

A Randomized Controlled Trial of a Cognitive Behavioural Intervention for Anger Management in Children Diagnosed with Asperger Syndrome

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Published online: 3 November 2006
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Abstract The purpose of the study described was to evaluate the effectiveness of a cognitive behavioural intervention for anger management with children diagnosed with Asperger syndrome. Forty-five children and their parents were randomly assigned to either intervention or wait-list control conditions. Children in the intervention participated in six 2-h weekly sessions while parents participated in a larger parent group. Parent reports indicated a significant decrease in episodes of anger following intervention and a significant increase in their own confidence in managing anger in their child. Qualitative information gathered from parents and teachers indicated some generalization of strategies learned in the clinic setting to both home and school settings. Limitations of the study and suggestions for future research are also discussed.

Keywords Asperger syndrome · Anger management · Cognitive Behaviour Therapy

Introduction

The explanatory text included in the DSM IV description of Asperger's syndrome (American Psychiatric

Association, 2000) refers to an association between Asperger's syndrome and the development of a secondary mood disorder. Extensive clinical experience and autobiographies confirm that while the person with Asperger's syndrome can have considerable intellectual ability there is invariably confusion and immaturity with regard to emotions. The theoretical models of autism developed within cognitive psychology, and research in neuro-psychology and neuro-imaging also provide some explanation as to why children and adults with Asperger's syndrome are prone to secondary mood disorders. The extensive research on Theory of Mind skills confirms that people with Asperger's syndrome have considerable difficulty identifying and conceptualizing the thoughts and feelings of other people and themselves. The interpersonal and inner world of emotions appears to be uncharted territory for people with Asperger's syndrome. This will affect the person's ability to monitor and manage emotions, within themselves and others.

Research on Executive Function and Asperger's syndrome suggests characteristics of being disinhibited and impulsive, with a relative lack of insight that affects general functioning (Eisenmajer et al., 1996; Nyden, Gillberg, Hjelmquist, & Heiman, 1999; Ozonoff, South, & Miller 2000; Pennington & Ozonoff, 1996). Impaired Executive Function can also affect the cognitive control of emotions. Clinical experience indicates there is a tendency to react to emotional cues without thinking. A fast and impulsive retaliation can cause the child with Asperger's syndrome to be considered to have a conduct disorder or a problem with anger management.

Research using neuro-imaging technology with subjects who have autism and Asperger's syndrome has

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also identified structural and functional abnormalities of the amygdala, a part of the brain associated with the recognition and regulation of emotions (Adolphs, Sears, & Piven, 2001; Baron Cohen et al., 1999; Fine, Lumsden, & Blair, 2001; Critchely et al., 2000). The amygdala is known to regulate a range of emotions including anger, anxiety and sadness. Thus we also have neuro-anatomical evidence that suggests there will be problems with the perception and regulation of emotions.

When feeling angry, the person with Asperger's syndrome does not appear to be able to pause and think of alternative strategies to resolve the situation, considering his or her intellectual capacity and age. There is often an instantaneous physical response without careful thought. When the anger is intense, the person with Asperger's syndrome may be in a 'blind rage' and unable to see the signals indicating that it would be appropriate to stop. In a conflict situation, typical young children will become angry and use acts of aggression to achieve possessions, dominance and control. Gradually, acts of aggression and threats are replaced by negotiation, compromise and cooperation, and the knowledge that one can sometimes get what one wants by being nice. These strategies may not be obvious to children with Asperger's syndrome, who tend to rely on immature, but sometimes effective, confrontation strategies and emotional blackmail.

Other reasons for problems with anger management include having a difficulty expressing feelings in words or Alexithymia (Hill, Berthoz, & Frith, 2004) and using physical acts to articulate the mood and release the emotional energy. Sometimes the anger is deliberately targeted at a person as a mood restorative. The psychological term for such behaviour is negative reinforcement. Hurting someone such as a sibling to feel better can be a powerful reinforcement for the aggressive behaviour.

The primary psychological treatment for mood disorders is Cognitive Behaviour Therapy (CBT). The intervention described in this paper uses a modified version of CBT to help children with Asperger syndrome that experience difficulties with understanding and controlling their anger.

Cognitive Behaviour Therapy

Cognitive Behaviour Therapy (CBT) has been developed and refined over several decades and research studies have established that CBT is an effective treatment to change the way a person thinks about and responds to emotions such as anxiety, sadness and anger (Graham, 1998; Grave & Blissett, 2004; Kendall,

2000). CBT focuses on aspects of cognitive deficiency in terms of the maturity, complexity and expression of emotions, and cognitive distortion in terms of dysfunctional thinking and incorrect assumptions. Thus, it has direct applicability to children and adults with Asperger's syndrome who have impaired or delayed Theory of Mind abilities and difficulty understanding, expressing and managing emotions. The theoretical model used in CBT is consistent with current theoretical models on human emotions, namely becoming more consciously aware of one's emotional state, knowing how to respond to the emotion, and becoming more sensitive to how others are feeling (Ekman, 2003).

