



Evidence-based Classroom Strategies for Reducing Anxiety in Primary Aged Children with High-functioning Autism

New Zealand Journal of Teachers' Work, Volume 10, Issue 1, 25-43, 2013

FRAN HOFFMAN

Victoria University of Wellington

ABSTRACT

This paper systematically reviews research on evidence-based intervention strategies for reducing anxiety in primary age children with High-functioning Autism (HFA) and Asperger Syndrome (AS). Systematic searches of electronic databases, journals, and reference lists identified 20 studies meeting the inclusion criteria. Interventions were sorted under the following categories: Environment and context, Social life and interaction, and Cognition. Results show that a preventative, multi-faceted approach is recommended with interventions that both directly and indirectly reduce anxiety. Interventions must address the Autistic Spectrum Disorder (ASD) characteristics that underlie the visible behaviour. Environmental and context interventions supports are recommended. Modified Cognitive Behaviour Therapy (CBT) and Functional Behaviour Analysis-Applied Behaviour Analysis (FBA/ABA) are the most researched direct interventions with a strong evidence base resulting in largely positive results. There is some promise for computer assisted CBT. Social skills taught by using social stories, video self-modelling and comic strip conversations have a fair evidence base, with a limited amount of research and mixed results. Recommendations are that interventions need to be driven by the assessment of each individual child and use a combination of the recommended strategies. Modified CBT is to be used, if possible, with FBA, ABA, and preventative environmental and context strategies to address the social deficits of ASD. An example of a checklist of strategies is proposed for use in school/home settings.

Keywords

Autism, Asperger Syndrome, Anxiety, Classroom, Interventions

INTRODUCTION

Autism is a disorder characterised by impairments in social interaction and communication skills, and by stereotypical patterns of behaviours, interests, and activities (American Psychiatric Association, 2000). Autism Spectrum Disorder (ASD) also includes Asperger Syndrome (AS), and Pervasive

Developmental Disorder-Not Otherwise Specified (PDD-NOS). In New Zealand, the Ministries of Health and Education (2008) identify the autistic spectrum as including: AS, High Functioning Autism (HFA), PDD-NOS, Kanner's Syndrome, Rett's Syndrome and Heller's Syndrome. Because it is a spectrum disorder, symptoms and characteristics are expressed in many different combinations and degrees of severity (Mash & Wolfe, 2005). Currently, even though anxiety is not regarded as a phenomenological characteristic of ASD, anxiety-related issues are expressed in the problematic behaviour of ASD students (Attwood, 2000; Ghaziuddin, 2002; White, Oswald, Ollendick, & Scanhill, 2009). This was historically acknowledged by Kanner who was the first to identify unusual patterns of behaviour in certain children, including anxiety (Kanner, cited in Mash & Wolfe, 2005). Anxiety and stress may be critical components in understanding certain behavioural aspects of this disorder. The constructs of stress and anxiety must inform assessment and intervention for autistic individuals. Anxiety related behaviours can be displayed within the contexts of both home and school and can have a negative impact on social relationships and learning (Laugeson & Frankel, 2010). According to Attwood (2004a), those with autism have a special vulnerability to stress, with anxiety being an indicator. Implications within a school context are that anxiety, stress, and panic lead to an inability to focus on instruction, to understand basic social interaction, and to participate in classroom activities. Problems with communication, basic problem-solving skills, and an increased number and intensity of behaviour problems can develop as a result of anxiety. In a home situation, anxiety can also have an impact on relationships within the family and community (Attwood, 2000; Laugeson & Frankel, 2010).

In addition to generalised feelings of anxiety, individuals with HFA/AS can also develop distinct anxiety disorders such as obsessive-compulsive disorder (OCD), post-traumatic stress disorder (PTSD), school refusal, selective mutism, and social anxiety disorder (Laugeson & Frankel, 2010). Anxiety can also be expressed in terms of refusal to comply with requests, anger outbursts, melt-downs, non-engagement and involvement academically, limited social interaction with peers, and increased absences from school. According to White et al. (2009), the evaluation and treatment of anxiety in ASD school-aged children has only recently received the attention it needs. Effective methods of assessment and evidence-based interventions for anxiety management for autistic children at school are essential in terms of both practice and policy (Lord et al., 2000).

The question

The following question for investigation was provided to the Educational Psychology and Pedagogy Faculty at Victoria University by the New Zealand Ministry of Education (MOE): What are good intervention strategies for assisting children and adolescents with high anxiety levels, particularly, although not exclusively, those on the autistic spectrum?

