Cognitive Behavioural Therapy for anxiety in children and adolescents with Autism Spectrum Disorder

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Abstract
This article is a review of the use of Cognitive Behavioural Therapy for anxiety in children and adolescents with high functioning Autism Spectrum Disorders (ASD). It first briefly outlines some of the key features of ASD, comorbid anxiety, and the increasing necessity to identify effective intervention strategies for use in this group of individuals, before providing a critique of the literature available. It looks at the adaptations that are commonly suggested to tailor a CBT intervention to the specific needs of an ASD population, and at the studies done so far.

Autistic Spectrum Disorder is a term used to describe a condition in which the person has difficulties in social reciprocation, communication and ritualised or rigid behaviour. Most people on the Autistic Spectrum will have social skills difficulties but not necessarily meet criteria for other clinical problems. Look for associated co-morbid conditions such as Depression and Attention Deficit Disorder. A common associated presentation which can be debilitating but often overlooked is anxiety.

People on the Autistic Spectrum should have access to a range of treatments for anxiety as other clinical populations. Modified Cognitive Behavioural Therapy can be successfully used to manage anxiety disorders in people on the Autistic Spectrum.

Keywords: ASD, Anxiety, CBT, Group therapy, Autism, children, Adolescent


Description of the disorder
Autism Spectrum Disorders (ASD) is the umbrella term increasingly used to describe the set of pervasive developmental disorders that included the diagnosis of Autism, Asperger’s Syndrome, and Pervasive Developmental Disorder Not Otherwise Specified under DSM IV. These are a group of disorders characterised by pervasive difficulties in a combination of the key areas of social communication interaction, and restrictive repetitive behaviours or activities 1, 2. The Diagnostic and Statistical Manual of Mental Disorders (the DSM-5), released by the American Psychiatric Association, officially eliminated many familiar autism spectrum diagnoses and now incorporated them into the single diagnosis of autism spectrum disorder. In DSM-IV, Asperger Syndrome was diagnostically differentiated from Autism by the lack of a significant language delay and intellectual functioning within the normal range.

The epidemiology of ASD is approximately estimated 30 in 10,000, although with increasing awareness of the disorder, this has led to greater rates of diagnosis, more recent estimates suggest the rate may be as high as 60 in 10,000 3. ASD may be as common as 1 in every 68 children according to the United States Centre for Disease Control 4.

Difficulties with an understanding of prevalence possibly related to early studies relying on clinically identified cases rather than community-based surveys, which may have resulted in cases not in treatment being missed, and possibly only the most severe cases being recorded. Previous estimates may also have been incorrect due to previous narrower case definitions. As sampling methods have improved and better diagnostic instruments are used more cases have been identified and there has been a better delineation of ASD from other psychotic disorders. As more children with ASD are identified, there will be a likely rise in the number of families and children seeking treatment.

Comorbidities
There are very high levels of co-morbid psychiatric difficulties amongst this population with estimates ranging from 7-15%. Anxiety related concerns are among the most common presenting problems for school age children and adolescents with ASD 5. Several studies have examined the prevalence of anxiety within the ASD population. A review by white et al 6 of 11 such studies reported a prevalence to range from 11-84%. This large range in the prevalence may be accounted for by difference in methods used to measure anxiety, differences in definitions and in diagnostic subtypes.

Studies have also looked at prevalence rates of anxiety within the ASD population to other populations. Compared to groups of typically developing children, those with autism had a higher occurrence of anxiety 7, 8. Comparison with other groups considered to be at risk (children with conduct disorders and learning disabilities) children with ASD were more likely to be diagnosed with an anxiety disorder and/or have more intense anxiety symptoms 9,10.
A formal diagnosis of anxiety disorder in this group is hard for therapists due to overlap between comorbid anxiety and the core symptoms of ASD makes. Several anxiety disorders in DSM-IV and ICD-10 have autism as an exclusion criterion, implying that an anxious procession style is a feature of ASD.

