Enhanced Aggression Replacement Training with Children and Youth with Autism Spectrum Disorder

Luke Moynahan

An enhanced form of Aggression Replacement Training is being used with children and youth with autism spectrum disorder and particularly those with Asperger’s Syndrome who present behavioural challenges. Initial results in a Norwegian centre indicate that, with some modifications and enhancements, the programme is an appropriate strategy for improving social competence and replacement of aggressive responding in this population. Enhancement techniques are described that help tailor standard Aggression Replacement Training to the demands of this population.

The first two international Aggression Replacement Training (ART) seminars held in Malmö, Sweden, revealed that ART is in use in at least 22 countries worldwide. Most applications are carried out with children and youth with, or at risk of developing, conduct disorders. At Glenne Autismsenter, part of the regional specialist habilitation service for Autism Spectrum Disorder (ASD) in southeastern Norway, we are currently conducting research and clinical trials of both standard and enhanced Aggression Replacement Training with children and youth with ASD (Autism, Atypical Autism, Asperger’s Syndrome) in a variety of school, day care, and respite care settings.

The special strengths and requirements of children and youth with ASD and especially those diagnosed with Asperger’s Syndrome (AS), have prompted us to undertake methodological enhancements of standard ART in order to motivate attendance and active participation in training sessions. Asperger’s Syndrome (AS) is characterized first and foremost by severe problems in social interaction and communication, restricted spheres of interests, and perseverant or compulsive behaviour. At our clinic all of the referrals received concerning children, youth, and adults with AS between 1996 and 2002 concerned problems of aggressive behaviour. This is a surprising finding given current diagnostic criteria for AS. Neither the ICD-10, used in Europe (World Health Organization, 1992), nor the DSM-IV, used in the Americas (American Psychiatric Association, 1994), describe problems of emotional self-regulation or aggression as being prevalent in AS. Indeed the widespread view of clients with AS is that they are more often the victims of, rather than perpetrators of, aggressive behaviour (Ghaziuddin, Tsai, & Ghaziuddin, 1991; Tantam, 2000). This perspective still holds despite several studies indicating a prevalence of challenging behaviour warranting intervention amongst children with ASD of between 13 and 30% (see Horner, Carr, Strain, Todd, & Reed, 2002, for review).

There is increasing evidence for comorbidity of AS and attention deficit hyperactivity disorder (ADHD) (Bashe & Kirby, 2001; Ehlers & Gillberg, 1999). Problems of impulse control have been indicated as the central neuro-behavioural dysfunction affecting children and youth with ADHD (Barclay, 1997), thus making interventions that target development of consequential thinking, perspective taking, and problem solving intuitively appealing. Asperger’s Syndrome has also been described as a fundamental disorder of empathy (Ehlers & Gillberg, 1999), indicating the appropriateness of systematic nurturance of empathy and perspective taking skills for this group. The Prepare Curriculum and ART programme contain prescriptive interventions that cover all the above areas (Goldstein, 1999; Goldstein, Glick, & Gibbs, 1998).
The social and employment trajectories of youth with AS are exceedingly poor, as compared with normal peers. Young adults with Asperger’s Syndrome are severely over represented among the under- and unemployed in Norway (Kittelsaa, 2000). Children and youth report having few friends and acquaintances. One child reported that he had 27 friends (his classmates), but that none of them liked him. Rates of depression among youth with AS are elevated compared with the normal population (Bashe & Kirby, 2001; Ghaziuddin & Greden, 1998). Problems of anger control and aggressive behaviour are often seen in depression in children and youth (Barlow & Durand, 1995; Seligman, Walker, & Rosenhan, 2001), with disruption to social relations occurring as a consequence. This raises the question of whether one should treat a possible underlying depression, rather than attempt to replace aggressive behaviour. An alternative view is that depression in children and youth with AS follows a behavioural history of avoidance and (unsuccessful) aggressive avoidance of life stressors more akin to a learned helplessness (Seligman, 1992). Our basic research stance is founded upon the latter understanding.

The average age of diagnosis of autism in Norway is around three years, whereas the average age of diagnosis for Asperger’s Syndrome is 12-plus years. This alarming fact may well indicate that many, if not all, families of children with AS are having to tackle serious problems involving lack of emotional self-regulation over several years, quite possibly without adequate professional assistance. This has certainly been the case with families referred to our centre.

One of the major agreements among researchers is the difficulty experienced by children and youth with ASD in understanding the perspectives of others and using this perspective in social transactions. This difficulty has been termed “lack of a theory of mind” (Leslie, 1987; 1994), “mindblindness” (Baron-Cohen, 1995), or “impairment in using mental state concepts” (Wellman, et al., 2002).