Cognitive Behaviour Therapy generally consists of six components, assessment of the nature and degree of the mood disorder, affective education, cognitive restructuring, stress management, self-reflection, and a schedule of activities to practice new cognitive skills. In the affective education component of CBT the child learns why we have emotions, the advantages and disadvantages of emotions and the identification of the different levels of expression in him/herself and others. Another important aspect of affective education in CBT is to enable an individual to discover the salient cues that indicate a particular level of emotion in terms of his or her body sensations, behaviour and thoughts. These sensations can act as early warning signs of an impending escalation of emotion. In part, affective education is designed to improve the function of the amygdala in informing the frontal lobes of increasing stress levels and emotional arousal.

Once the key elements that indicate a particular emotion have been identified through affective education, it is important to use a measuring instrument to determine the degree of intensity. The psychologist can use a model 'thermometer', 'gauge', or 'volume control', and a range of activities to define the level of expression. During CBT it is important to ensure the child with Asperger's syndrome has the same definition or interpretation of words and gestures as the psychologist, and to clarify any semantic confusion. Clinical experience has indicated that some children and adolescents with Asperger's syndrome tend to use extreme statements, such as 'I am going to kill you', to express a level of anger that would be more moderately expressed by a typical child. Affective education increases the person's vocabulary of emotional expression to ensure precision and accuracy in verbal expression.

The cognitive restructuring component of CBT enables the person to correct the distorted conceptualizations and dysfunctional beliefs that create emotions

such as anxiety and anger, or feelings of low self-esteem. The process involves challenging his or her current thinking with logical evidence and ensuring the rationalization and cognitive control of emotions.

The first stage is to establish the evidence for a particular belief. Children with Asperger's syndrome can make false assumptions of their circumstances and the intentions of others due to impaired or delayed Theory of Mind abilities. They also have a tendency to make a literal interpretation, and a casual comment may be taken out of context or to the extreme.

The child with Asperger's syndrome may also have a limited repertoire of responses to situations that elicit anger. The therapist and child create a list of appropriate and inappropriate responses and the consequences of each response. Another part of cognitive restructuring is to actually challenge certain beliefs with facts and logic. We are all vulnerable to distorted conceptualizations but people with Asperger's syndrome are less able to put things in perspective, to seek clarification or to consider alternative explanations or responses. In CBT the person is encouraged to be more flexible in his or her thinking and to seek clarification, using questions or comments such as, 'Are you joking?', or 'I'm confused about what you just said.' Such comments can also be used when misinterpreting someone's intentions, such as, 'Are you serious?', or 'Did you do that deliberately?'

The concept of a 'tool box' developed by the second author, with different types of tools to 'fix the feeling' was employed as a central component of the cognitive restructuring in the present study. The strategy of the emotional toolbox is to identify different types of 'tools' to fix the problems associated with negative emotions, especially anxiety, anger and sadness. The range of tools can be divided into those that quickly and constructively release or slowly reduce emotional energy and those that improve thinking. The therapist works with the child, or adult, with Asperger's syndrome, and the family to identify different tools that help fix the feeling, as well as some tools that can make the emotions or consequences worse. Together they use paper and pens during a brainstorming session in which they draw a toolbox and pictures and descriptions of different types of tools and activities that can encourage constructive emotion repair.

The final component of CBT is the practice of all of these strategies. Practice, in graduated steps, is necessary to ensure that the child is able to use the strategies effectively. Modelling by the therapist and role-play with the children make up the first stage of this component. The final step is the use of the strategies in real situations. During the fourth session of the current

intervention, the therapists use role-play situations generated by the children to practise the strategies.

Attwood (2004a) describes the modifications that can be made at each of the stages of CBT in order to create a program that suits the unusual cognitive profile of children with Asperger syndrome. The anger intervention program described in this paper utilizes many of these modifications.