The development of anxiety among children with ASD may relate to their cognitive impairment as they may lack the cognitive flexibility to generate strategies to adapt to varying circumstances and may experience distress over even trivial changes in the environment. The information processing style in children with ASD termed ‘weak central coherence’ is similar to non ASD anxious children whereby they selectively attend to threatening cues which results in the misinterpretation of ambiguous situations as threatening. As a consequence these cognitive deficits can result in a repertoire of social and communication difficulties resulting in children experiencing severe difficulties in social relationships which may in turn lead to the development of anxiety. If a child or adolescent has a co-occurring anxiety disorder, this could further negatively impact on the overall social impairment associated with ASD. This can impact on the child or adolescents ability to participate in activities at school, at home and within the community. Children with significant anxiety symptoms are at risk for serious educational difficulties, later unemployment, substance abuse and other psychiatric problems.

Some of the most frequently reported anxiety disorders and symptoms seen in children with Autistic Spectrum disorders are simple phobia, generalised anxiety disorder, separation anxiety disorder, obsessive-compulsive disorder and social phobia.

### Treatment with Cognitive Behavioural Therapy

Pharmacological and psychosocial treatment have been the most common approaches to the treatment of anxiety in children with ASD but no single anxiety treatment has emerged to attain well established or probably efficacious empirically supported treatment status for children with an autistic spectrum disorder. Evidence for pharmacological intervention is limited. Also the effects of medication only appear to last as long as the medication is used, with relapse once regime is ceased.

The recommended treatment of choice by NICE guidelines for mood and anxiety disorders is cognitive behavioural therapy (CBT) and the primary psychosocial treatments have used CBT.

Despite the fact that CBT has been shown to be an effective empirically supported treatment for typical children, there continues to be differing views as to whether or not it can be used effectively with other populations. Some of the difficulties associated with treating children with ASD are due to suggestions from research that children with ASD have difficulty in identifying emotions and cognitions both in themselves and others. As CBT relies on the child’s ability to infer their own emotional states and thoughts in order to shift their cognitive style and in turn their anxious behaviour, standard CBT treatments need modification to address the difficulties associated with this.

Although there is recognition of the high comorbidity of anxiety with ASD, there have also been suggestions to the use of strict behavioural analysis and an argument against using a cognitive component to treat this population. Lindsay provides a different view, arguing children with ASD can benefit from the use of a cognitive component.

Various modifications have been proposed on the approach of CBT in this population. Some of the models have suggested adjustment of the developmental level to reflect the child's ability, the use of coping model instead of curative model, the involvement of caretakers, and extending treatment both by the number of sessions and by overall session duration. Attwood has recommended the use of role-plays and visuals, the involvement of special interests of the young person, the adjustment of material according to the developmental level and the incorporation of a social skills module due to the vast deficits associated with ASD. Anderson and Morris recommend a more directive approach to treatment and the use of specifically in vivo practice to aid in the generalisation of skills. Each of these variations may contribute differently to the adaptation of CBT to meet the specific needs of the child being treated; however, the most appropriate pattern of practical and functional strategies is yet to be determined.

Chorpita and Daleiden in their review of evidence based treatment for children and adolescents noted the most commonly used techniques to treat anxiety in typically developing children. These include exposure, relaxation, cognitive restructuring and modelling in that order. The most commonly used techniques to treat ASD include communication skills training, modelling, social skills training, goal setting and parent psycho-education.

CBT generally consists of six components which include assessment of the nature and degree of the disorder, affective education, cognitive restructuring, stress management, self-reflection and a schedule of activities to practice new cognitive skills. It is important to ensure that the young person has the same definition and interpretation of words, and affective education can help increase their vocabulary of emotional expression.
Attwood has described several intervention components which can be added to CBT. Some of the suggestions include: a) Increasing the use of visual aids. b) Associating emotions with tangible objects. c) An emphasis on coping strategies that do not require the use of abstract language for instance the use of relaxation. d) Use of alternative communication modes. e) Embedding the use of preservative interests into CBT sessions. f) Increasing the focus on teaching social skills.

Attwood also developed the concept of an emotional toolbox and focused on working with the young person in identifying different tools to ‘fix’ problems that occur as a consequence of negative emotions including anger, anxiety and sadness. The ‘tools’ are further divided into those that constructively release or reduce energy and those that improve thinking. The therapist generally works together with the young person to draw a variety of tools and activities which encourage constructive emotions repair.