In an attempt to teach theory of mind using social skills training, Ozonoff and Miller (1995) used the first edition of Goldstein’s The Prepare Curriculum (1988), but found the skills described there to be too advanced for their subjects. Much of the current research into mindblindness/theory of mind is designed to identify possible cognitive mechanisms or lack of such mechanisms that may explain autistic children’s difficulty in relating empathetically in social transactions. This research is heavily based upon tests of verbal reasoning and upon the use of pencil and paper tests in contrived experimental situations.

Glenne Autismsenter is a habilitation centre devoted to practical solutions and to optimising the quality of life of our clients and their intimate (family, friends, and close relatives) and effective social networks (those in daily contact with the client—school friends, teachers, neighbours, etc). Our approach is firmly grounded in applied behaviour analysis and positive behavioural support (Carr, et al., 2002) and relies heavily on achieving life style changes through skills acquisition and generalization to real life contexts. Thus we prefer enactment techniques, rather than verbal and textual methods, for establishing social perspective taking and empathy skills that provide our

“Peace of My Heart” by Annie M., Sioux Falls, SD. Used with permission.
clients with multimodal sensory experiences in realistic simulation training situations. We prefer methods that may be employed by teachers, parents, and youth trainers in actual situations, i.e., the home, school, and youth club, in a collaborative effort. We term this approach joint experimental cooperation (Moynahan, 2001).

**Enhanced ART**

In our programme of research, we make use of a three-component model of intervention. The primary component is a standard ART programme, consisting of 30 sessions over 12 weeks—12 skillstreaming (social skills) sessions, 10 anger control sessions, and 8 moral reasoning sessions. Students with an Autism Spectrum Diagnosis train in mixed groups of between 4 and 8 students, where ASD and non-ASD children and youth participate together. We have found that using mixed groups instead of groups of children all with ASD diagnoses ensures lower fall out and higher “on task” activity within sessions. Two ART trainers, usually teachers or social educators, are responsible for delivery of the ART curriculum.

Dependent upon responses to standard ART, as measured by a battery of tests, behavioural observations, and subjective evaluations by trainees, family members, and teachers of usefulness and appropriateness, students may be offered a further eight-week enhanced programme, consisting of eight problem-solving training sessions, eight social perception training sessions, and eight empathy training sessions. The enhanced component is based on courses described in *The Prepare Curriculum* (Goldstein, 1999) and use of techniques developed at our centre are detailed below. Students who still fail to respond are offered “Graded Exposure to Aggression evoking stimuli and alternative Response Strengthening” (GEARS). Each trainee is helped to construct a stimulus hierarchy and is assisted to replace aggressive responses with alternative social skills through GEARS. These alternative social skills must help reduce the level of aversiveness of aggression-evoking stimuli and must enable the student to cope in non-aggressive ways to such stimuli. This component is in part analogue to validated exposure and response prevention treatments of Obsessive Compulsive Disorder (OCD) in children and youth (March & Mulle, 1998). Recalcitrant problems of serious aggressive behaviour in children and youth can usefully be regarded as impulsive-compulsive behaviour.

In our research, we utilize a test battery comprising, amongst other instruments, the Child Behavior Checklist (ASEBA) (Achenbach, 1991), Social Skills Rating System (Gresham & Elliott, 1989), Stress Index for Parents of Adolescents (Sheras & Abidin, 1998), and Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984). We have also begun to use the Behavioral Objective Sequence (Braaten, 1998). In addition to random group designs, we are conducting single case experimental designs using direct behavioural measures. In our approach, it is their inti-

---

**Figure 1:** Group averages showing effects of Skillstreaming training on social skills with conduct-disordered and autistic youth in a public school setting.
mate and effective social network that helps the child or adolescent construct the stressor hierarchy and helps them observe and chart successful contact with stressors.

Initial pilot studies indicate that standard and enhanced ART is effective in reducing aggressive behaviour and increasing the use of pro-social and anger replacement skills in children and youth with Autism Spectrum Disorder. The techniques to be described have been developed over several years in the course of applying the Prepare Curriculum and ART with children and youth with ASD. (See Figure 1.)

### Some Refinements of Standard ART Delivery

Trainers use a method called “bubble talk” to tell the group what they are thinking or feeling in much the same way as cartoon figures share their thoughts in “bubbles” with the reader. Trainers and trainees click their fingers, say out loud, “Bubble talk!” and proceed to state what their goals are, how they feel, and what they are thinking. When they are finished, they click their fingers twice and say, “end of bubble talk.” Observers can, at any time, ask the role-players to perform “bubble talk” in order to verify their hypotheses regarding the private thoughts and feelings of actors or simply to gain information prior to questioning.

