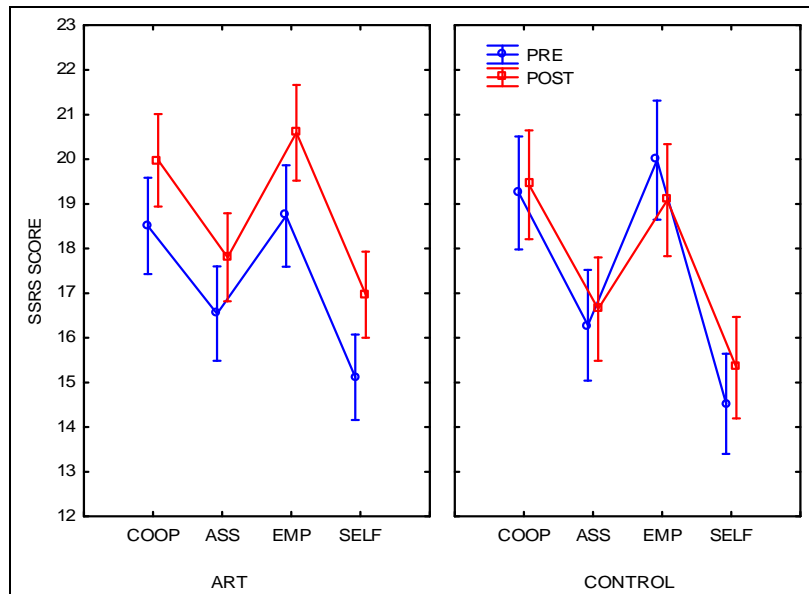
(age, institution) predictor variables, and change in pre vs. post competence scores as the dependent variable. The analysis indicated no significant effect of the intervention,  $F(1, 208) = 3.52, p = .062$ . Other studied factors also indicated no significant effects.

Because age level previously has been shown to be related to intervention efficacy (Langeveld, Gundersen, & Svartdal, 2012), when analyzing the data we arranged the participants in three age groups, 6-9, 10-14, and 15 years and older to compare pre-post changes on social competence. This arrangement was made according to age related class level in the Russian school system where age 6-9 is related to primary school, 10-14 middle school and 15 and older to secondary school. An ANOVA with intervention and age levels as predictor variables indicated that overall social competence levels decreased significantly with increasing age,  $F(2, 207) = 3.19, p < .05$ . Further, as is shown in Figure 2, reliable effects of the ART intervention seemed to occur in the two lower age groups, but not in the oldest group. Note, however, that the number of participants in the 15+ age group was low (8 in the ART group, 12 in the control group). Contrast analysis of the predicted pre vs. post change in the 6-8 years ART group was significant,  $F(1, 237) = 5.34, p < .025$ . The corresponding contrast in the 10-14 years ART group was not significant,  $F(1, 237) = 2.98, p < .10$ .



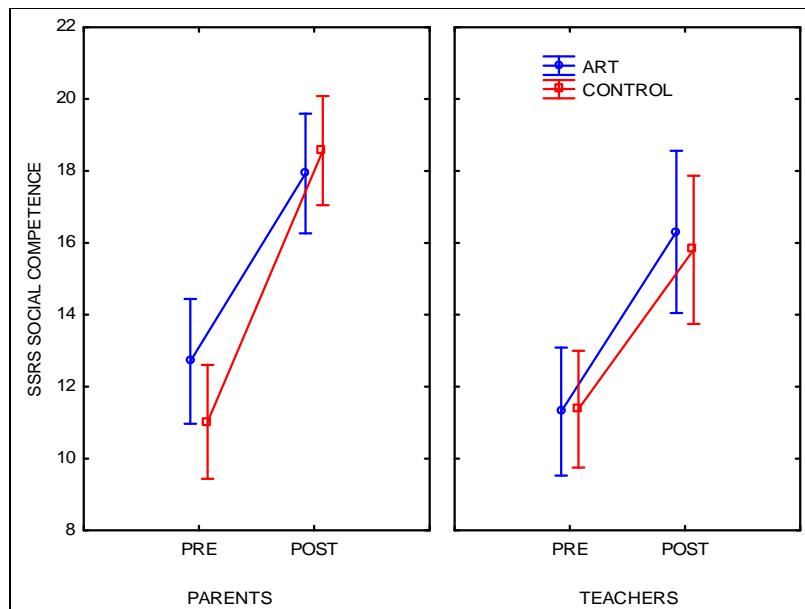
**Figure 2. Change in overall SSRS competence scores between pre and post-test in the ART and control groups grouped according to respondents' age levels (students' self-report data).**

