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Understanding the literacy difficulties of students with Asperger's syndrome in middle years' classrooms

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Among the students in Australian classrooms who are experiencing learning difficulties are increasing numbers of children who have been diagnosed with Asperger's syndrome. Although the general cognitive and language abilities of these students are comparable with most of their peers, they experience significant difficulties with social communication, social interactions and social-emotional/behavioural functioning. Despite indications that there are features inherent in Asperger's syndrome that are likely to have a negative effect on the development of advanced literacy skills, studies to date have primarily focused on social-emotional/behavioural challenges. Without effective literacy skills, however, students' access to educational and career opportunities may be curtailed. This article reviews features of Asperger's syndrome that appear to have a negative impact upon the development of advanced literacy skills and suggests ways in which inclusive classroom teachers could support the development of their learners.

Introduction

Many students experience difficulties with academic learning. In Australian schools, estimates indicate that 10 to 20 per cent of students face such challenges (Westwood & Graham, 2000). Among these students are children and adolescents who have been diagnosed with Asperger's syndrome (World Health Organization (WHO), 2007) or, as it is known in North America, Asperger's Disorder (American Psychiatric Association (APA), 2000).

Although recent epidemiology studies indicate that the prevalence of Asperger's syndrome (AS) within the general population is fairly stable (Fombonne, 2005; Prior, 2003), more and more children are being diagnosed during their school years. This apparent increase is most likely due to a growing awareness of the disorder, improved identification procedures, and an increase in the provision of services for affected children and their families (MacDermott, Williams, Ridley, Glasson & Wray, 2007). Estimates of prevalence rates within the general population vary widely from a low of 0.4 in every 1,000 children (Lauritsen, Pedersen & Mortensen, 2004), through 4.8 in every 1,000 children (Kadesjo, Gillberg & Nagberg, 1999), to a high of approximately 1 in every 250 children (Atwood, 2007). At present, approximately four boys are diagnosed for every girl diagnosed. This imbalance may be due to girls' greater abilities to camouflage their differences in social settings (Attwood, 2007).

Whether Asperger's syndrome is an increasingly prevalent disorder among students or not (MacDermott et al., 2007), many teachers are becoming increasingly familiar with the perplexing challenges faced by these students. As a consequence, many classroom teachers are looking for specific guidance in teaching and supporting these students in inclusive classrooms (Jones, 2006; Marks, Shaw-Hegwer, Schrader, Longlaker et al., 2003).

What is Asperger's syndrome?

Asperger's syndrome is a complex, life-long, pervasive developmental disorder presumed to be neurobiological in origin and which affects an individual's communication skills, social understanding and behavioural functioning. The syndrome was first described by Hans Asperger, a Viennese physician, in 1944, but did not receive much attention until described by British psychiatrist, Lorna Wing in 1981 and subsequently included in the World Health Organization's *International classification of diseases* (ICD-10) in 1993 and the American Psychiatric Association's *Diagnostic and statistical manual of mental disorders* (DSM-IV) in 1994 (APA, 2000; Attwood, 2007; Lerner & Kline, 2006; WHO, 1993).

Asperger's syndrome is sometimes described as mild or 'high-functioning' autism (Macintosh & Dissanayake, 2004), but it is important to recognise that a student with Asperger's syndrome has a learning and behavioural profile that is very different from a student who has been diagnosed with Autism or Autistic Disorder (Attwood, 1998). Although students with Asperger's syndrome do not have clinically significant delays in cognition or general language development, they do have communicative, social and functional impairments. This triad of impairments constitutes the core element of a diagnosis. In addition to these areas of impairment, many students also present with motor co-ordination and sensory difficulties (American Psychiatric Association, 2000; Attwood, 2007).

Although researchers and clinicians continue to debate the characteristics that are consistently displayed by individuals with Asperger's syndrome (Klin, Volkmar & Sparrow, 2000), it is generally agreed that the common characteristics include the following (American Psychiatric Association, 2000; Attwood, 2007; Barnhill, Cook, Tebbenkamp & Myles, 2002; Conway, 2005; Cumine, Leach & Stevenson, 1998; Mercer, 2008; Myles & Simpson, 2002):

Communication difficulties

Have speech and language peculiarities that may include odd prosody (rhythm); tend to be long-winded and pedantic; have difficulties communicating with peers (i.e. poor pragmatic language); often have difficulty comprehending the language of others, especially jokes, figures of speech and implied meanings; appear to lack an understanding of the unwritten rules of social behaviour including the reciprocal nature of conversation, and appear not to understand the importance of nonverbal behaviours in supporting communication (e.g. eye gaze, facial expression, body postures, and gestures) (Leekham, 2007).

