Petronella de Jager and Janet Condy

The identification of sensory processing difficulties of learners experiencing Asperger's Syndrome (AS) in two mainstream Grade R classes

Abstract

The purpose of this study is to explore the sensory processing difficulties of Grade R learners that are diagnosed with Asperger's Syndrome (AS) in two schools in South Africa. Attwood (2007, p. 271) considers sensory sensitivities to have a greater impact on the lives of these individuals, than problems with making friends, managing emotions and coping academically. This research approach was purely qualitative; it used interviews and observations. The sample consists of two independent case studies composed of learners aged between five and seven who had been clinically diagnosed with AS. The results confirmed sensory processing difficulties, and illustrated how these difficulties impacted on the general learning and development of learners diagnosed with AS. Although they were both bright learners, they were perceived as underachievers. By identifying these sensory difficulties and creating awareness among educators, it is possible to debunk misconceptions people have of the adaptability of these learners to a mainstream school environment.

Keywords: Asperger's Syndrome, sensory processing, Inclusive Education, sensory difficulties, mainstream school

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Introduction

The optimal development of young children is considered vital to society and hence it is important to understand the learning and development of them. Children are active participants in their own development, reflecting the intrinsic human drive to explore and master one's environment (Shonkoff & Phillips, 2002). Their development involves five dimensions and they are: physical (body image and motor control and movement), social (adaptability), emotional (maturity), creative (arts and culture appreciation and technology appreciation) and cognitive (language and mathematical literacy and numeracy) development. The Ministry of Education's commitment to provide educational opportunities in particular for those learners who experience barriers to learning and development will be discussed in the following paragraphs.

South Africa's National Department of Education (NDoE) launched the Education White Paper 6 (2001) on *Special Needs Education: Building an inclusive education and training system.* The 2005 Curriculum's *Assessment Guidelines for Inclusion* clearly shows the commitment of the education system to minimise the impact of a range of intrinsic and extrinsic barriers upon the assessment performance of the learners (NDoE, 2002). However, since 2005, there has been a plethora of more recent documents published, pertaining to the practical implementation and theory of special education and inclusive education, of which 'The National Strategy on Screening, Identification, Assessment and Support' (SIAS) (2008) is the most recent. The implementation of these strategies pertained in these documents on inclusion by the NDoE has thus allowed large numbers of children of school-going age who experience barriers to learning, including those who are disabled, to exercise their right to basic education and to access the necessary support in their local schools as far as possible. The implementation of the NDoE's strategies pertaining to inclusive education has allowed a large number of learners with barriers to learning, which includes those who are disabled, to exercise their right to access basic education and the necessary support in their local schools, as far as is reasonably possible.

It is due to the principles of Inclusive Education that educators have been identifying and embracing learners with AS, and the unique ways they perceive their world in mainstream classrooms. The present study evolved out of a concern for young learners experiencing AS, since only limited research has been done on these learners in South Africa. As the focus of this study was on two Grade R learners who are experiencing AS, it made us aware of the importance of sensory processing, and the influence it can have on learning and cognitive, intellectual and physical development. We have noticed, while working one-on-one with these learners, that they have a number of sensory problems associated with hearing, vision, movement and touch. These sensory shortcomings would often make them feel anxious and insecure. We were interested about how this would influence their abilities to function in a mainstream education class. Hence, this concern became the focus of our research. The aim of the study was to create an awareness of learners experiencing AS who are attending mainstream schools in and around the Western Cape. This case study focussed on two

Grade R learners, and tried to discover how their unique way of sensory processing influenced their general learning and development. The interviews and observations that comprise our qualitative data were captured in 2008. The main aim of the study was to investigate the identification of sensory processing difficulties experienced by learners diagnosed with AS, who were attending a Grade R mainstream school. The investigation was done by observing their responses to the sensory stimulus they were exposed to, while interacting within their immediate environment.

Literature review

In the following section, the discussion will focus on how AS learners fit into the South African educational framework. In addition, we discuss what the NDoE has done, in their view, to ensure that these learners are successfully included in the mainstream schooling system. We then consider the historical development of the term 'Asperger's Syndrome', the character traits of people diagnosed as such, and the impact of sensory processing on learners with AS.

Inclusive education in South African mainstream schools

Since many learners with AS attend mainstream schools, and have to be assessed within the same curriculum and assessment framework, it is important to mention the NDoE's view on Inclusive Education. The White Paper 6 (2001, p. 17) states:

> Inclusion is about recognising and respecting the differences among all learners and building on their similarities.

In addition, the policy mentions that Inclusion concerns the support of, not only, the learners, but also the educators and the inclusive system, as a whole; with emphasis on development and good teaching strategies with an adaptive support system that will be of benefit to all learners in need.