*Children: Subscale analyses.* To examine the nature of the SSRS score changes between pre and post indicated in the two lower age groups in Figure 2, we plotted the subscale scores (i.e. cooperation, assertion, empathy and self-control) for the ART vs. control groups. As indicated in Figure 3, the younger participants in the ART group demonstrated increased levels of corresponding magnitude on all four subscales from pre to post, whereas no changes were observed in the control group.



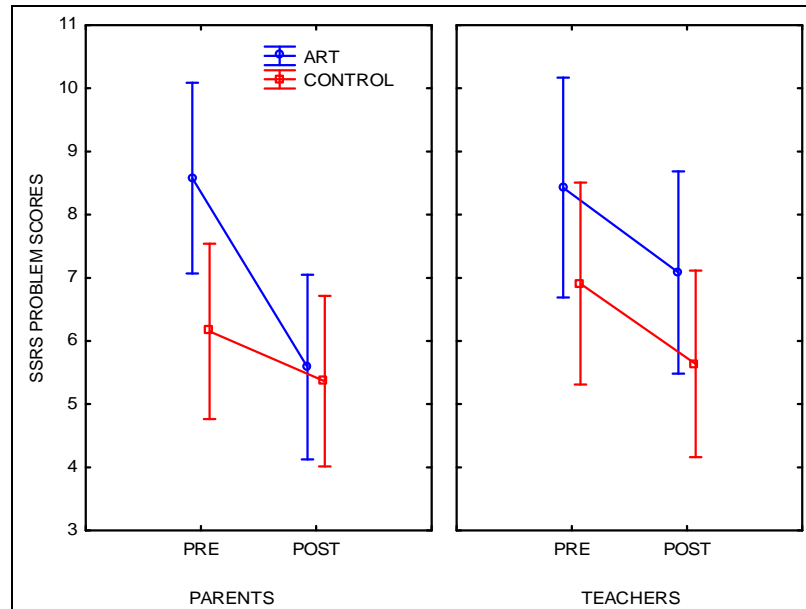
**Figure 3. Changes in pre vs. post-test scores on the SSRS subscales, ART and control groups (students' self-report data).**

*Parents and teachers: Social competence.* The parents' and teachers' SSRS social competence scores were subjected to repeated measures ANOVA with intervention (ART vs. control) as the between-group factor and time (pre vs. post) as the repeated measures factor. The ANOVA indicated a significant effect of time,  $F(1, 64) = 58.16, p < .001$ , reflecting that SSRS scores for both informants and both conditions changed markedly between pre and post (Figure 4). Obviously, there were no differences between the ART and control groups.



**Figure 4. Changes in pre vs. post-test social competence scores according to parents and teachers**

*Parents and teachers: Problem scores.* The parents' and teachers' SSRS external problem scores were analyzed by repeated measures ANOVA with intervention (ART vs. control) as the between-group factor and time (pre vs. post) as the repeated measures factor. The ANOVA indicated a significant effect of time,  $F(1, 59) = 10.87, p = .005$ , indicating a general reduction in problem scores from pre- to post assessment. No other significant effects were observed (Figure 5).



**Figure 5. Changes in pre vs. post-test problem scores according to parents and teachers**

### Discussion

The study aimed to examine the efficacy of the ART programme with regards to pro-social skill acquisition and decrease in problem behaviour. Based on the children's self-reports, the results indicated positive changes from pre to post in overall SSRS competence scores among children from the ART group. The ART group demonstrated increased levels on all four SSRS subscales, namely cooperation, assertion, empathy and self-control. In contrast, pre- and post-test comparisons of overall SSRS competence scores and SSRS subscales, revealed no change in the control group. These results are in line with previous studies conducted in Norway and USA on the efficacy of the ART programme (Gundersen & Svartdal, 2006; Nugent & Bruley, 1998).