Social difficulties

Often appear to be extremely egocentric; often get along better with adults than with peers; have difficulty taking turns; have difficulty establishing and maintaining friendships despite desire to have friends; have difficulty sharing feelings with other people and often appear to lack empathy, and are often considered to be 'strange' or eccentric by their peers.

Functional difficulties

Often adhere inflexibly to certain routines (e.g. wearing the same article of clothing every day); have a restricted range of interests and often develop obsessions (e.g. with trains, globes and maps, electricity); engage in repetitive patterns of behaviour, especially when upset (e.g. snapping or flicking fingers); become very upset and angry when a schedule is not followed or when their routines are disrupted; have difficulty dealing with change; often have a low sense of self-esteem and high levels of anxiety, and may develop depression especially during adolescence.

Fine and gross motor co-ordination difficulties

Often have poor posture and present with general clumsiness; have difficulties catching balls and running; often avoid physical activities; often have very poor cursive handwriting; usually prefer to print or to use a computer instead of hand writing assignments, and typically complete assignments in a messy disorganised manner (Miyahara, Tsujii, Hori, Nakanishi, Kageyama, & Sugiyama, 1997).

Sensory difficulties

May experience a range of reactions to sensory stimuli such as taste, touch, sound, temperature ranging from low awareness (hyposensitive) to high awareness (hypersensitivity) that interfere with functioning; some students may be extremely sensitive to bright light and noise in some settings (classroom) but oblivious in others (e.g. gymnasium); may react to uncomfortable textures in clothing (e.g. prefer wearing sweat pants to jeans), and a student's sensory reactions may be especially pronounced when tired or stressed (Dunn, Saiter & Rinner, 2002).

The emphasis on social functioning

Individuals with Asperger's syndrome can vary greatly in their personality, communication style, social abilities and behavioural functioning (Speech Pathology Association of Australia, 2008). Thus it is important to remember that each student is unique. Nonetheless, a review of the common characteristics indicates that many of these students are likely to find school a significant challenge.

We know that middle school classrooms, hallways and playing fields are highly complex social environments (Roeser, Eccles & Sameroff, 2000) and that the difficulties experienced by a student with Asperger's syndrome are primarily in relation to social functioning (Myles & Simpson, 2001). We also know that social competence is a powerful predictor of academic achievement (Nelson & DeBacker, 2008; Wentzel, 1991; Wentzel & Caldwell, 1997). It should not be surprising, therefore, that a considerable body of research has focused on addressing the communication, social and behavioural difficulties of students with Asperger's syndrome and that, as a result, numerous books and journal articles detailing best practices for teachers and parents have been published (Myles & Simpson, 2001).

A need for a focus on academic functioning

Despite the volume of research and best practice literature addressing the social-emotional and behavioural challenges of students with Asperger's syndrome, very little research has focused upon the specific academic difficulties of these students (Myles et al., 2002; Nation, Clarke, Wright, & Williams, 2006). I hypothesise that there are four reasons for the dearth of research and information regarding best practice in the academic domain. Firstly, from a historical perspective, academic development has been underemphasised for students with developmental disabilities in terms of both research and practice (Weikle & Hadadian, 2004). Secondly, attendance, engagement and successful social functioning in school are understandably the major foci of parents, teachers and administrators. Thirdly, the relative success that young students with Asperger's syndrome enjoy with regard to developing basic academic skills during their early school years serves to deflect teachers and parents' concerns away from this domain of functioning. Young students with Asperger's syndrome are often quick to learn their numbers and letters, are often advanced in their word reading and basic mathematics computational skills, are often extremely verbal (particularly in the topics of special interest to them), and their pedantic speaking style often masks their comprehension

deficits (Church, Alisanki, & Amanullah, 2000; Lanter & Watson, 2008; Myles & Simpson, 1998). Fourthly, by the time students with Asperger's syndrome are entering their middle years of schooling and their struggles with reading to learn and with higher level inferential and critical thinking are becoming increasingly evident (Falk-Ross, Iverson & Gilbert, 2004), their secondary difficulties with stress, anxiety and behavioural issues are of greater concern to their parents and teachers (Church et al., 2000).