Rationale

Reasons for the selection of this question and the undertaking of this systematic review included the following:

- 1) Interventions must address the underlying characteristics of ASD which are expressed in terms of anxious and problematic behaviour. According to Moree and Davis (2010), although anxiety is common in this population, no single treatment alone has emerged as efficacious and empirically sound. Furthermore, the New Zealand Ministries of Health and Education (2008) caution against using a single type of intervention and suggest that it is short-sighted to assume that a pervasive developmental disorder can be effectively treated with any single approach.
- 2) Anxiety-related issues are among the most common presenting problems for students with ASD (Attwood, 2000; Ghaziuddin, 2002; White et al., 2009).
- 3) Many of the core features of autism are anxiety driven. The social disability and differences in sensory processing of children who have ASD have been hypothesised as triggering high anxiety (White et al., 2009). Fixed rituals and routines suggest that anxiety and stress could be a consequence and cause of autism. Guillot, Furnace, and Walter (2001) have suggested that stereotypical behaviour like flicking, twirling, rocking, echolalia and perseveration may act as coping mechanisms and may inadvertently function as calming strategies.
- 4) The barriers to learning and social interaction that anxiety can create (e.g., lack of academic progress, poor social interaction with peers, school absences) suggest that effective anxiety-related interventions are crucial tools for those working with children who have ASD and for the children themselves (Attwood, 2004b, 2006; Mash & Wolfe, 2005).
- 5) Children with HFA/AS appear to experience anxiety differently and more intensely due to their awareness of their social disconnectedness and a desire for it to be different (Attwood, 2000).
- 6) AS could soon be eliminated as a separate disorder from the new fifth edition of the American Psychiatric Association's (APA) Diagnostic and Statistical Manual of Mental Disorders (DSM-5) which is due for publication in April 2013. Current debate indicates that AS could be merged within the autistic spectrum of disorders. Presentation of ASD could then be classified as severe, moderate or mild (APA, 2012). The implication for this group of learners in terms of funding and treatment is another reason why such a focus is crucial.
- 7) There has been an increase in the estimated prevalence of autism over the past decades with the United States Centres for Disease Control (2007) reporting that ASD may be as common as 1 in every 152 children. Hence the urgent need for effective interventions.

The objective of this review was firstly to provide a summary of evidence-based interventions currently available to lower anxiety levels, and improve the educational and social outcomes for HFA/AS children. The second objective was to present a checklist of interventions for use in the classroom or at home that reduce anxiety in HFA/AS individuals. These interventions were also aimed at informing and empowering educational professionals, parents, carers, specialists, and any other individuals involved with a HFA/AS child. Ultimately, the purpose was for the ASD child to gain the knowledge, tools, and skills to understand and manage their own anxiety levels throughout their lifespan.

According to Schlosser, Koul, and Costello (2007), the careful asking of well-built and judicious questions is the first step in producing useful and relevant answers. They propose using a template called PESICO to refine a question and make it clinically useful and educationally relevant. The MOE question was thus developed into a research proposal using this template.

- The person/ problem (P) was identified as primary aged children (5-12 years) with HFA including AS.
- The environment (E) was to be an inclusive school setting, and home setting.
- The stakeholders (S) included the child, the staff working with the child, the principal, and parents of the child.
- The interventions (I) were the proposed steps to reduce the child's anxiety levels and the comparison (C) would be examining all types of interventions in the literature.
- The outcome (O) was to identify strategies to reduce the anxiety levels of HFA/AS students so that engagement, learning and participation in both the contexts of school and home could take place. Thus the final research question for the review was: What are the best interventions (home or school based) for reducing anxiety in primary aged children with HFA, including AS?

Effective evidence-based practice (EBP) comes out of best practice models and the question was placed within a model developed by Bourke, Holden, and Curzon (2006). The model is a synthesis of three inter-dependent components: research evidence, collaboration around the learner, and professional judgement. All three parts of the model are essential for good EBP. The systematic review focuses on the research component of the EBP model and identifies, appraises, selects, and synthesises quality research evidence related to a question. According to Brice and Hill (2004), the important issue is "not the inherent qualities of evidence, but the ability of that evidence to answer a particular type of question" (p.19).

The research was appraised according to certainty of evidence, using a grading system taken from the New Zealand Guidelines Group (2001). Therefore it is proposed that a combination of strategies be used in the form of an intervention package, which can be used according to the assessment and individual needs of the HFA/AS child, to successfully lower anxiety levels. To facilitate EBP in this area, a systematic review is presented in this paper.