Cognitive restructuring aims to enable the young person to correct distorted conceptualisations and dysfunctional beliefs. It involves challenging the current thinking with logical evidence and ensuring rationalisation and cognitive control of their emotions. Young people with ASD can make false assumptions of their circumstances and intentions of others due to impaired or delayed theory of mind abilities. These young people also tend to make literal interpretations and are less able to seek alternative explanations or responses.

Summary of Case Reports, Case Series, and Randomised Control Trials

Method

Studies that used CBT with the aim of reducing anxiety symptoms in young people with an ASD diagnosis were looked at.

Search Procedures

A search was carried out in electronic bases: Psychinfo and Medline. The publication year was not restricted but the search was limited to English- language peer reviewed journals. Over the databases, the terms ‘Asperger’, ‘Autism’, or ‘developmental disability’, plus ‘anxiety’ or ‘CBT’ and the search was limited to children and adolescents.

Review of Case series and reports

There have been five case studies that used CBT in treatment of anxiety as well as one case report that used CBT in treatment of OCD in children with ASD.

The first case study by Reaven and Hepburn (2003) reported a 7 year old girl with Asperger syndrome who markedly responded to a 6 month modified CBT treatment which was primarily tailored for her OCD. Afterwards, Greig and MacKay (2005) and Sze and Wood (2007) and (2008), Reaven et al (2009) and White et al (2009) reported further successful outcomes of using modified CBT for treatment of Anxiety in children with ASD. See table 1 for a summary of published case reports and series of studies.

Review of Randomised Control Trials

There have been eight studies that have met criteria for a randomised controlled trial that identified CBT as a treatment for anxiety in children with ASD. See table 2 for published randomised controlled trials.

Sofronoff, Atwood, and Hinton (2005) evaluated the impact of a six week cognitive-behavioural intervention for anxiety in 71 school children aged between 10 to 12 with Asperger’s Syndrome. The authors also looked at the potential impact of parent involvement on outcome. The diagnosis of Asperger’s Syndrome was confirmed by semi-structured telephone interview and anxiety symptoms were based on parent report in the initial telephone interview. Children were randomly assigned to one of three groups: child based intervention, combined child and parent intervention or a waiting list group. The intervention focused on teaching the children strategies to manage feelings and expanding emotional knowledge and was delivered weekly in a group format. The focus was on teaching the children strategies to effectively manage feelings and expanding emotional knowledge. Parents served as co-therapists in the combined parent-child intervention as they were trained in all aspects of the intervention.

Using the Spence Child Anxiety Scale-Parent report, children in the combined parent-child intervention reported fewer symptoms of anxiety post–treatment and at a six week follow up than children in the child-only intervention. A child report measure (James and the Maths Test) was used to identify the number of strategies the child could identify for coping with anxiety. Compared to children on the waiting list, children who received either intervention were able to develop more coping strategies. Those in the combined intervention generated significantly more coping strategies at endpoint compared to those in the child only intervention.

Parental involvement is an important aspect of treatment of young people with ASD in ensuring better generalisation and therapy outcome. Authors of this study found that children whose parents were involved in treatment were significantly more improved at follow up than those whose parents were not involved. There are different models of parents involvement and include either only direct participation in each session or
Table 1: A Summary of Published Case Reports and Series of studies using CBT for anxiety symptoms in young people with an ASD diagnosis

<table>
<thead>
<tr>
<th>Author (year)</th>
<th>Sample</th>
<th>Anxiety Measure</th>
<th>Characteristics of intervention</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reaven &amp; Hepburn (2003)</td>
<td>a 7 year old girl with Asperger syndrome</td>
<td>6 months modified CBT treatment based upon the work of March and Mulle</td>
<td>Obsessive-compulsive symptoms improved markedly</td>
<td></td>
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<tr>
<td>Greig and MacKay (2005)</td>
<td>12 year old male with ASD and unspecified anxiety disorder</td>
<td>TSCC, Teacher Report, SWQ</td>
<td>15 sessions</td>
<td></td>
</tr>
<tr>
<td>Sze and Wood (2007)</td>
<td>11 year old female SAD, OCD, GAD, HFA</td>
<td>ADIS</td>
<td>16 sessions 90 minutes each over 4 months family cognitive behavioural therapy (FCBT)</td>
<td></td>
</tr>
<tr>
<td>Sze and Wood (2008)</td>
<td>10 year old male with ASD, GAD, SAD</td>
<td>ADIS, CGI, MASC, CBCL, SSRS, VABS</td>
<td>Enhancing CBT</td>
<td></td>
</tr>
<tr>
<td>Reaven et al (2009)</td>
<td>7 male, 3 female mean age 11 years, 12 weeks Active Treatment 10 parent-child dyads (n = 10) Wait List Control (n = 25) based on order of enrolment, not random assignment</td>
<td>SCARED</td>
<td>12 weekly sessions of 1.5 hours Large group time, separate parent and child group meetings, and parent-child dyads</td>
<td></td>
</tr>
<tr>
<td>White et al (2009)</td>
<td>14 year old male with ASD, 14 yr old female with PDD-NOS, 12 year old male with ASD, 12 year old female with ASD</td>
<td>ADIS</td>
<td>MCIT 12-15 individual therapy modules delivered over 11 weeks.</td>
<td></td>
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Table 2: Published randomised controlled trials of CBT