Bubble talk is in fact a form of reflexive (self-directed) observation that is very useful in gaining access to trainees’ private behaviour.

All training is videotaped and allows trainees to see and hear their own performances. Students are asked to provide reflexive feedback on their own performance, which enables trainers to correct skill users’ overestimation and underestimation. We use a simple form of self-evaluation to correct patterns of over- and underestimation of skills.

Table 1 shows that in the first evaluations the student consistently underevaluates her own performance compared to the trainers’ evaluation. She nevertheless received the given points. In the next three evaluations, she overevaluates her own performance compared to the trainers’ evaluation. Again she received the points given. In the next three evaluations, her evaluation of her own performance is in agreement with the trainers, and an agreement bonus results. We often fade out trainer evaluations and replace them with group evaluations, family member evaluations, and teacher evaluations prior to, and commensurate with, generalization of skills to real life situations.

### Enhanced ART

Difficulties in indentifying the perceptions, states, and goals of others is a core problem for children and youth with ASD (Baron-Cohen, 1995; Ozonoff & Miller, 1995). In order to meet this challenge, we have developed Goldstein’s situational perception training course (Goldstein, 1988, 1999) into social perception training. The specific behavioural goals for the course are to enable students to identify probable motivations of differing actors in realistic and relevant social role-plays that include the students themselves, identification of available choices of the course of action for all actors, including themselves, and providing guidance as to the most beneficial course of action (that which is best for all concerned). We have developed new techniques for enabling multiple perspective taking in Aggression Replacement Training with trainees with ASD.

<table>
<thead>
<tr>
<th>trainee self-evaluation</th>
<th>trainee self-evaluation</th>
<th>trainee self-evaluation</th>
<th>trainer evaluation</th>
<th>agreement</th>
<th>sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>excellent 3 points</td>
<td>good 2 points</td>
<td>ok 1 point</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>10</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 1: Use of inter-observer agreements to promote realistic self-assessment (reflexive competence)
Enhanced Techniques—
The Triple Dance

The triple dance technique may be used in the anger control and moral reasoning training components of Aggression Replacement Training, but is used most extensively in social perception training. Triple Dance is a structured role-play technique where students first watch a demonstration of a successful social interaction or the successful resolution of an interactive problem that occurs between two or more actors. We have adapted our technique from the Neuro Linguistic Programming technique developed by Sellæg, sætreng, and Wroldsen (1993). Role-plays are usually based on the realistic use of a social skill previously trained in the skillstreaming component of ART.

Trainees are first placed in the role of observer (step one) and asked to observe the role-play and to comment upon content and the flow of the role-play. Trainers make use of questions, such as “What happened first?” “What happened next?” “What was the result?” “How do you think person A felt?” “How could you tell?” “How do you think person B felt when person A said …?” “What makes you think that?”

Following this first round of descriptive or reflective questioning, the trainee is then requested to role-play the role of the skill receiver (step two). Playing the role of the skill receiver provides the trainee with multimodal (multisensory) experience of the effects of the social skill and sensitizes the student to the future consequences for others of using the skill. Trainers will make use of reflexive (self-descriptive) questioning in order to amplify positive effects of the skill for the student. “When person A said … what did you think there and then?” “How did you feel when s/he offered to share the game with you?” The third step in the triple dance is then to aid the student in performing the role of the skill user. Trainees focus upon fluent use of the skill training and may encourage the student to repeat specific details of the skill, such as approaching, maintaining appropriate distance, intonation, gaze, etc. We make use of precision teaching techniques (Binder, 1996; Lindsley, 1996), such as fluency spurts lasting no more than 10 to 20 seconds. The trainee is requested to perform as many rapid repetitions of basic component skill elements, such as smiling, nodding, approaching, gaze co-ordination, non-verbal listening skills, etc., as possible within the spurt time limit. In addition, trainers may “freeze” the role-play in order to provide response-specific feedback or request that the skill user perform “bubble talk” in order to access the student’s private behaviour. “When you used the skill, how did it feel?” “When you said … and you saw person A smile, how did that make you feel?”

Role-playing the role of the skill user provides the trainee with multimodal, sensory experiences of naturally reinforcing stimuli. The skill receiver, other group members, and trainers provide the skill user with immediate and concise performance specific feedback. This in itself helps build competence in giving and receiving praise and constructive criticism.