Effectiveness of CBT with Children with Asperger syndrome

We now have published case studies and research evidence that CBT does significantly reduce mood disorders in children and adults with Asperger's syndrome (Bauminger, 2002; Fitzpatrick, 2004; Hare, 1997; Reaven & Hepburn, 2003; Sofronoff, Attwood, & Hinton 2005). However, at this time, there is little empirical evidence for the effectiveness of a CBT program for children with Asperger syndrome who have anger management problems. Sofronoff et al. (2005) conducted a CBT intervention for anxiety in children with Asperger syndrome in which children and parents met with therapists for six weekly 2-h sessions. The study showed that the children demonstrated improved performance in generating strategies to deal with a hypothetical anxiety-causing scenario following the intervention with a significant main effect for time and group (intervention versus control). Parental feedback from this study indicated that following the intervention, children were more open to talking about their anxiety, showed more insight into interpersonal situations, and some parents reported that their child was slower to become distressed and quicker to calm down. Parents also indicated that a high level of parental involvement was preferred. The current program, which is modelled on the anxiety program, takes this preference into account.

Kellner and Tutin (1995) conducted a pilot cognitive-behavioural anger management program at a high school for developmentally and emotionally disabled students. Of the five participants, one had PDD and another had autism. Two therapists worked with the children in a group therapy setting. This program utilized some of the same modifications to CBT as the anxiety program and the current anger management program. According to reports from the students' teachers, the CBT anger management program had a positive effect on the students' ability to control their anger (Kellner & Tutin, 1995). The authors also felt that parental involvement would play an important role in the success of this program. Unfortunately, the parents of the students in the program were unresponsive (Kellner & Tutin, 1995).

Most of the literature on anger interventions for children with Asperger syndrome suggests using cognitive-behavioural based approaches. There are several key principles that emerge. The first is that any intervention program must be specifically based on the cognitive learning characteristics of children with Asperger syndrome (Attwood, 1999; Kellner & Tutin, 1995; Marks et al., 1999; Myles & Simpson, 2001; Sofronoff et al., 2005). This principle encompasses all of the modifications to CBT discussed earlier. The second is that intervention programs should employ tools such as Comic Strip Conversations and Social Stories (Gray, 1998) and role-play to enhance the children's understanding of what is happening in certain situations and what is the appropriate way to react (Attwood, 1999; Myles & Simpson, 2001; Sofronoff & Attwood, 2003; Sofronoff et al., 2005). Finally, anger interventions should espouse a high level of parental involvement (Kellner & Tutin, 1995; Safran, Safran, & Ellis, 2003; Sofronoff & Attwood, 2003; Sofronoff et al., 2005).

The current anger intervention program abides by these principles. Its six sessions (each session being 2 h) are highly structured. Comic Strip Conversations, Social Stories and role-play are employed during the sessions. The parents of the children in the intervention receive instruction on the strategies their children are being taught. The results of this intervention will provide us with empirical data on the effectiveness of a CBT based anger intervention program for children with Asperger syndrome.

Methods

Participants

Fifty-two children, aged 10–14 years, were recruited from metropolitan Brisbane, Australia via media release to participate in the 6-week intervention. All children included in the study had a primary diagnosis from a pediatrician of Asperger syndrome, and no

children were excluded on the basis of the presence of comorbid disorders, such as ADHD. The diagnosis was further established in a semi-structured interview based on DSM-IV criteria conducted with parents. The Childhood Asperger Syndrome Test (CAST; Scott, Baron-Cohen, Bolton, & Brayne, 2002) based on DSM-IV criteria was also used as a screen. Two children did not meet criteria for a diagnosis of Asperger syndrome and whilst they participated in the intervention their data were excluded from analyses. A further five families withdrew from the study on assignment to condition and the program went ahead with 45 families participating. No families withdrew once the intervention had begun.

The presence of anger was established via both parent and child interview. Parents were asked to describe instances of anger in the child and to outline specific situations that were problematic for their child. This was recorded as a behaviour diary and enabled therapists to target appropriate situations within sessions.

Children were assessed individually and a short form of the WISC-III was used to establish IQ. The questionnaires used with children were read aloud and answers recorded by therapists. Families were randomly assigned to either the intervention or wait-list condition as consent forms were returned. Group demographics are presented in Table 1.

Intervention

The CBT program was designed to be highly structured, informative and entertaining. Sessions were highly structured and therapists were trained to include 'fun breaks' with short games and activities as well as rewards for all children participating (see Appendix B for session outline). Every child received a workbook for the six 2-h sessions that included information on being happy, relaxed and angry with space for individual comments and responses to questions. At the end of each session, a project (homework task) was explained to the participants and the completed project

Table 1 Child demographics across intervention and wait-list groups

	Age	IQ	ADHD diagnosis (<i>N</i>)	Gender	Total (<i>N</i>)
Intervention					
Mean	10.79	105.24	11 (46%)	Boys = 23; Girls = 1	24
SD	1.12	22.3			
Minimum	9.8	95			
Maximum	13.6	132			
Wait-List					
Mean	10.77	108.7	9 (43%)	Boys = 20; Girls = 1	21
SD	.87	21.6			
Minimum	10.1	101			
Maximum	13.0	127			

was discussed within the group at the start of the next session. A metaphor was created of the child as an astronaut or scientist exploring a new continent or planet. Each session encompassed a separate stage of the exploration. The authors had noted that children with Asperger syndrome, within the age range of 10–12 years, (and predominantly boys), often have a special interest in science and science fiction.