<table>
<thead>
<tr>
<th>Author (year)</th>
<th>Age range/ Sample size</th>
<th>Anxiety Measure</th>
<th>Characteristics of intervention</th>
<th>Characteristics of Controlled</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sofronoff, Arwood, Hinton (2005)</td>
<td>age 10-12 (n=71)</td>
<td>SCAS, SCAS-Parent, child report measure</td>
<td>a 6 week CBT child based (n=23) or combined child and parent (n=25) intervention</td>
<td>a waiting list group</td>
<td>Significant decreases Parent reports SWQ at follow-up and a significant increase in the child’s ability to generate positive strategies in an anxiety-provoking situation.</td>
</tr>
<tr>
<td>Chalfant, Rapee, and Carroll (2006)</td>
<td>age 8-13 (n=47)</td>
<td>ADIS, SCAS, Revised Children’s Manifest Anxiety Scale, Children’s Automatic Thoughts Scale, SDQ-Parent, SCAS-Parent</td>
<td>a 12 week group CBT based on ‘Cool Kids’ program (n=28)</td>
<td>Approx. 7 months waiting list (n=19)</td>
<td>71.4% of the treated children no longer met criteria for an anxiety disorder compared to 0% in the wait list condition (n=19)</td>
</tr>
<tr>
<td>Wood et al (2009)</td>
<td>ages 7-11 (n=40)</td>
<td>Anxiety symptom checklists at baseline and post treatment/ post waitlist</td>
<td>16 sessions of standard CBT augmented with multiple treatment components (n=17)</td>
<td>A 3 month wait list (n=23)</td>
<td>78.5% CGI improved compared to only 8.7% of the waitlist group. Remission of anxiety in CBT group, but child reported anxiety had no significant effect</td>
</tr>
<tr>
<td>Sung et al (2011)</td>
<td>age 9-16 (n=28)</td>
<td>SCAS-C, CGI-S</td>
<td>a 16-week CBT program</td>
<td>a Social Recreational (SR) program on anxiety</td>
<td>Children in both programs showed significantly lower levels of generalized anxiety</td>
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with a separate parent only component or both. It seems that regardless of which approach is used parent involvement increases the sustainability and success rate of CBT. Involvement of parents helps to improve their understanding of exposure and practice and helping the young person to learn how to master the skills on their own.

Limitations of this study include the reliance on the parent report of anxiety symptoms and both Asperger’s Syndrome and anxiety symptoms were not formally diagnosed. Parents who were involved in the delivery of treatment may have had a more vested interest in their children’s progress with higher expectations for improvement affecting outcome measure reports. However, no independent (blinded) ratings of anxiety were gathered.

Chalfant, Rapee, and Carroll (2006) evaluated a 12 week group delivered cognitive–behavioural treatment for anxiety in 47 school children aged between 8 to 13 with ASD and no intellectual disability. The intervention was adapted from the ‘Cool Kids’ program (Lynneham et al, 2003), a 12 week group based activity for treatment of childhood anxiety. Cognitive strategies were simplified in the intervention, with a greater focus on visual aids, structured worksheets and homework and exposure and the programme was extended over a 6 month period of time.