Curriculum 2005 Assessment Guide for Inclusion (2002, p. 4) emphasises that any practice must be cognisant of the following:

- All learners can learn, given the necessary support;
- OBE is learner-paced and learner-based;
- Schools create the conditions for learners to succeed;
- There is a shift from categorising/labelling learners according to disability towards addressing barriers experienced by individual learners; and
- Provision should be based on the levels of support needed to address a range of barriers to learning.

In theory, the policy set out in White Paper 6 is sound. But in practice it has proven to be difficult. Over the past four years the NDoE has developed a National Strategy Programme as part of the implementation of Education White Paper 6 (2001). More recently, in 2008 the National Strategy on Screening, Identification, Assessment and

Support (SIAS) was introduced to all South African officials, schools, teachers, learners and parents. Hindle (2008, p. 18) states that:

> The introduction of this strategy will allow large numbers of children of school-going age who experience barriers to learning, including those who are disabled, to exercise their right to basic education and to access the necessary support in their local schools as far as possible.

According to the principals and educators of both learners in my study, they had embraced the challenge of attempting to include both learners with AS, by conducting their own individual research on the condition, attending workshops, and allowing a facilitator to assist and support the learners in the classroom. According to both educators, these support strategies have made them aware of the unique way these learners perceive the world. During their planning, they had made provision for the following: the AS learner's unique learning style; their special interests; their perceptual difficulties; and their social and motional impairments. They had made sure that the learners knew what was expected of them, that the learners were aware of the behaviour that attracted positive and negative attention, and that they were reminded of the classroom rules and regulations, and were pre-warned of any changes in the daily routine.

In the following section, we discuss the historical development of the term 'Asperger's Syndrome'. We also discuss these learners' character traits, and how they function within an inclusive educational system.

The historical development of the term Asperger's Syndrome and these learners' character traits

Hans Asperger was a Viennese psychiatrist and educator, who first described the syndrome in 1944. Asperger (in Smith Myles, Cook, Miller, Rinner & Robbins, 2005, p. 9) described the characteristics of children that he termed as having 'autism psychopathy', in the following way:

> The children I will present all have in common a fundamental disturbance, which manifests itself in their physical appearance, expressive functions and, indeed, their whole behaviour.

It was only after Asperger's death in 1980 that Wing (1981), first used the term 'AS', to provide a new diagnostic category within the autism spectrum. She stated that Asperger (1944) described many facets of behaviours of children with this syndrome, and yet did not explicitly define the syndrome.

However, Wing (1981, p. 115-130) extended Asperger's description and compiled the following characteristics of AS children:

- The children were socially odd, behaved inappropriately and emotionally detached from others;
- They were egocentric and highly sensitive to any perceived criticism, while oblivious to others people's feelings;

- They had good grammar and extensive vocabularies. Their speech was fluent, but long-winded, literal and pedantic;
- They had poor non-verbal communication, monotonous and peculiar vocal intonation;
- They had circumscribed interests in specific subjects, including collecting objects or facts connected with these interests;
- Although most of the affected children had intelligence in the normal or superior range, they had difficulty in learning conventional school work;
- They were capable of producing remarkably original ideas and had skills connected with their special interests;
- Motor-coordination and organisation of movement was generally poor, although some would perform well in a special interest, like playing a musical instrument; and
- These children conspicuously lacked common sense.

In 1988, an international conference was held in London, to explore AS as one of the spectrum disorders. The result of this conference was the publication of the first diagnostic criteria (Gillberg & Gillberg, 1989, revised by Gillberg, 1991). In 1991 the original paper by Asperger, *Autistic Psychopathy*, was translated into English by Frith (1991).

In 1994, the American Psychiatric Association published the fourth edition of the Diagnostic and Strategic Manual of Mental Disorders (DSM-IV). For the first time Asperger Disorder was added as one of the Pervasive Developmental Disorders.

Subsequent to this first publication of the DSM-IV in 1994, the manual was piloted and revised. Attwood (2007, p. 53) mentions that the revised DSM-IV (2000) diagnostic criterion is to-date still considered a 'work-in-progress'. The American Psychiatric Association states that the release of the approved DSM-V is expected in May 2012.

The following discussion defines sensory processing, explains when it can become a disorder, and how sensory processing pertains to learners experiencing AS.

The impact of sensory processing on learners experiencing AS

Kranowitz (2005, p. 68) argues that ineffective sensory processing happens when the brain has difficulty in the way it takes in and organises sensory information, in one or more of the sensory areas, or at any point in the sensory integration process. This can cause a person to have problems interacting effectively in the every day environment. She mentions that sensory stimulation may cause difficulty in one's movement, emotions, attention, or adaptive responses. Ineffective sensory processing can limit the learning possibilities and effective interaction with other peers and the immediate environment.