METHODOLOGY

The inclusion criteria stipulated that articles were peer reviewed, and evidence based. The studies had to involve or include children with HFA/AS of primary school age (5-12 years). The interventions had to be non-medication based and able to be implemented (alongside medication) within the contexts of a classroom by a teacher/teacher aide. They could be used in the home context also. The search was conducted through the Victoria University Library website and included studies from 2000-2012. A variety of information sources was used to find relevant background information. Higher level peer reviewed research was obtained through the following electronic databases: PsychINFO, Educational Resources Information Clearing House (ERIC) via proquest, A+ Education, Education Research Complete, and SCOPUS. Keywords inserted as free text into the keywords field included “autism”, “intervention”, “anxiety” “behaviour,” and “social”. Alternative search terms were “school,” “stress”, “ASD”, “strategy,” and “cognition”.

Studies were sorted under the following categories. These relate to the underlying needs and characteristics of ASD and could be part of a multi-faceted intervention: 1. Environment and context: this included strategies such as visual and structural techniques using schedules, transition strategies accommodating the learner through adaptation of the educational curriculum, behavioural strategies using functional behaviour analysis (FBA), modern applied behaviour analysis (ABA) techniques, and sensory checks. 2. Social life and process: this category included social skills taught through social stories, comic strip conversations, cartoon thought-bubble training and video self-modelling. 3. Cognition: This included interventions such as cognitive behaviour therapy (CBT) adapted for ASD children and computer assisted CBT.

Unusual responses to sensory stimuli are seen in many children with autism and although there is evidence to show a relationship between anxiety and sensory challenges, there are mixed reviews on related interventions such as Sensory Integration therapy (SIT), as the current evidence-base does not support its use in the education and treatment of children with ASD.

Analysis and Interpretation

Twenty studies shown in Table 1 fulfilled the criteria for inclusion. These are sorted according to the three categories mentioned previously. Studies were excluded if they did not have students with HFA/AS included or if the students were just classified as ASD. Studies had to have primary age students included but could have different age groups also represented as participants. Some relevant studies were excluded because of the time frame. Studies had to be published within the period of 2000-2012. Strategies or interventions had to be able to be replicated in a school or home context.

Studies were selected and placed within a table of evidence and were then graded according to the certainty of evidence/ recommendations section of the table. For each study, decisions on grading were made by the quality, quantity, consistency, and impact of the studies. Grade A recommendation needed to be supported by good evidence – good evidence for the purpose of this review means the studies were applicable and valid. Grade B was supported by fair evidence – the studies needed to show some validity. There

were fewer studies and they were not so relevant or applicable. Grade C showed that the recommendation was supported by expert opinion only (New Zealand Guidelines Group, 2001).

Assessment

Those children included in this review had a diagnosis of HFA or AS. In some studies children had been assessed further using the following standardised measures of anxiety. These were:

- 1) The Spence Children's Anxiety Scale (Spence, 1998).
- 2) The Social Worries Questionnaire (Spence, 1995).
- 3) James and the Maths Test (Sofronoff, Attwood, & Hinton, 2005).
- 4) A parent report measuring self-efficacy with the management of behaviours related to AS (Sofronoff & Farbotko, 2002).

Table 1 TABLE OF EVIDENCE

Summary of anxiety reduction studies for primary school aged participants with HFA within a classroom context

CATEGORY AND STUDY	STUDY DESIGN	PARTICIPANTS	INTERVENTION STRATEGIES	RESULTS OF INTERVENTION	CERTAINTY OF EVIDENCE
Visual supports, schedules, structure, environment checks, sensory issues, behavioural strategies using functional behaviour analysis (FBA) and modern applied behaviour analysis (ABA) techniques to reduce anxiety.					
Bryan and Gast (2000)	ABAB design	4 HFA students (7-8 years)	Picture activity schedule Reinforcement.	Increase in on-task and on-schedule behaviour. Reduction in anxiety symptoms while learning.	A Good
Myles et al. (2007)	Large scale study	156 AS students (12-18 years)	Provide structure by using schedules, organisational tools, visual support techniques, sensory checks.	Asperger Syndrome profile developed. Adaptations for classroom based on profile characteristics.	A Good
Dettmer, Simpson, Myles, and Ganz (2000)	Single-subject reversal designs (ABAB).	2 AS students (7 and 5 years)	A combination of visual supports to aid transitions from one activity to another in community and in home settings.	Visual supports assisted transition between activities. Smooth transitions. Anxiety reduction noted.	A Good
Hume and Odom (2007)	Single subject/ Withdrawal of treatment	3 students, 1 with HFA (3, 6 and 20 years)	Visual work system.	Effective at increasing independent work. Relaxed behaviour observed.	A Good