When examining the role of age as a moderator of the efficacy of the programme, we found that younger participants demonstrated greater improvement in social training. Indeed, reliable effects of the ART intervention were found among children 14-years old and younger, with no changes observed among children older than 15. This finding is in line with previous studies (e.g., Langeveld, Gundersen & Svartdal, 2012) that older children often benefit less from competence training compared to younger children. In the age group >15, a positive change was found in the control group, with no change in the ART group. We attribute this to



the low number of pupils in the oldest group and hence the outcome in this group may be unreliable. It is also possible that the ART intervention is contra-productive for this age group. Another study involving more children from this age group is needed to confirm or reject this conclusion.

When parent and teacher pre- and post-ratings were analysed, it was found that children from the intervention and control groups demonstrated similar positive changes in SSRS scores. Also, children from intervention and control groups demonstrated less externalising problems in the pre- and post-comparisons. One of the possible explanations for this is related to the day-to-day interaction between the children at the institution and the transfer of positive changes in behaviour from ART children to those in the control group. This effect was noted earlier in several studies (Gundersen & Svartdal, 2010; Kazdin, 1998) and may be attributed to a diffusion of treatment. Thus, measures intended for the intervention group may have affected the control group. A more subtle form of diffusion of treatment is the possibility that changed behaviour in the intervention group may have affected behaviour in the control group, thus representing some form of indirect diffusion of treatment (Gundersen & Svartdal, 2010). In our study, children from control and intervention groups had close daily contact and it is likely that those receiving the ART programme applied their new skills outside the training room. Although this represents a problem by threatening the internal validity of this study, it also indicates a potential positive side-effect of ART programme implementations in situations with a high degree of interaction between participants.

Although, the overall result of the evaluation of the ART programme is positive, several limitations of the study must be mentioned. Although randomization was carried out by the teaching staff following a strict protocol, there might still have been a tendency for the teaching staff to allocate those pupils with the highest level of difficulty to intervention groups. Secondly, often the same teacher completed the teacher's reports for several children, which could influence the estimation accuracy when providing the assessment. The involvement of more teachers in research can potentially provide better assessment of children and improve the quality of data. Thirdly, the achievement of better results is guaranteed when the programme is culturally sensitive and adapted accordingly. It is common for practitioners to change or adapt evidence-based programmes as they implement them, whether intentionally or not. The adaption, thus, must assume meeting local needs without compromising the efficacy of the programme. Fourth, the efficacy of the programme is dependent on whether the implementation is systematic and well-focused. To our knowledge, most of the ART trainers had extensive theoretical and practical training before using the programme and this could potentially guarantee the fidelity of the implementation. Nonetheless, it was not possible to prevent cases when the implementation was influenced by, for example, illness of trainers or participants, children's refusal to continue with ART or fill out the questionnaires, and overload of trainers with other work duties at their institution. Better results from the implementation can be achieved when the intervention is fully integrated not only into the institution's approved intervention plan but also into the institution's daily routines. This involves quality systems that secure proper generalization into the ART group's natural environment as well as regular supervision and sufficient time for trainers to prepare and debrief each session. Olsen and Gundersen (2012) have developed an assessment scale measuring the degree of proper implementation for use in future research in ART. Such measures related to implementation quality would also allow for a focused

examination of the relationship between implementation quality and outcome efficacy. In conclusion, our study revealed significant positive changes in skills among children who received the ART programme. The study also found that many children from both intervention and control groups demonstrated similar tendencies in decreased behavioural problems and we attributed this outcome to diffusion of treatment effect.

As far as we know, this is the first evaluation study on efficacy of the ART programme in Russia. The results suggest initial support for the use of the programme as an effective method for increasing social skills and decreasing behavioural problems among children from social institutions and schools. Future studies should investigate whether the ART programme is also effective when it is implemented among Russian children and adolescents at risk of offending.