The first session explored two positive emotions, happiness and relaxation, with a range of group and individual activities to measure, experience and compare emotions in specific situations. The second session was an exploration of feeling angry and recognition of the changes that occur in physiology, thinking, behaviour and speech. The concept of a tool box with different types of tools to ‘fix the feeling’ was explained, with a focus on physical tools that provide a constructive release of emotional energy (e.g., going for a run or bouncing on the trampoline), and relaxation tools that lower the heart rate (e.g., listening to music or reading a book). In session three, social tools were explored; for example, how other people can help restore positive feelings through words and gestures of reassurance and affection or how avoiding of social contact, solitude, can be a most effective emotional restorative for children and adults with Asperger syndrome. Thinking tools, a category of activities or thoughts that test the reality and probability of feared outcomes, were also explored in session three. In session four the participants discovered a range of measures of the degrees of emotion, with some time spent exploring the concept of an emotion ‘thermometer’ and a group activity where a long rope was laid on the floor and each participant stood on the rope at the position that measured the intensity of their anger in a nominated situation. Group discussion then explored how each participant could share strategies or tools to successfully manage their anger. In session five, the participants explored how Social Stories (Gray, 1998) can be used for emotion management, and the concept of creating an ‘antidote’ to poisonous or noxious thoughts. In the final session, the participants worked together designing a program for each participant to improve their management of anger.

Procedure

The therapists who conducted the child groups were postgraduate students enrolled in the clinical psychology program at the University of Queensland, Australia. All therapists participated in a full day workshop conducted by Dr. Tony Attwood prior to commencing the intervention and all therapists worked from a

therapist’s manual and received weekly supervision from Dr. Kate Sofronoff. Therapists completed a checklist after each session to indicate adherence to the protocol and 25% of sessions were videotaped and checked for protocol adherence.

In the intervention condition children were assigned to pairs and each pair worked through the program with two therapists. Parents were placed together to form a ‘parent group’ and a therapist worked through the components of each session with them, at the same time as the children’s sessions were taking place. Parents were again encouraged to help their child with the home-based projects. Some groups ran in the morning and some in the afternoon so there were also two parent groups.

Children and parents in the wait-list condition completed pre- and post-assessments at the same time as the intervention groups, and were then invited to participate in the intervention.

Measures

The first measure, “Dylan is being Teased” (Attwood, 2004b), was completed by the child and was developed specifically for the study. Each child was asked to generate strategies for ‘Dylan’ to cope with his anger in the situation outlined (See Appendix A). This measure was given to all children at pre-intervention, post-intervention and 6-week follow-up. Administration was standardized with the scenario read aloud to each child and responses recorded by a therapist.

The child also completed a questionnaire about their own anger issues, What Makes me Angry (Faupel, Henick, & Sharp, 1998). The measure is a list of 26 statements describing events or situations that make some people angry. The child is asked to tick the items that would make them angry and to estimate how angry on a scale from 1 to 10 (with 10 being very angry). The child could also add items of their own and rate those. The questionnaire was used to identify issues raised by each child that could be used within the group setting.

Parents completed a monitoring measure for the week prior to commencing the program. Parents were asked to monitor outbursts of anger that occurred in the home or whilst the child was with the family. These were operationalized as instances when the child was unable to maintain emotional control and behaved or spoke inappropriately in anger. A total score was calculated for each child. Parents were also asked to rate on a scale of 1–10 how confident they felt in managing their child’s anger where 1 is not at all confident and 10 is extremely confident. Parents were also asked to indicate how confident they felt their child was in managing their own anger using the same rating scale.

Parents completed the parent form of the Children's Inventory of Anger (ChIA-P; Sofronoff, 2003). The parent form was adapted for this study from the Children's Inventory of Anger (Nelson & Finch, 2000). The inventory contains 39 items that measure various aspects of a child's experience of anger. It yields four subscales: frustration, physical aggression (perception of others' aggression towards child), peer relationships and authority relationships. The scale demonstrated high reliability measured by internal consistency with this sample, Cronbach's Alpha ($\alpha = .93$). The subscales also showed good reliability ranging from $\alpha = .80$ for the frustration and peer relationships subscales to $\alpha = .85$ for the physical aggression subscale.