CATEGORY AND STUDY	STUDY DESIGN	PARTICIPANTS	INTERVENTION STRATEGIES	RESULTS OF INTERVENTION	CERTAINTY OF EVIDENCE
Social life and Interaction: Social stories, Comic-strip conversations, Video self-modelling, Cartoon thought-bubble training, ABA techniques to reduce anxiety.					
Sansosti and Powell-Smith (2006)	Multiple-baseline across participants design	3 AS students (5-7 years)	Social stories for targeted behaviour.	Increase in pro-social behaviour for 2 of the 3 students. Not able to demonstrate skill maintenance. Poor results for 1 student.	B Fair
Kagoharo et al. (2012)	Multiple baseline across participants	2 AS students (10 years)	Social stories Video self-modelling.	Moderately effective. Results not maintained for positive social interaction behaviour.	B Fair
Agosta, Graetz, Mastropieri, and Scruggs (2004).	ABCA design	1 AS student (6 years)	Social Stories Positive reinforcement.	Reduced inappropriate behaviour when sitting in a group. Reduced anxiety.	A Good
Beaumont and Sofronoff (2008).	Social skills group intervention	49 AS students (26 in intervention group-23 in wait list control group (5-10 years)	Computer game Small group over 7 weeks Parent involvement.	Improvement in social skills and emotion management. Anxiety reduction.	A Good
O'Connor (2009)	Single subject design	1 HFA student (8 years)	Social story DVDs.	Mixed results. Saw the need for a combination of strategies to reduce anxiety.	B Fair
Smith (2001)	Social story training with adults- Case studies	19 students – 15 HFA, 4 LD (Mean age – 10 years).	Social Stories.	Teacher and Parent reports- 13/19 stories were rated between 7-10 in terms of changing behaviour. 5 rated 10.	B Fair
Wellman, et al. (2002)	Randomised control trial	2 studies: Study 1: 7 HFA students – mean age 11.2 years. Study 2: 10 HFA students – mean age 11.2 years.	Comic strip conversations – cartoon thought bubble training.	Children passed false-belief tests and theory of mind tests. 14 out of 17 improved. Increase in social comprehension. Indirect anxiety reduction.	A Good

CATEGORY AND STUDY	STUDY DESIGN	PARTICIPANTS	INTERVENTION STRATEGIES	RESULTS OF INTERVENTION	CERTAINTY OF EVIDENCE
Cognition, Cognitive behaviour therapy (CBT) adapted for Autistic Spectrum Disorder (ASD) children and computer assisted CBT to reduce anxiety.					
Atwood (2004a)	Randomised control trial	79 students with AS (Half in treatment, half in wait list control group)	Modified CBT – The Emotional Toolbox.	Significant differences between intervention and control groups.	A Good
Chalfant, Rapee, and Carroll (2007)	Randomised control trial	47 HFA students (half in wait list and half in control)	Modified CBT – family based, group sessions – 6 weeks.	Following treatment 71.4% no longer fulfilled criteria for an anxiety disorder.	A Good
McNally Keehn, Lincoln, Brown, & Chavira (2012)	Randomised control trial	22 students (A combination of HFA,SAD, GAD,OCD-aged 8-14 years)	Modified version of CBT Coping Cat programme. 16 sessions of CBT or wait-list control.	Large reductions in anxiety for treatment group.	A Good
Reaven and Hepburn (2003)	Case study	1 student with AS-7 years	Modified CBT with social stories and video-modelling.	Anxiety and OCD decreased.	A Good
Reaven et al. (2009)	Randomised control trial	33 students with HFA	Modified CBT-group, plus parents.	Reductions in parent report of anxiety symptoms after group treatment, compared to wait list.	A Good
Sze and Wood (2008)	Case study	1 student with AS – 10 years	Enhanced variant of CBT.	Positive treatment response with decrease in problematic, anxiety related behaviour.	A Good
Sze and Wood (2007)	Case study	1 student with HFA – 11years	Modified CBT – 16 sessions over 4 months.	No longer met criteria for SAD, GAD, or OCD.	A Good
Sofronoff et al. (2005)	Randomised control trial	50 students (44 with AS) mean age 10 years	6 group sessions – Modified CBT.	Significant reduction in parent related symptoms.	A Good
Wood et al. (2009)	Randomised control trial	17 students with HFA/AS, or PDD-nos	16 sessions of 1.5 hours – Modified CBT, including social skills instruction, reinforcement systems.	Positive treatment response – 92.9%.	A Good

RESULTS

Table 1 summarises the findings from the 20 studies reviewed which link to the original question for this review.