A need for a particular focus on literacy development

It is important to remember, however, that students with Asperger's syndrome possess general cognitive and language abilities that are comparable with the majority of their same-age peers. Accordingly, we might expect (and hope) that, in an environment which is socially and academically supportive, these students can develop literacy skills commensurate with their aptitude for learning. Of concern, however, are findings from research in the field of cognitive psychology that suggest that there are cognitive features inherent in Asperger's syndrome that may well make the development of advanced literacy skills problematic. The three features are theory of mind deficits (Baron-Cohen, 1995; Fletcher et al., 1995), central coherence deficits (Frith & Happé, 1994), and difficulties with executive functioning (Attwood, 2007; Landa & Goldberg, 2005).

Theory of mind deficits

The ability to attribute independent thoughts or beliefs to self and others in order to explain and predict behaviour appears to pose a major challenge for individuals with Asperger's syndrome (Attwood, 2007; Doris, Espie, Knott & Salt, 2004; Fletcher et al., 1995). In the literacy domain, students' challenges with theory of mind can be seen in their difficulties with:

- reading comprehension especially with regard to answering inferential questions;
- comprehending narrative texts and films and writing narratives, especially personal narratives. Students typically find expository or information materials easier to deal with than narrative materials;
- understanding and predicting the emotions of characters in texts and films;
- portraying emotions in their creative writing;
- understanding that idioms and metaphors should not be understood literally (e.g. 'Pull your socks up!');
- understanding that only salient events should be included in their writing rather than a long detailed lists of events;
- understanding that their special topic of interest may not be of equal interest to their audience or peers;
- understanding that others are able to help when faced with a difficulty (e.g. not knowing how to spell a particular word correctly or not knowing where to set the scene for their play);
- writing persuasive texts or texts that solve a problem;
- changing their text when suggestions for improvement are offered by their teacher or peers;
- feeling a compulsion to complete reading or writing a text regardless of the class schedule;
- becoming frustrated if interrupted during reading or writing activities.

Some strategies that middle years' teachers could include to help students with Asperger's Syndrome become more aware of what others might be thinking, feeling, or pretending include:

- guided conversations about characters in a film or text that include inferring and predicting the thoughts and beliefs of the characters;
- guided conversations about alternate solutions that the characters could implement to solve particular dilemmas or problems;
- developing a graphic organiser or visual representation of the structure a text should take using different colours for the various points of view or characters before beginning to write;
- depicting narratives in comic strip form with thought and speech bubbles (Gray, 1994);
- collecting lists of idioms and metaphors from familiar texts and discussing their meanings and impact for various members within the discussion group (Falk-Ross, Iverson & Gilbert, 2004);
- focusing comprehension questions on deep rather than surface meaning (i.e. inferential rather than factual recall questions) (Lanter & Watson, 2008);
- specifically guiding students to link their prior knowledge of a subject with the information they are gleaned from their reading of a text (Lanter & Watson, 2008);
- having students share their relevant prior knowledge and observing how each of them has a slightly different body of prior knowledge because of their individual experiences.

There are resource books and DVDs available to assist students to develop their skills in 'mind reading' (e.g. Carol Gray's *Social Stories* and Simon Baron-Cohen's *Mind reading: The interactive guide to emotions – Version 1.3*), but these resources are more suited to individual and small group instructional settings than to an inclusive classroom.

Central coherence deficits

Although individuals with Asperger's syndrome generally have excellent abilities to perceive and remember details, they often have difficulties in perceiving and understanding the overall context or 'main idea' (Attwood, 2007; Frith & Happé, 1994; Happé & Frith, 2006). One of the easiest ways to observe a student's difficulties is by listening to the student talking to peers. Quite often the student will speak at great length, delivering various facts, but never actually 'get to the point.' Happé, Briskman and Frith (2001) noted that there may be some advantages to detail-focused processing, as opposed to global processing, in some careers such as engineering, physics and mathematics where a focus on details is of crucial importance.

Central coherence deficits or a bias for detail-focused processing can result in students with Asperger's syndrome having difficulties with analysing and synthesising information into a meaningful pattern or framework of understanding. Within the literacy domain, students are likely to present with difficulties in:

- retelling a story or information from a text or film;
- answering comprehension questions related to the main idea or gist of a text or film
- writing a précis or summary of a text, presentation, or film;
- organising thoughts logically to complete essay assignments (Church et al., 2000);
- drawing on prior knowledge when reading or writing texts (Church et al., 2000);
- drawing on prior knowledge and skills to solve problems (Channon, Charman, Heap, Crawford & Rios, 2001);

- completing assignments on time because too much time has been spent on individual parts that were of most interest to the student (Attwood, 2007);
- deciding which pieces of information are relevant or redundant for an essay on a specific topic.