The study also adopted a qualitative approach since it is often not possible to adequately capture change in a heterogeneous population such as this one. A questionnaire was developed that asked parents to respond to a series of questions aimed at tapping information about change that may have been missed by the more standardized questionnaires. Parents were asked not to put their names on questionnaires and were told that all feedback both positive and negative would be gratefully appreciated so that we could improve the program for the future. Parents were asked firstly whether they had noticed any changes in their child that they attributed to participation in the program. They were then asked to elaborate and a series of prompt questions was used to guide this process. Parents were also asked about their own participation in the parent group and whether they felt they had gained any benefit. The questionnaires were subjected to content analysis by two independent raters and themes were extracted from parent responses.

A similar process was adopted in a follow-up questionnaire with teachers in an effort to access more objective behavioural data from informants who were not associated with the program. Twenty teachers were approached to respond to the brief interview about any changes in behaviour noted as a result of the child's participation in the program. Eighteen teachers agreed to be interviewed. The reasons for the reduced number of teachers included the child having changed school (8); the teacher not knowing the child before the program (4); the teacher not agreeing to participate (2) and the teacher unable to be contacted (13).

Results

Preliminary analyses revealed that the distribution was normal and homogeneous with no missing data. Data was collected at pre-intervention and post-intervention

for both intervention and wait-list groups, and again at follow-up for the intervention group in order to evaluate maintenance of gains.

Parent Reports of Anger—ChIA-P

A series of repeated measures analyses of variance was conducted to compare parent reports of child anger (ChIA-P) across time (pre-intervention, post-intervention and follow-up) and between groups (intervention and wait-list control group). Analyses were conducted for the total scale and for the six subscales.

Results from the total score of the ChIA-P showed a significant main effect for Time, $F(2,42) = 4.31$, $P < .05$. This effect only occurred in the intervention group, $F(2,42) = 9.83$, $P < .0001$. In the intervention group there was a significant difference between pre-intervention and post-intervention, $P < .0001$ and between pre-intervention and 6-week follow-up, $P < .001$. There was no significant difference between the intervention and wait-list control at any time.

Two of the four subscales from the ChIA-P showed significant differences both across time and between groups. The frustration subscale showed a main effect for Time, $F(2,42) = 5.26$, $P < .01$. Planned comparisons showed that this was significant for the intervention group only. There was a significant difference in frustration described by parents between pre-intervention and post-intervention, $P < .0001$ and this was maintained at 6-week follow-up, $P < .0001$ with a further significant difference between post-intervention and follow-up, $P < .01$.

The relationships with authority subscale showed no main effects but demonstrated a significant Time by Group interaction, $F(2,42) = 4.82$, $P < .02$. Planned comparisons showed that there was a significant effect across time for the intervention group but not for the comparison group. For the intervention group there were significant differences reported by parents between pre-intervention and post-intervention, $P < .0001$ and these were maintained at 6-week follow-up, $P < .02$. Means and standard deviations for all subscales are provided in Table 2.

Parent Monitoring of Anger

Analysis of parent monitoring of instances of anger over a week showed a significant main effect for Time $F(2,41) = 9.17$, $P < .002$ and a significant Time by Group interaction, $F(2,41) = 7.18$, $P < .005$. Post-hoc comparisons of the simple effects showed that in the intervention group parents reported significantly fewer instances of anger at post-intervention compared with

Table 2 Means and standard deviations for parent reports of child’s level of anger across time for total ChIA-P and subscales

Measure	Pre-intervention	Post-intervention	6-week follow-up
Total score			
Intervention	108.7	100.7****	97.4***
Control	109.1	108.1	108.1
Frustration			
Intervention	28.6	26.1****	24.7****
Control	28.9	28.4	28.4
Physical aggression			
Intervention	25.1	25.2	25.4
Control	24.1	23.0	28.6
Peer relationships			
Intervention	23.8	22.3*	21.7*
Control	24.4	23.4	23.4
Authority relationships			
Intervention	29.0	26.7****	25.7*
Control	28.0	28.3	28.3

*Significantly different from pre-intervention $P < .05$

***Significantly different from pre-intervention $P < .001$

****Significantly different from pre-intervention $P < .0001$

pre-intervention, $P < .0001$ and this was maintained at 6-week follow-up, $P < .0001$. Whilst there was no difference in the number of reported instances of anger between groups at pre-intervention, there was a significant difference between groups at post-intervention, $P < .02$ and at follow-up $P = .005$. Means and standard deviations are provided in Table 3.