Asking trainees to perform all three roles—observer, skill user, and skill receiver, as well as sharing their thoughts and feelings while performing all three roles—is a simple yet elegant way to build repertoires of complementary skills. Indeed, such training lays the groundwork for acquiring socially validated pre-empathetic skills, i.e., empathetic understanding and empathetic communication. We make use of modified Carkhuff scales for the measurement of empathy (Carkhuff, 1969) as pre- and post-measures in order to gauge the effect of this form of training and as a preparatory exercise for empathy training.

The Turning Point Technique

In the turning point technique, ART trainees are asked to watch a demonstration of a problematic or unresolved so-
cial interaction between two or more actors. Situations chosen are often based upon incidents occurring at school, at home, or in the local community. Students are often encouraged to keep diaries in addition to ART programme “hassle logs” (Goldstein, Glick, & Gibbs, 1998), as well as to record successes and challenges that they meet in their daily lives. These data allow us to reconstruct problematic interactions in the form of realistic role-plays. After having described the problem to the rest of the group, the student watches a re-enactment of the problem as performed by other members of the group without comment or interruption. The problem is then re-played and the student is asked to stop the role-play at any point where an alternative behaviour (a turning point) can be suggested that can help the actors come to a better result or acceptable solution. We make use of a “magic remote control apparatus,” where the observing student pushes a make-believe button on a make-believe remote control and says loudly, “beep.” The actors immediately “freeze” and stop the role-play to listen to the suggestion given by the student. The student then pushes an imaginary rewind button and starts the role-play again. The actors then perform the suggestion(s) given by the student. The student tracks the success (or lack of success) of her or his suggestion. New suggestions regarding turning points may be made. If the suggestion(s) lead to a better result, the student is then required to play her or his own role in a new and more successful role-play. We make use of the triple dance technique where appropriate, i.e., we may ask the trainee to play other roles than her or his own in order to provide multiple perspective experience that helps make the skill more robust.

Students thoroughly enjoy both the triple dance and turning point techniques. Making video recordings of such training enables students to track their own progress. Video recordings are also useful in generalization work. Families may borrow recordings in order to follow training and incorporate learned skills into the daily life of the family. Trainers also make use of pre-recorded role-plays so that they can challenge the whole group to identify turning points. This variation is also useful in conducting ART with whole school classes and larger groups. Violent behaviour is never demonstrated, but video challenges are very lifelike up to the point where physically aggressive behaviour begins. The advantage of role-play based training is that the trainers or skill coaches have a lot of behaviour with which to work. Using “bubble talk” enables access to thoughts and feelings (private events). The magic remote control enables trainers to give very precise response specific feedback and also has the advantage that actors have to be thoroughly in control of their own behaviour—they must be able to stop, replay, slow down, or speed up their behaviour on demand.

The Four-Step Technique

A variant of the triple dance is termed the “Four Step,” where each student is asked to problem solve a conflict or dispute among friends, schoolmates, and acquaintances. First the student watches a demonstration of a conflict situation (step one, observer role) and then is requested to play both actors’ roles in order to fully grasp both perspectives on the problem (steps two and three). Here “bubble talk” is very valuable. Finally pupils are asked to play the role of a “neutral friend” who is required to give practical advice to both actors (step four). Advice must be made in terms of actual behaviours, both verbal and motoric, that can help them resolve their differences in a non-aggressive, pro-social manner. Often the advice is whispered in the ear of each of the actors so that the suggested solution comes as a surprise to both actors and observers.

All three techniques, the triple dance, turning point, and four-step techniques, may be adapted to group use where panels of students are asked to provide solutions, actors may ask observers to take over their roles on demand, observers may ask actors to relinquish their role and allow the observer to play the role, etc.

In conclusion, the use of enactment-focused skills training comprises the major component in enhanced aggression replacement training currently under experimental research at Glenne Autismesenter. Initial results are promising, and the number of schools and clinics utilizing this approach is increasing in Norway (Moynahan & Stromgren, 2003). A symposium on ART, at the annual convention of the Norwegian Association for Behaviour Analysis (NAFO), included contributions from a wide range of settings and applications with children and youth with and without Pervasive Developmental Disorders. The techniques described above may be attempted safely by ART trainers and skills coaches in the continuing efforts to improve Aggression Replacement Training.

Luke Moynahan, MSc, is a senior consultant for Glenne Autismesenter in Norway. His current research involves enhanced Aggression Replacement Training with Autism Spectrum Disordered children and youth. He can be contacted at: Glenne Autismesenter, Fogdeveien 55, 3184 Horten, Norway; fax: Norway (47) 33 07 88 96; or e-mail: luke.moynahan@siv.no

REFERENCES