Middle years' teachers might wish to consider a number of strategies, primarily based on visual representations, to assist their students with Asperger's syndrome to perceive the overall gist or main idea of a text, presentation, or film. Some strategies to consider include:

- developing two-column notes when recording information (from a lesson, film or story). In the first column, details judged to be important are recorded, while in the second column (with much less frequency), the 'main idea so far' is recorded. Students should then be encouraged to discuss similarities or differences between their judgements of important details and main ideas;
- using semantic maps or webs to show relationships (e.g., detail/main idea or compare/contrast) among ideas (Falk-Ross, Iverson & Gilbert, 2004);
- developing comic strips to retell or summarise a story or film narrative;
- having students develop comprehension questions for texts or films;
- having students prepare a visual map of the structure of a written task, adding important information (newly acquired and prior knowledge) in bubbles on the map;
- having students develop timelines and plans of what they need to do in order to complete a large homework assignment on time;
- provide students with guided practice in using active mental strategies such as questioning, predicting, constructing mental images, and developing summaries as they read a long text (Lanter & Watson, 2008).

Executive functioning difficulties

Students with Asperger's syndrome often present with a number of cognitive processing difficulties that psychologists term 'executive functioning' (Attwood, 2007; Landa & Goldberg, 2005). Executive functioning includes the ability to focus attention, deal with information in working memory, shift attention, inhibit behaviours (self-regulation), manage time, set priorities, plan and organise, and engage in self-reflection, self-monitoring and goal setting. Students' difficulties with executive functioning are even more pronounced when they are feeling tired or stressed. Reviewing these processes, it becomes evident that sustaining focus on a complex and lengthy reading or writing task would be very difficult for a student with Asperger's syndrome in the middle years, where assignments are more complex and demanding than in the primary years (Attwood, 2007; Channon, Charman, Heap, Crawford & Rios, 2001).

Within the literacy domain, students with Asperger's syndrome are likely to present with difficulties in:

- making sense of complex instructions for a specific literacy assignment;
- planning and organising themselves to work through the assignment;
- thinking flexibly and brainstorming ideas when preparing to write an assignment (Church et al., 2000);
- sustaining attention on complex tasks that involve a number of components;
- not being distracted by subtasks to the detriment of completing the assigned task;
- understanding dialogue (i.e. paying joint attention) (Barnhill, 2001);
- creating dialogue (i.e. shifting attention) (Barnhill, 2001);

- continuing to stay on one topic or one idea too long in their speaking and writing (i.e. perseverating) (Barnhill, 2001);
- overreacting to disappointments or perceived failures in written work or reading performance;
- finding and handing in assignments even when they have been completed;
- being willing to engage with topics and activities in the classroom that are not related to specific personal interests.

Some strategies that middle years' teachers could implement in their classroom instructional activities with all of their students, including those with Asperger's syndrome, include:

- providing students with a plan or an agenda (for an activity, a lesson and/or the day, so that they know what to expect and can prepare for changes);
- providing information about a text, new concept, or an assignment in a simple, logical manner with supporting visuals (e.g. flow charts, diagrams, illustrations and photographs);
- making sure that students are attending before giving instructions;
- allowing time for students to process verbal instructions and checking on their understanding as they begin to plan out how they will accomplish an assigned task;
- allowing students to have decreased homework expectations if appropriate (aiming for quality on essential work rather than quantity for extended practice);
- providing a scribe or a voice-recognition system for students with fine-motor co-ordination difficulties so that written work can be accomplished more efficiently;
- providing copies of class notes or structured note-taking pages with headings to assist students in listening to a lesson and recording important information;
- allowing students to have some choice in how they will complete an assignment, but following up with a contract to record the necessary steps, so that students with Asperger's syndrome can learn to develop and follow plans;
- assisting students to colour-code their work (schedule, binders, dividers) so that they can file and later locate important information related to their school work;
- preparing students (and their parents) well ahead of scheduled school-wide and class-based assessment activities (writing dates into the students' homework planners);
- allowing students to leave the classroom for short breaks when required;
- allowing students to use ear plugs when working independently;
- allowing students to work in pairs or small groups to complete assigned literacy tasks;
- allowing students to 'check in' with a peer partner if unsure about what next step to take in completing a writing task.

There are numerous resource books available to assist students to develop their executive functioning and self-management abilities. Most of these resources have been designed for students with ADHD but they are equally useful for students with Asperger's syndrome as well as for any student who finds it difficult to plan, organise and complete reading and writing assignments effectively and efficiently. Web links to two recommended resources, the Australian Government's *Health Insite* and the British Columbia (Canada) Ministry of Education's *Teaching students with ADHD: Planning for success at school* are provided in the recommended resources section at the end of this paper.