Parent Confidence Measures

Analysis of the parents ratings of confidence in their ability to manage their child’s anger showed a significant main effect for Time, $F(2,41) = 5.13, P = .01$. Planned comparisons showed that only the intervention group parents demonstrated increased confidence between pre-intervention and post-intervention, $P = .001$ and this was maintained at 6-week follow-up, $P = .001$. Parents also rated how confident they thought their child was in managing their own anger. Analyses showed a significant main effect for Time, $F(2,41) = 13.84, P < .0001$ and a significant Time by Group interaction, $F(2,41) = 9.63, P < .0001$. Post-hoc comparisons of the simple effects showed that in the intervention group there was a significant increase in parent reports of their child’s confidence between pre-intervention and post-intervention, $P < .0001$ and this was maintained at 6-week follow-up, $P < .0001$. Whilst there was no difference between parent ratings between groups at pre-intervention, the ratings between groups were significant at 6-week follow-up, $P = .002$. The means and standard deviations are provided in Table 4.

Table 3 Means and standard deviations for parent reported instances of child anger across time

Group	Time 1	Time 2	Time 3
Intervention	8.7 (4.4)	3.7 (3.9)****	3.2 (3.9)****
Control	7.6 (4.3)	7.9 (5.1)	7.9 (5.1)

****Significantly different from pre-intervention $P < .0001$

Dylan is being Teased—Strategies Generated by Children

This analysis evaluated differences over time and between groups for the number of strategies generated in the hypothetical scenario. There was a significant main effect for group, $F(1,43) = 4.87, P < .05$. Planned comparisons revealed that in the intervention group there was a significant difference in number of strategies generated between pre-intervention and post-intervention, $P < .01$ and this was maintained at 6-week follow-up, $P < .05$. Whilst there was no difference between the intervention and comparison groups at pre-intervention, there was a significant difference between the groups at post-intervention, $P < .01$. These results are presented in Fig. 1.

Qualitative Parent Reports

Following the intervention, parents were asked to respond to a questionnaire about the usefulness of the intervention both for themselves and for their child. Thirty-four parents (75%) completed the questionnaire and because completion was anonymous we do not know whether there were differences between responders and non-responders. Parents were asked whether they felt they had gained any benefit by participating in the parent group. All parents who responded indicated that they found the sessions beneficial. The types of responses fell into four main themes: they learned practical strategies both from therapists and from other parents; they felt comfortable and validated sharing experiences with other

Table 4 Ratings of confidence in ability to manage child’s anger by parents both for themselves and for their child

Confidence	Time 1	Time 2	Time 3
Parent confidence			
Intervention	4.3 (2.2)	6.0 (1.6)***	6.1 (1.9)***
Control	4.9 (2.0)	5.2 (2.1)	5.2 (2.1)
Child confidence			
Intervention	2.7 (1.7)	4.1 (1.7)****	5.2 (1.9)****
Control	2.9 (2.0)	2.9 (2.2)	2.9 (2.2)

***significantly different from pre-intervention $p < .001$

****significantly different from pre-intervention $p < .0001$

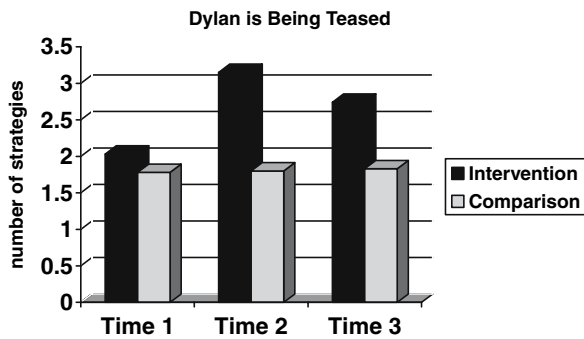


Fig. 1 Number of strategies generated by children to manage anger in a hypothetical scenario

parents; they learned that they were managing okay and that their child was not so difficult; and they were able to talk to their child using the language of the program. Parents were also asked whether they felt their child had demonstrated any behaviour that indicated they had benefited from the program. Thirty-four parents responded to the question and 25 (74%) indicated that they could identify positive behavioural changes whilst 9 (26%) said that so far they could not identify any positive behavioural changes. The types of responses fell into three main themes: 16 parents (47%) indicated that their child had used strategies learned in the program in order to manage their anger on several occasions; 20 parents (59%) commented that their child was more able to talk about feelings, think things through, and seemed more confident and easier to get along with; ten parents (29%) indicated that their child had made a friend during the program and that this had resulted in a more positive attitude in the child.