Environment and context

The four studies selected within this category demonstrated with good evidence that if the classroom or home environment is adapted through the use of visual schedules, structural aids (Bryan & Gast, 2000; Myles et al., 2007), work stations (Hume & Odom, 2007), adapted curriculum in terms of how it is presented and length and nature of task (Bryan & Gast; Myles et al.), then academic output and on-task behaviour may improve, the child's sensory system calmed, and anxiety levels lowered. The study by Bryan and Gast, (2000) demonstrated that techniques of ABA can be useful in terms of using reinforcement with objects of obsession. These can also serve to relax and regulate. FBA checks can determine whether a behaviour is anxiety-driven or not, and interventions modified accordingly.

Social life and interactions

The seven selected studies established fair evidence for the efficacy of social stories. The study by Sansosti and Powell-Smith (2006) only increased pro-social behaviour in two out of the three children. Skill maintenance over time was not demonstrated. One student made little change at all. Similarly, the study by Kagoharo et al. (2012) used social stories and video self-modelling, but was not able to demonstrate skill maintenance over time. Positive results for social stories were reported in the study by Agosta et al. (2004), but interestingly these were combined with the ABA strategy of positive reinforcement. O'Connor (2009) noted that social stories, had limitations and needed to be combined with other interventions. The study by Wellman et al. (2002) showed great promise in using comic strip conversations and cartoon thought-bubble training, to improve social comprehension and theory of mind deficits. This underlying social disability of HFA/AS can have an impact on stress levels and an intervention like this can do much to reduce anxiety.

Cognition

The nine studies ranged in sample sizes with six randomised control trials and three case studies. All nine studies used modified versions of CBT. These modifications included affective education to teach accurate emotions awareness and expression, including correct recognition of emotions in themselves and others, self-talk, relaxation, and exposure to feared stimuli (Attwood, 2004b; Sze & Wood, 2007, 2008). Some studies lengthened the sessions to increase processing time for the HFA/AS students. The cognitive restructuring part of the CBT interventions took into account the distorted conceptualisations, literal interpretation and social comprehension deficits that HFA/AS children experience. Some studies included social stories and comic strip conversations including cartoon thought-bubble training (Attwood, 2004a; Reaven & Hepburn, 2003; Wood et al., 2009) to address these deficits. One

study also used CBT combined with a computer game and parental involvement (Chalfant et al., 2007). The study that had high success rates (92.9%) combined modified CBT, social skills instruction and used ABA techniques of reinforcement using self-selected and highly motivating reinforcers (Wood et al., 2009).

The certainty of evidence was classified according to the rating system used by the New Zealand Guidelines Group (2001) and given a rating of A, B or C. The interventions for the use of structure and visual supports, modifying the environment and curriculum, and the use of FBA/ABA techniques, were given an A rating (4/4 studies were rated A). For the intervention effects of social stories, comic-strip conversations and cartoon thought-bubble training were given a rating of B (3/8 studies were rated A). For the intervention effects of modified CBT and computer-assisted CBT, a rating of A was given (9/9 studies were rated A).

DISCUSSION

The systematic search for this review yielded 20 studies regarding interventions for HFA/AS children to reduce anxiety. The most successful outcomes were the interventions that used CBT combined with social and behaviour interventions. It must be emphasised that no single intervention or strategy will meet the needs of this group. A combination of strategies and an individualised approach must be used in order for positive and lasting change to occur.

The analysis of the studies from Table 1 confirms the above finding and demonstrates that a combination of cognitive, behavioural, environmental, sensory, visual and structural strategies serves to address the underlying characteristics of ASD. Myles et al. (2007) also suggest that interventions must be multi-faceted. To demonstrate this they developed a 'Ziggarat' model of assessment and intervention for ASD students with an underlying characteristics checklist. The five levels in their model include sensory differences and biological needs, reinforcement, structure and visual support, task demands, and skills to teach.

Interventions must be individualised and the constructs of stress and anxiety inform the assessment and strategy packages to be used. In a study to reduce anxiety in young adolescent ASD students by Bevan-Brown, Carroll-Lind, Kearney, Speri, and Sutherland (2008), ongoing data gathering led to the modification of unsuccessful approaches, the extension of interventions that brought success, and the trialling of new strategies. In this case, the use of modified CBT was trialled but students did not have the conceptual understanding needed to benefit from the programme. Rather, social stories combined with visual and behaviour strategies brought change and success.