The authors randomly assigned participants to either the CBT (n=28) or waiting list (n=19) before beginning of each treatment group. Those under waiting list condition were offered treatment after approximately 7 months, when the waiting list period ended. Multi-modal and Multi-person assessment of anxiety were used. At pre-treatment, over 75% of the sample met criteria for more than one anxiety disorder. Structured diagnostic measures used in the study included the ADIS (Albano & Silverman, 1996), Spence Children’s Anxiety Scale (Spence, 1998), The Revised Children’s Manifest Anxiety Scale (Reynolds & Richmond, 1978), and Children’s Automatic Thoughts Scale (Schniering & Rapee, 2002). Parent report measures included the SDQ-Parent Report (Goodman, 1997), and SCAS-Parent Report (Spence, 1998).

At post treatment, 71.4% of the treated children (n=28) no longer met criteria for an anxiety disorder compared to 0% in the wait list condition (n=19). It was also found that children in the CBT condition were largely able to identify their automatic thoughts indicating some theory of mind ability and had a significant reduction in automatic thoughts, in comparison to the wait list condition.

Limitations of this study include the small sample size so the data may not be reflective of the wider population with high functioning autism and anxiety. Also the lack of confirmation of the diagnosis of ASD by the investigating clinicians reduced

<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Intervention</th>
<th>Outcome</th>
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<tbody>
<tr>
<td>Reaven et al (2012)</td>
<td>(n=70)</td>
<td>ADIS-P</td>
<td>modified CBT (n=24)</td>
</tr>
<tr>
<td>&amp;n=36</td>
<td></td>
<td>TAU(n=26)</td>
<td>50% in the CBT compared to 8.7% TAU group had a clinically meaningful positive treatment response, group CBT intervention specifically developed for children with ASD may be effective in decreasing anxiety</td>
</tr>
<tr>
<td>White et al (2012)</td>
<td>(n=50)</td>
<td>ADIS-C/P,SRS, CASI-Anx CGI-I, PARS</td>
<td>Multimodal Anxiety &amp; Social Skills Intervention (MASSI) (n=15, 13 completed)</td>
</tr>
<tr>
<td>&amp;n=50</td>
<td></td>
<td>wait-list control (n=15, 12 completed)</td>
<td>16% improvement in ASD social impairment MASSI is a feasible treatment program and further evaluation is warranted</td>
</tr>
<tr>
<td>Storch et al (2013)</td>
<td>(n=45)</td>
<td>ADIS IV C/P, PARS, CGI, MASC-P, RCMAS</td>
<td>BIACA-CBT; child &amp; parent focused sessions (n=22)</td>
</tr>
<tr>
<td>&amp;n=11</td>
<td></td>
<td>TAU(n=21)</td>
<td>18 (75%) of CBT arm, were treatment responders, versus only 3 of 21 (14%) in the TAU arm. CBT adapted for anxious youth with high-functioning ASD demonstrates large effects in reducing anxiety symptoms.</td>
</tr>
<tr>
<td>McNally et al (2013)</td>
<td>(n=22)</td>
<td>ADIS-P, SCAS-P, SCAS</td>
<td>a modified version of the Coping Cat program CBT package(n=12)</td>
</tr>
<tr>
<td>&amp;n=14</td>
<td></td>
<td>waiting-list (n=10)</td>
<td>ADIS-P 58% of children with CBT had no anxiety / 36% after 2 month follow up. A modified version of the Coping Cat program may be a feasible and effective program for reducing clinically significant levels of anxiety in children with ASD.</td>
</tr>
</tbody>
</table>
the validity of the participant’s diagnostic status. Participants were accepted based on previous evaluations completed within the community setting.

There was no time spent with the waiting list group to help ensure that the benefits of treatment could be attributed to the treatment alone and not to time spent with the therapist. Also the issue of the waiting list group being aware of the treatment programme and knowledge of future treatment may have attenuated the response of those on the waiting list. Clinicians who implemented the CBT groups and collected the relevant pre-and post-treatment data were not blind to the study’s aims.

Wood et al. (2009) used a standard CBT program augmented with multiple treatment components as a randomised controlled trial for 40 children aged between 7 to 11. It was designed to accommodate the social and adaptive skill deficit of children with ASD that could pose barriers to anxiety reduction. They also used a family based intervention program adapted for use with children with ASD. Enhancements included addressing of poor social skills, adaptive skill deficits, circumscribed interests and stereotypes, poor attention and motivation, common co-morbidities as well as school based problems. During modules, children were given social coaching by the therapist, parents and available school providers on appropriate ways to enter interactions and maintain conversation with peers.