Qualitative Teacher Reports

Eighteen teachers were able to be contacted by phone to participate in a brief interview, teacher responses were examined for content and coded by two independent raters. All teachers who participated had been told about the anger management program by the child's mother. In response to the question 'have you noticed any change in behaviour or ability to manage anger since the child completed the program', 16 (88%) responded yes and 2 (12%) responded no. The teachers who responded 'yes' were asked to say specifically what they had noticed. All teachers indicated that they were aware of the child trying to use strategies to manage anger at least some of the time. Three teachers (19%) said that the child would ask to withdraw from the class when he/she began to feel angry. Nine teachers (56%) reported that the child now had

'language' with which to talk about anger and this helped to reduce the incidence of outbursts. For the two children where the teacher had noticed no change, teachers were asked to how many episodes of anger occurred in the school setting in a normal week and how that was currently managed. Both teachers indicated episodes of anger at least once a week and the strategy used was to have the child removed from the school by a parent.

Discussion

The major question addressed in this research project was whether a cognitive behavioural intervention for anger management would be effective with a group of children diagnosed with Asperger syndrome. It was also important to evaluate whether strategies taught and rehearsed in the clinic setting would be generalized to the home environment and finally whether there would be any further generalization to the school setting.

The outcome measure that was used to evaluate the child's ability to understand the material presented was 'Dylan is being Teased', a measure of the child's ability to generate effective strategies to manage anger in a friend in a hypothetical situation. This measure demonstrated a significant increase in the number of effective strategies generated by children in the intervention group when compared with the wait-list group.

Most of the material gained about the child's ability and willingness to use the strategies taught in the program came from parent reports. Parents took baseline measures of the number of episodes of anger in the week prior to starting the program. They did this again post-intervention and at 6-week follow-up. The results show quite clearly that the number of anger episodes reported by parents decreased significantly over time and that this was maintained at follow-up. Parents further described an increase in their confidence in managing anger in their child that was maintained at follow-up and a perception that the child had more confidence in his/her own ability to manage anger. These findings are consistent with other research findings that suggest positive outcomes for children with Asperger syndrome following a cognitive behavioural intervention (Kellner & Tutin, 1995; Marks et al., 1999; Myles & Simpson, 2001; Sofronoff & Attwood, 2003; Sofronoff et al., 2005). The findings also add support to the suggestion that including parents as part of an intervention program for this population yields positive results (Kellner & Tutin, 1995; Safran et al., 2003; Sofronoff & Attwood, 2003; Sofronoff et al., 2005).

The more standardized measure of anger that was used in the study, the Children's Inventory of Anger—Parent version (ChIA-P; Sofronoff, 2003), also showed a significant decrease over time for the intervention group. Specifically, the Frustration subscale showed significant improvement. This subscale is reflective of the anger experienced by a child when he/she encounters obstacles, is interrupted at an activity, or is prevented from pursuing a favoured course of action. The items on this subscale mesh well with the types of situations reported by parents of a child with Asperger syndrome as frequently leading to anger outbursts. The other subscale that captured an improvement was Authority Relations. This subscale measures the anger likely to be experienced by a child in reaction to situations that involve people in authority, primarily parents and teachers. When we looked at the items on the other two subscales, it was not surprising that no significant change was reported for this population. The Peer Relationships questions tap situations such as being left out of games, encountering rejection or jealousy. The response of the majority of the children with Asperger syndrome to these items was that this was very commonplace for them and they were used to it. The Physical Aggression subscale is comprised of items in which other people are threatening or physically aggressive towards the child. Again many of the children reported that they were used to this type of behaviour from others.

The qualitative information gathered from parents gave insight into the usefulness of the program for parents and children. All parents who responded indicated that attending the sessions had been beneficial both for themselves and for their child. The majority of parents felt that they were able to identify behavioural or attitude changes in their child and they also reported that the experience of being in the parents group, learning new strategies and interacting with parents in similar circumstances was a valuable one. An important outcome that was highlighted by parents was that they now had a common language with their child with which to discuss anger and other emotions.

The qualitative information gathered from teachers indicated that most teachers were aware of the child's participation in the program and had been told of it by the child's mother. The majority of teachers (88%) reported that they had noticed changes in the behaviour of the child in the school setting and that they were aware of the child trying to use strategies learned in the clinic at school. Again, an added benefit reported by teachers was that they also now had a common language with the child that enabled them to discuss anger and emotions.

Clinical Implications

For clinicians working with this population it is important to know that a cognitive behavioural approach to the management of anger is effective when the cognitive profile of the child is accommodated. It is also important to be aware that there are significant treatment gains when parents are engaged in the therapeutic process and encouraged to reinforce strategies at home. The fact that changes, albeit qualitative, were recognized by teachers in the school setting was unexpected and may be attributable to the proactive efforts of parents and the genuine interest of some teachers.