The cognitive deficiency of students with HFA/AS does need to be addressed as the structural and functional abnormalities of the amygdala in the brain cause problems with perception and regulation of emotions within themselves, and for understanding the thoughts and feelings of others (Attwood, 2004b). This raises the issue of ethics when designing interventions for ASD students. In terms of informed consent, it is important that students are

consulted when developing suitable interventions for them. This will be determined by the intellectual/cognitive capability of the individual involved, how much information should be given, and how involved the child should be in the decision-making and goal-setting process. The collaborative team needs to consider the rights of the parent also in terms of input and involvement (Raines, 2008).

EBP, as shown by Bourke et al. (2006), effectively illustrates the need for a synthesis of current research evidence, professional judgement and experience combined with the voice of the child, family and others involved. In the case of a child with HFA/AS, a successful intervention will combine not only information from a literature review, but will take into account the voice of the child, family and other professionals working with the child. Information from systematic reviews and high level peer-reviewed research can help to inform the development of effective interventions for school and home use. A checklist based on information from this review that could be used in a school setting is outlined in Table 2.

IMPLICATIONS FOR TEACHERS

Behavioural	<p>Check purpose and pay off for problematic behaviour, e.g.,</p> <ul style="list-style-type: none"> ○ Is it anxiety driven? ○ Is it enabling avoidance of aversive stimuli? 	<ul style="list-style-type: none"> ○ Positively reinforce desired/appropriate behaviour by identifying and applying positive reinforcers (activities, objects, privileges, rewards desired by student) ○ Punish by loss of reinforcers ○ Remove aversive stimuli in environment (see Environment section of table)
Environmental & Sensory	<p>Check the environment for:</p> <ul style="list-style-type: none"> ○ Unpredictability and lack of structure ○ Clutter and lack of space ○ Sensory challenges ○ Appropriate arrangement of furniture 	<ul style="list-style-type: none"> ○ Provide structure and predictability ○ Ensure uncluttered and spacious environment ○ Ensure there is no extreme light, sound or smells or overload of people ○ Place desk close to exit, near supportive peers ○ Provide space for breaks/quiet times to regulate emotions and relax
Transitions	<p>Check</p> <ul style="list-style-type: none"> ○ How does the student cope with changes in routines? 	<ul style="list-style-type: none"> ○ Anticipate any changes ○ Prepare and use visuals and schedules
Cognition & CBT	<p>Check whether the student has difficulty</p> <ul style="list-style-type: none"> ○ Processing social information ○ Reading situations ○ Understanding emotions in themselves and others 	<ul style="list-style-type: none"> ○ Teach emotion awareness and expression ○ Teach positive self-talk ○ Help them identify and be aware of anxiety triggers ○ Introduce them to tools for regulation and relaxation ○ Gradually expose them to situations of which they are fearful
Learning And	<p>Check</p> <ul style="list-style-type: none"> ○ Has the curriculum been adapted to accommodate the needs of the student? ○ Are visual supports in place? 	<ul style="list-style-type: none"> ○ Reduce task demands in terms of length, time-frame and amount of writing. ○ Consider computer-based learning ○ Provide visuals for programme and task requirements ○ Reinforce completion of content and time demands of task and factor in breaks
Social Skills	<p>Identify</p> <ul style="list-style-type: none"> ○ Social situations where student experiences difficulties ○ Cues that student does not respond to ○ Inappropriate responses 	<ul style="list-style-type: none"> ○ Use social stories to teach cues and responses for specific social and emotional situations ○ Use comic-strip conversations and thought-bubble training to explain alternative perspectives or correct errors and assumptions.

Table 2 BEST CLASS: A list of prompts for reflection and strategies for action, to inform and guide intervention practice.

Observation and assessment of the child drives the intervention, and a combination of strategies could be used from this checklist. Anxiety for the child with HFA/AS can present itself as problematic behaviour in a range of different contexts including school. To facilitate and contribute to EBP, this systematic review has assessed the current research base using the thematic categories of environment and context, social life and interaction, and cognition. This evidence demonstrates that a combination of strategies can be used to reduce anxiety. Intervention programmes of modified CBT, FBA and ABA have a strong evidence base combined with the use of environmental, visual, and contextual supports and social skills strategies. The intervention needs to be driven by the observation and assessment of the child, address the underlying characteristics and needs of ASD, and be developed through a collaborative, consultative process which includes the voice of the child, parents and professionals working with the child.