Children were randomly assigned to 16 sessions of CBT (n=17) or a 3 month wait list (n=23). Independent evaluators blind to treatment condition, were involved in structured diagnostic interviews. Parents and children completed anxiety symptom checklists at baseline and post treatment/ post waitlist.

The Clinical Global Impressions Improvement Scale (CGI) criteria showed that 78.5% of the CBT group showed positive treatment response at post treatment as compared to only 8.7% of the waitlist group.

Children randomised to CBT had primary outcomes comparable to those of typically developing children receiving CBT for anxiety disorder, which were remission of all anxiety disorders for over half the children in immediate treatment at post treatment and follow up and a high rate of positive treatment response on the CGI. However child-reported anxiety did not yield a significant treatment effect.

Limitations of this study include the small sample size which precluded tests of moderation. The study was also undertaken by researchers who developed the intervention and would need independent replication to validate the intervention.

Also using measures not designed for children with ASD had major impact on the outcomes. The child report of Multidimensional Anxiety Scale for Children (MASC) scores did not yield a significant effect for treatment group largely due to a decrease in MASC scores from pre to post treatment for children in both groups. This may have been due to the MASC being not particularly effective in this population and children’s scores at baseline were relatively low on average. Parental scores showed less of a change from pre to post treatment in the waiting list group. The MASC does not specifically measure OCD and GAD symptoms and as there was a wide range of anxiety symptoms, the type of change that some children may have experienced may not have been properly assessed.

Sung et al. (2011) compared the effects of a 16-week cognitive-behavioural therapy program and a Social Recreational (SR) program for 70 children with ASD aged between 9 to 16. 36 of them were randomised to CBT and 34 to Social Recreational program. Children in both programs showed significantly lower levels of generalised anxiety and total anxiety symptoms at 6-month follow-up on SCAS-C. They suggest factors such as regular sessions in a structured setting, consistent therapists, social exposure and the use of autism-friendly strategies are important components of an effective framework in the management of anxiety in children and adolescents with ASD.

Reaven et al. (2012) used a modified CBT intervention for anxiety in 50 children aged between 7 to 14 with high-functioning ASD and anxiety, who were randomized to group CBT (n=24) or treatment-as-usual (TAU) (n=26) for 12 weeks. Independent clinical evaluators blind to condition, completed structured ADIS-P pre- and post-intervention condition. They found a significant difference between CBT and TAU group.

47 children completed either the CBT or TAU condition. They also had 3 and 6 month follow-ups. Results indicated markedly better outcomes for the CBT group. Clinician Severity Ratings, diagnostic status, and clinician ratings of global improvement showed significant differences by group. In the intent-to-treat sample, the CBT group, 10 of 20 children (50%) had a clinically meaningful positive treatment response, compared to 2 of 23 children (8.7%) in the TAU group. Initial results from this randomized, designed treatment study suggest that a group CBT intervention specifically developed for children with ASD may be effective in decreasing anxiety.

Limitations of this study include small sample size, lack of an attention control group, use of outcome measures normed with typically developing children, and no use of teacher or child measures. TAU remained variable, and the study did not
mention the situation of the children in TAU as were or weren’t receiving any treatment.

White et al (2012) 35 combined treatment approaches, and evaluated the feasibility and preliminary outcomes of the Multimodal Anxiety and Social Skills Intervention (MASSI) program in 30 adolescents aged between 12 to 17 with ASD and anxiety symptoms of moderate to greater severity who were randomised to CBT (n=15) or Wait list group (n=15). A 16 % improvement in ASD related social impairment (within-group effect size = 1.18) was observed on a parent-reported scale. Although anxiety symptoms declined by 26 %, the change was not statistically significant. These findings suggest MASSI as a feasible treatment program and further evaluation is warranted. High subject adherence and therapist fidelity demonstrate the treatment was acceptable to families.