Limitations and Future Research

It is important to acknowledge several limitations of the study including a relatively small sample size and reliance for the most part on parent report measures. Having said that, it is often only parents who will be able to recognize small changes in functioning in a child with Asperger syndrome. Whilst teachers were regarded as a more objective source of data on behavioural changes in the child, it must also be acknowledged that the teachers were aware of the child's participation in the program. It is important to collect further data on the program for replication purposes and also to conduct trials in other settings (e.g., home and school) administered by parents and teachers to allow for greater dissemination of programs.

Acknowledgments We would like to acknowledge the families who participated in this research and the Apex Autism Trust Foundation who supported the trial with a grant.

Appendix A

Dylan is Being Teased

My friend at school is Dylan. We are in Mrs. Smith's class. Dylan is a great friend and we like to do the same things at lunch time. Sometimes we play handball, or go to the library and read about volcanoes, and we both like *The Simpsons*.

There are three boys in our grade who are not our friends. They like to find someone and tease them and get them into trouble. We don't know why they do it. Sometimes they can be really mean and call you names, which are not true, and want to punch you or push you onto the ground. Dylan and I don't do that to anyone.

Dylan has been in trouble with the Principal for getting mad at them and hitting them. They start it but he gets in to more trouble then they do. He was suspended for three days last week when they called him a ‘Psycho’. When they said that, he told them to stop, but they didn’t, so he hit one of them on the nose. There was a lot of blood everywhere.

On Friday, at lunchtime, they started to tease him again; calling him chicken and saying he is fat and gay. If he gets mad at them again he will be suspended and have to leave the school forever. He is my only friend.

Tell me what you could do and say to help Dylan keep cool and not get mad with them.

Appendix B

Trainer’s Notes

- Session 1 Introduction
- Strengths and Talents
- Being Happy
- Feeling Relaxed

- Session 2 Why we feel anxious
- Heroes who become angry
- A time when I have felt angry

- An emotional tool box
- physical tools
- relaxation tools

- Session 3 Emotional Tool Box
- Social Tools
- Thinking Tools
- Other Tools
- Inappropriate Tools

Session 4 Practice using the tool box

- Session 5 Social Stories
- Antidote to poisonous thoughts

Session 6 Sharing Strategies

Suggestions for Group Cohesion

Emphasise success and discovery

- Be careful with idioms
- Acknowledge intelligence
- Use the special interest as a metaphor
- No right or wrong answers
- Ground rules will need to be established at the start of session 1
- One person leads the activity. The other person’s function is recording information and maintaining attention
- Use plenty of games from the list to break up the sessions
- Incorporate rewards from the reward bank for every child

Session Two

Time	Activity	Resource
10 Mins	Key points from the previous session	
	Distribute the summary of the key points discovered in session 1.	Handouts of key points
20 mins	Discussion of project work	
	Discuss the project work of each participant individually. Explain the value of the projects in encouraging a feeling of happiness.	Participants projects
	Collect each participant’s anger worksheet so that the information can be used in the current and future sessions (N.B. ensure participants have named their sheets).	Length of rope
	Place the participants relaxation pictures along the rope.	

Time	Activity	Resource
10 Mins	Heroes who become angry Using butchers paper, write down the information provided by each participant, commenting on the situations and strategies.	Butchers paper × no. of participants
20 Mins	A time when I have felt angry Start by using a personal example to explain the activity. Then ask the participants to work on their own, using a sheet of butchers paper. Provide guidance.	Butchers paper × no. of participants. Pens
20 Mins	An Emotional Tool Box to Fix the Feeling Briefly introduce the concept of an emotional tool box. Explain that we have different types of ‘tools’ to fix a feeling. These tools might be: Physical tools Thinking tools Relaxation tools Other tools Social tools Inappropriate tools Have two sheets of paper ready with a picture of a hammer (physical) on one and a paintbrush (relaxation) on the other. Quickly brainstorm several physical activities and methods of relaxation that could be ‘tools’ to fix the feeling of being angry. Explain the different types of ‘tools’ for fixing the feelings will be explored in the next session.	2 Sheets headed butchers paper Pens
5 Mins	Review the key points that have been discussed during the session	
10 Mins	Explain the Project Hand out the two A4 sheets of paper to each participant. Explain that they are to fill in one sheet with ideas of their own of ways to help them reduce their anger. On the other sheet they can collect ideas from their family and friends Remind them that these activities are like tools they can use to help fix their anxiety.	A4 activity sheets × 2 Set for each participant
5 Mins	Review Review the main points of session 2, and prepare a handout to be distributed at the start of the next session. Include the general points and specific examples or strategies relevant to participants.	Handout of key points to be prepared.

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