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### **References**

- Barnoski, R. & Aos, S. (2004). *Outcome evaluations of Washington States' research-based programmes for juvenile offenders*. Washington: Washington State Institute for Public Policy.
- Currie, M. R., Wood, C. E., Williams, B. & Bates, G. W. (2012). Aggression Replacement Training (ART) in Australia: A longitudinal youth justice evaluation. *Psychiatry, Psychology & Law*, 19(4), 577-604.
- Demary, E., Maray, M. K., Ruffalo, S. L., Carlson, J., Busse, R. T., Olson, A. E., et al. (1995). Social skills assessment: A comparative evaluation of six published rating scales. *School Psychology Review*, 4, 648-671.
- Dowden, C. & Andrews, D. A. (2000). Effective correctional treatment and violent reoffending; A metaanalysis. *Canadian Journal of Criminology*, 42(4), 449-467.
- Glick, B. & Gibbs, J. C. (2011). *Aggression Replacement Training. A Comprehensive Intervention for Aggressive Youth*. Champaign, Illinois: Research Press.
- Goldstein, A. P. & Glick, B. (1994). Aggression Replacement Training: Curriculum and Evaluation. *Simulation and Gaming*, 25(1), 9-26.
- Goldstein, A. P., Glick, B. & Gibbs, J. C. (1998). *Aggression replacement training a comprehensive intervention for aggressive youth*. Champaign, Ill: Research Press.
- Goodman, R., Slobodskaya, H. & Knyazev, G. (2005). Russian child mental health—a cross-sectional study of prevalence and risk factors. *European Child and Adolescent Psychiatry*, 14(1), 28-33.
- Gresham, F. M. & Elliot, S. N. (1990). *Social Skills Rating System*. Circle Pines, MN: American Guidance Service.
- Gundersen, K. & Moynahan, L. (2006). *Nettverk og sosial kompetanse*. Oslo: Gyldendal Akademisk.
- Gundersen, K. & Svartdal, F. (2006). Aggression Replacement Training in Norway: Outcome evaluation of 11 Norwegian student projects. *Scandinavian Journal of Educational Research*, 50(1), 63-81.

- Gundersen, K. & Svartdal, F. (2010). Diffusion of treatment interventions: Exploration of secondary treatment diffusion. *Psychology, Crime and Law*, 16(3), 233-249.
- Gundersen, K., Olsen, T. & Finne, J. (2008). *ART - En metode for trening av sosial kompetanse. Trenermanual*. Nærbø: Rogaland Høgskole.
- Kazdin, A. E. (1998). *Methodological issues and strategies in clinical research*. (2<sup>nd</sup> ed.). Washington, DC: American Psychological Association.
- Kazdin, A. E. & De Los Reyes, A. (2009). Conduct disorder. In R. J. Morris, & T. R. Kratochwill (Rev. ed.). *The practice of child therapy* (pp. 207-247). New York: Lawrence Erlbaum Associates.
- Langeveld, J. H., Gundersen, K. & Svartdal, F. (2012) Social competence as a mediating factor in reduction of behavioural problems. *Scandinavian Journal of Educational Research*, 1, 1-19.
- Nordahl, T., Sørli, A. M., Manger, T. & Tveit, A. (2005). *Atferdsproblemer blant barn og unge*. Bergen: Fagbokforlaget.
- Nugent, W. R. & Bruley, C. (1998). The Effects of Aggression Replacement Training on antisocial Behaviour in a Runaway Shelter. *Research on Social Work Practice*, 8(6), 637-657.
- Ogden, T. (2003). The validity of teacher ratings of adolescents' social skills. *Scandinavian Journal of Educational Research*, 47(1), 63-76.
- Olsen, T. M. & Gundersen, K. K. (2012). *Implementation of ART. Quality-assurance policies and procedures*. Diakonhjemmet Høgskole. Report 2012/1.
- Rosenthal, R. & Rosnow, R. L. (1985). *Contrast analysis. Focused comparisons in the analysis of variance*. Cambridge, England: Cambridge University Press.
- Sartorius, N. & Kuyken, W. (1994). Translation of Health Status Instruments. In: J. Orley, & W. Kuyken (Ed.), *Quality of Life Assessment: International Perspectives* (pp. 3-18). Berlin-Heidelberg: Springer-Verlag.
- SINTEF (2004). *SAMDATA Psykisk helsevern. Sektorrapport: Sammenligningsdata for psykisk helsevern*. Trondheim: SINTEF Helse.
- Sørli, M. A. (2000). *Alvorlige atferdsproblemer og lovende tiltaks i skolen. En forskningsbasert kunnskapsanalyse*. Oslo: Praxis Forlag.
- Vermeiren, R., Deboutte, D., Ruchkin, V. & Schwab-Stone, M. (2002). Antisocial behaviour and mental health. Findings from three communities. *European Child and Adolescent Psychiatry*, 11(4), 168-175.