Storch et al (2013) 36 examined the efficacy of the Behavioural Interventions for Anxiety in Children with Autism (BIACA), a modular cognitive behavioural therapy protocol, relative to treatment as usual (TAU) among 45 children with ASD aged between 7 to 11. Children with clinically significant anxiety (including OCD), and no intellectual disability, were randomised to receive 16 sessions of weekly CBT (n=22, 2 drop out) or TAU (n=21). After screening, assessments were conducted at baseline, post-treatment, and 3-month follow up for only CBT group which was not blind. The raters were blind to treatment condition. They did also use both child- and parent-report versions of ADIS. Children receiving CBT showed substantial improvement relative to TAU on primary anxiety outcomes. Of 24 children randomised to the CBT group, 18 (75 %) were treatment responders, versus only 3 of 21 children (14%) in the TAU group. Treatment gains were generally maintained at 3-month follow up for CBT responders. They concluded that relative to usual care, CBT adapted for anxious youth with high-functioning ASD demonstrates large effects in reducing anxiety symptoms.

The limitations of this study include that only about 75% of the TAU children were in fact getting treatment of any kind at all, as 25% of their TAU weren’t getting anything. Also TAU group was extremely variable, therefore the control group were getting a variety of treatments, or none, making comparisons with the children who received CBT difficult.

McNally et al (2013) 37 used a modified version of the Coping Cat Program in reducing anxiety in children with ASD. They randomly assigned 22 children with ASD aged between 8 to14, with clinically significant anxiety and no intellectual disability, to 16 sessions of the Coping Cat cognitive-behavioural therapy (CBT) program or a 16-week wait list group. They used ADIS-parent at pre-treatment and post-treatment phases, and they also video-recorded therapy sessions to check for treatment fidelity. Children in the CBT condition evidenced significantly larger reductions in anxiety than those in the waitlist. Treatment gains were largely maintained at two-month follow-up. Results provide preliminary evidence that a modified version of the Coping Cat program may be a feasible and effective program for reducing clinically significant levels of anxiety in children with high-functioning ASD.

The limitations of this study include small sample size which recommended statistical and effect size to be interpreted with caution, and also the outcome measures were largely based on parent- ADIS reports by parents who were not blind to the treatment. Also, examining treatment response was limited to the primary author who delivered all of the treatment. Similarly, with waiting list as a comparison, there was a danger of getting placebo effects with the intervention arm, especially with parent-report measures, as most parents were very keen to get any help at all for their children.

Discussion and future perspective

It is clear from the 8 randomised controlled studies that young people on the autistic spectrum benefit from some form of CBT when modified as part of a therapeutic package. Unfortunately it is not clear what specific aspect of the therapy is making the difference. Cognitive Behavioural Therapy has many components to it as well as the actual cognitive, i.e. ‘thinking’ part and behavioural part. Which bit of the therapy is making a difference to the anxiety? Is it the cognitive reframing, the relaxation, the exposure, the parental involvement, or simply the therapeutic relationship with a therapist? As with CBT studies which are delivered as part of a package, positive results are often obtained when there is no control group or when compared to a waiting list.

Other limitation to research papers cited above include fairly small sample sizes, and outcome measures that are normed with a non ASD cohort.

Only 2 studies had non waiting list comparison 32, 34. These studies did show significant clinical improvement in anxiety levels. These studies have shown that CBT can be effective if modified for the ASD population. Many clinics often fail to pick up associated anxiety difficulties in the ASD cohort and if present, often are under the impression that CBT would not work in this population due to misunderstanding and ill-informed prejudices about the ASD population. As there is such a high comorbidity with anxiety disorders, young people on the autistic spectrum should be offered effective interventions such as CBT. Research should focus on modifications of the CBT.
package to enable better engagement and better understanding of the CBT constructs.

**Practice Points**

- Children with high-functioning Autism Spectrum Disorder (ASD) are at high risk for developing significant anxiety
- Anxiety can adversely impact on functioning across school, home and community environments
- Cognitive Behavioural Therapy (CBT) is frequently used with success for children with anxiety symptoms
- Standard CBT treatments need modification to address the anxiety difficulties associated with ASD
- Modified CBT interventions for anxiety in children with ASD have also yielded promising results

**Competing Interests**
None declared

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**REFERENCES**

18. Atwood T. Modifications to cognitive behaviour therapy to accommodate the cognitive profile of people with Asperger’s Syndrome; 1999