REFERENCES

- Agosta, E., Graetz, J., Mastropieri, M., & Scruggs, T. (2004). Teacher-researcher partnerships to improve social behaviour through social stories. *Intervention in School and Clinic*, 39(5), 276–278.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington DC: Author.
- American Psychiatric Association. (2012) *APA-DSM-5 Development*. Retrieved August 2, 2012, from http://www.dsm5.org/home/proposed_revisions/pages
- Attwood, T. (2000). Strategies for improving the social integration of children with Asperger Syndrome. *Autism*, 4(1), 85–100.
- Attwood, T. (2003). Frameworks for behavioural interventions. *Child and Adolescent Psychiatric Clinics of North America*, 12, 65–86.
- Attwood, T. (2004a). Cognitive behaviour therapy for children and adults with Asperger's syndrome. *Behaviour Change*, 21(3), 147–161.
- Attwood, T. (2004b). *Exploring feelings: Cognitive behaviour therapy to manage anxiety*. Arlington, TX: Future Horizons.
- Attwood, T. (2006). *The complete guide to asperger's syndrome*. London, U.K: Kingsley.
- Beaumont, R., & Sofronoff, K. (2008). A multi-component social skills intervention for children with Asperger syndrome: The junior detective training program. *The Journal of Child Psychology and Psychiatry*, 49(7), 743–753.
- Bevan-Brown, J., Carroll-Lind, J., Kearney, A., Sperl, B., & Sutherland, M. (2008). Making assumptions vs building relationships: Lessons from a participatory action research project to identify effective practices for learners with ASD. *Kairaranga, Special Issue*, 22–31.
- Bourke, R., Holden, B., & Curzon, J. (2006, January). *Using evidence to challenge, change and create new practices*. Unpublished paper. Presented to National Leadership Forum, Ministry of Education.
- Brice, A., & Hill, A. (2004). A brief history of evidence-based practice. In A. Booth & A. Brice (Eds.), *Evidence based practice for information professionals: A handbook*. London: Facet.
- Bryan, L. C., & Gast, D. L. (2000). Teaching on-task and on-schedule behaviors to high-functioning children with autism via picture activity schedules. *Journal of Autism and Developmental Disorders*, 30, 553–567.
- Chalfant, A., Rapee, R., & Carroll, L. (2007). Treating anxiety in children with high functioning autism spectrum disorders; A controlled trial. *Journal of Autism and Developmental Disorders*, 37, 1842–1857.

- Dettmer, S., Simpson, R. L., Myles, B. S., & Ganz, J. B. (2000). The use of visual supports to facilitate transitions of students with autism. *Focus on Autism and Other Developmental Disabilities*, 15, 163–169.
- Edwards, J. A., Dattilio, F. M., & Bromley, D. B. (2004). Developing evidence-based practice: The role of case-based research. *Professional Psychology: Research and Practice*, 35(6), 589–597.
- Frederickson, N. (2002). Evidence-based practice and educational psychology. *Educational and Child Psychology*, 19(2) 96-111.
- Ghaziuddin, M. (2002). Asperger syndrome: Associated psychiatric and medical conditions. *Focus on Autism and Other Developmental Disabilities*, 17, 138–144.
- Guillott, A., Furniss, F., & Walter, (2001). Anxiety in high-functioning children with autism. *Autism*, 5 (3) 277-286.
- Hume, K., & Odom, S. (2007). Effects of an individual work system on the independent functioning of students with autism. *Journal of Autism and Developmental Disorders*, 37(6), 1166–1180.
- Kagoharo, D., Achmadi, D., Van der Meer, L., Lancioni, G., O'Reilly, M., Lang, R., et al. (2012). Teaching two students with Asperger Syndrome to greet adults using social stories and video-modelling. *Journal of Developmental and Physical Disabilities*, 25, 241-251.
- Laugeson, E., & Frankel, F. 2010. *Social skills for teenagers with developmental and autism spectrum disorders: the peers treatment manual*. New York: Routledge.
- Lord, C., Risi, S., Lambrecht, L., Cook, E., Bennett, L., Di Lavore, P., et al. (2000). The Autism Diagnostic Observation Schedule-Generic: A standard measure of social and communication deficits associated with the spectrum of autism. *Journal of Autism and Developmental Disorders*, 30, 3, 205–223.
- Mash, E., & Wolfe, D. (2005). *Abnormal child psychology*. Belmont, CA: Thompson Wadsworth.
- McNally Keehn, R., Lincoln, A., Brown, M., & Chavira, D. (2012). The Coping Cat Program for children with anxiety and Autism Spectrum Disorder: A pilot randomized controlled trial. *Journal of Autism and Developmental Disorders*, 43, 57-67.
- Ministries of Health & Education. (2008). *New Zealand Autism Spectrum Disorder guidelines*. Wellington: Ministry of Health.
- Moree, B., & Davis, T. (2010). Cognitive-behaviour therapy for anxiety in children diagnosed with autism spectrum disorders: Modification trends. *Research in Autism Spectrum Disorders*, 4, 346–354.
- Myles, B., Hudson, J., Lee, H., Smith, S., Tien, Y., & Swanson, T. (2007). A large scale study of the characteristics of Asperger Syndrome. *Education and Training in Developmental Disabilities*, 42(4), 448–459.