Strengths of students with Asperger's syndrome

Although the majority of this paper has focused upon the difficulties faced by many students with Asperger's syndrome (indeed the disorder is defined by deficits in specific areas of functioning), it is important for us all to remember that each student is unique and has strengths upon which a teacher can build.

Many young children with Asperger's syndrome are very bright, are intensely curious to learn about their world, and soon develop (sometimes all-consuming) special interests (Myles & Simpson, 2002). Hans Asperger noted this in 1944, describing how an individual's special interest area (SIA) often enabled them to 'achieve quite extraordinary levels of performance in a certain area' (Asperger, 1944/1991, p. 45).

As teachers, we need to constantly remind ourselves that our students with Asperger's syndrome *can* develop many skills and talents and grow up to lead productive lives, but only if we adjust the environment, reduce sensory overload, support social functioning, and are prepared to differentiate our instruction and provide necessary accommodations in our inclusive classrooms. In addition, by establishing clear behavioural and academic expectations, by ensuring that our classrooms are well-organised and productive learning spaces, and by following clear routines and schedules, all students, including those with Asperger's syndrome, will feel supported and not so overwhelmed by the whirl of everyday life in our busy classrooms and schools.

In addition to the adjustments noted above, there appears to be another important way in which we might be able to assist students, especially those with Asperger's syndrome, to reach their full potential. Initial research on the efficacy of 'strengths-based programming' for students with Asperger's syndrome, conducted by researchers from the University of Oregon, has produced some exciting new findings. Namely, improvements in students' verbal and nonverbal communication, social functioning, social-emotional functioning, sensory processing, fine motor co-ordination and executive functioning when students were engaged in tasks related to their special interest areas (SIAs) (Winter-Messiers, 2007; Winter-Messiers, et al., 2007). Although incorporating students' SIAs into the curriculum requires flexibility, creativity and effort on the part of teachers and parents, students with Asperger's syndrome have clearly benefited. Winter-Messiers (2007) reported that incorporating a student's SIA (e.g. World War 1 biplanes) into language arts, social studies, science, mathematics and art lessons assisted the student to 'find stability' (p. 149). Winter-Messiers (2007) went on to state that, within their SIA, the students acquired 'a clear focus, a way to organize the world, a social approach, and a way in which to interpret life' (p. 149).

If our goal is for our students, especially those with Asperger's syndrome, to engage in rich literacy activities, thus learning to listen, speak, observe, read, write, perform and critique the language and thinking of self and others to their best of their abilities, then finding the time, energy and creativity to provide necessary adaptations and accommodations is vital. Students with Asperger's syndrome can be perplexing and very challenging, but we need to remember that, although they might perceive the world very differently from most of us (Attwood, 1998), they have strengths and special abilities that they can contribute to our diverse society. Asperger noted in 1944 that the possibilities for future careers could often be seen within children's special interests. He stated:

We can see in the autistic person, far more clearly than with any normal child, a predestination for a particular profession from earliest youth. A particular line of work often grows naturally out of his or her special abilities. (p. 88)

Note

An earlier version of this paper was presented in the symposium *Hidden challenges: Supporting the literacy development of diverse learners*, at the annual conference of the Australian Association for Research in Education at Kelvin Grove, Queensland in December 2008.

Recommended resources

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- Betts, S.W., Betts, D., & Gerber-Eckard, L. (2007). *Asperger syndrome in the inclusive classroom: Advice and strategies for teachers*. London: Jessica Kingsley.
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- Welton, J. (2004). *Can I tell you about Asperger syndrome?* London: Jessica Kingsley.

Recommended websites

- Asperger Services Australia: <http://www.asperger.asn.au>
- Australian Government, *Health Insite*: http://www.healthinsite.gov.au/topics/Attention_Deficit_Disorder_ADD_or_ADHD
- Autism Advisory Board on Autism Spectrum Disorders: <http://www.autismaus.com.au/>
- Autism Queensland: Education, Therapy and Support Services: <http://www.autismqld.com.au>
- Autism Queensland's links page: <http://www.autismqld.com.au/resources/links.html#I>
- Autism Spectrum Australia (ASPECT): <http://www.aspect.org.au>
- BC Ministry of Education, *Teaching students with ADHD: Planning for success at school*: <http://www.bced.gov.bc.ca/specialed/adhd/plan.htm>
- National Autistic Society: <http://www.nas.org.uk>
- OASIS: Online Asperger Syndrome information and support: <http://www.udel.edu/bkirby/asperger>

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