- New Zealand Guidelines Group. (2001). *Handbook for the preparation of explicit evidence-based clinical practice guidelines*. Ministry of Health, Wellington, N.Z.
- O'Connor, E. (2009). The use of social story DVDs to reduce anxiety levels: A case study of a child with autism and learning disabilities. *Support for Learning, 24*(3), 133-136.
- Raines, J. C. (2008). *Evidence-based practice in school mental health*. New York: Oxford University Press.
- Reaven, J., & Hepburn, S. (2003). Cognitive behavioural treatment of obsessive-compulsive disorder in a child with Asperger Syndrome: A case report. *Autism, 7*, 145–164.
- Reaven, J., Blakeley-Smith, A., Nichols, S., Dasari, M., Flanigan, E., & Hepburn, S. (2009). *Focus on Autism and other Developmental Disabilities, 24*(1), 27–37.
- Sansosti, F., & Powell-Smith, K. (2006). Using social stories to improve the social behaviour of children with Asperger Syndrome. *Journal of Positive Behaviour Interventions, 8*,1, 43-57.
- Schlosser, R., Koul, R., & Costello, J. (2007). Asking well-built questions for evidence-based practice in augmentative and alternative communication. *Journal of Communication Disorders, 40*, 225–238.
- Smith, C. (2001). Using social stories to enhance behaviour in children with autistic spectrum difficulties. *Educational Psychology in Practice, 17*(4), 337–345.
- Sofronoff, K., Attwood, T., & Hinton, S. (2005). A randomised controlled trial of a CBT intervention for anxiety in children with Asperger syndrome. *Journal of Child Psychology and Psychiatry, 46*, 1152–1160.
- Sofronoff, M., & Farbotko, M. (2002). The effectiveness of parent management training to increase self-efficacy in parents of children with Asperger Syndrome. *Autism, 6*(3), 271–286.
- Spence, S. (1995). *The Social Worries Questionnaire, in social skills training: Enhancing social competence with children and adolescents*. Windsor: NFER-Nelson.
- Spence, S. (1998). A measure of anxiety symptom among children. *Behaviour Research and Therapy, 36*(5), 545- 566
- Sze, K., & Wood, J. (2007). Cognitive behavioural treatment of comorbid anxiety disorders and social difficulties in children with HFA: A case report. *Journal of Contemporary Psychotherapy, 37*, 133–143.
- Sze, K., & Wood, J. (2008). Enhancing CBT for the treatment of autism spectrum disorders and concurrent anxiety. *Behavioural and Cognitive Psychotherapy, 36*, 403–409.
- United States Centre for Disease Control and Prevention. (2007). Prevalence of autism spectrum disorders. *Autism and developmental disabilities monitoring network. Surveillance Summaries, 56*, 1–40.

- Wellman, H., Baron-Cohen, S., Caswell, R., Gomez, J., Swettenham, J., Toye, E., & Lagattuta, K. (2002). Thought-bubbles help children with autism acquire an alternative to a theory of mind. *Autism*, 6(4), 343–363.
- White, S., Oswald, D., Ollendick, T., & Scahill, L. (2009). Anxiety in children and adolescents with autism spectrum disorders. *Clinical Psychology Review*, 29, 216–229.
- Wood, J., Drahota, A., Sze, K., Har, K., Chiu, A., & Langer, D. (2009). Cognitive behavioural therapy for anxiety in children with autism spectrum disorders: A randomized, controlled trial. *Journal of Child Psychology and Psychiatry*, 50, 224–234.

Manuscript Submitted: December 13, 2012 Manuscript Accepted: June 6, 2013
--

ABOUT THE AUTHOR

FRAN HOFFMAN

Victoria University of Wellington



Fran Hoffman has extensive experience teaching in a special school setting and presently has an interest in inclusive education. She works with students with learning and behaviour challenges at an Intermediate School in Wellington.

Her research interests are communication and social competence for students on the Autistic Spectrum. Fran is completing her

Masters in Educational Psychology.

Email: franhoffman89@yahoo.com