Asperger (in Frith, 1991) made mention of the following characteristics: stereotypical play, odd responses to sensory stimuli, including over-sensitivity to sound, spinning

objects, stereotypical body movements, destructiveness and restlessness. Attwood (2007) argued that these characteristics, (according to Asperger 1944), prevented learners from assimilating the automatic routines of every day life. Wing (1998, p. 13) concurs with Asperger's findings, when she mentions that children with autism are frequently reported to exhibit behaviours associated with sensory sensitivity (e.g. covering ears to loud, unexpected sounds; restricted food preferences), sensory under-responsiveness (e.g. failure to orient to name or react to pain) or sensory seeking (e.g. rocking, hand flapping and noise making).

Research conducted by Dunn (1999) has shown that the sensory system has a negative impact on the behaviour of children and youth living with AS. Smith Myles, *et al* (2005, p. 20) affirm that to have a better understanding of this statement one needs to keep in mind that learners with AS:

- have trouble growing up and making friends;
- are sensitive to criticism;
- have poor levels of frustration and tolerance, and cry easily;
- cannot tolerate change of plans or routines;
- often battle to complete tasks; and
- cannot perceive body language correctly.

Given the extent to which sensory problems are prevalent in children with AS, one can rightly expect these learners to have difficulty in functioning optimally in a mainstream school environment, without required understanding and additional support (Smith Myles *et al*, 2005, p. 41).

The research question, approach, methodology and design, analysis and ethical considerations are discussed in the following section.

Finding answers to the research question

The critical question was:

> What are the sensory processing difficulties experienced by AS learners within a mainstream Grade R class?

Research approach

The researchers employed interviews and observations in this study. We attempted to map out, or explain more fully, the richness and complexity of human behaviour of learners with AS, by studying it from more than one standpoint. Henning (2007, p. 147) argues that if the outcome of the interview survey corresponded with the observation study of the same phenomenon, the researcher would be more confident of the findings. By using observations and interviews as our data instruments, we hoped that the two sets of data would help to ensure consistency, reliability and validity. The purpose

of the three interviews was to establish the educational difficulties caused from the inappropriate response to sensory processing expressed by the learners with AS.

Methodology

Individual interviews were scheduled with the two educators of the AS learners in the first week of September 2008. In the first week of October 2008 we scheduled an interview with a psychologist who works with learners that live with AS. These semi-structured, 'face-to-face' interviews were conducted after hours, in the educators' classrooms, and in the psychologist's conference room. The interviews with the educators were scheduled and conducted in the medium of English, as that was the language of instruction in their classrooms. Using open-ended questions, the respondents were asked to give their own answers to the questions. Verbal, probing questions were provided when necessary. These probing questions were intended to help the respondents think more deeply about the issue at hand, and helped guide them to stay focussed on the research topic (Hammell, Carpenter & Dyck, 2005, p. 32).

The interview with the psychologist focussed on how she, in a school setting, works with teachers and assists in mediating sensory processing skills. This interview was beneficial to the study as her clinical findings on how sensory processing influences the learning and development of these learners were obtained, which provided insight into how these learners were functioning intellectually and perceptually. By using open-ended questions the psychologist gave as much information as she felt was relevant, which allowed the interviewer to respond to unexpected information and introduced new unanticipated questions into the interview.

Data from the observations were gathered through making continuous notes on a pre-planned observation schedule. Coding procedures, involved categories, labelling and naming of various aspects around the topic of sensory factors were used. 'Coding', according to Henning (2007, p. 131), represents the operations by which data is broken down, conceptualised, and put together in a new way. This allowed us to work systematically, while comparing the data and grouping it together under the same conceptual label. As participatory observers we observed two AS learners, while they were involved in real life experiences, in their everyday physical context. Henning (2007, p. 82) states that, "observation is not just [the] gathering of information, but participating in the actions of people in the research setting and getting to know their ways of doing very well".

Since both these learners experience AS, and since their performance fluctuated from day-to-day and minute-to-minute, we set aside the whole month of September 2008 to observe their sensory processing development. We visited each class, one morning a week from the 2nd to 23rd September 2008.

Between 08:30 and 12:30, an average Grade R class experiences different activities, such as the morning ring, creative activities, music and movement ring, free play and story time. Within each of these activities the learner would be exposed to the following environments: physical, cultural, social, and group and task environments.

Pre-planned focus areas were included in the schedule that focussed on the exposure to sensory processing of the learner, while participating in activities in each of these environments.

So as to avoid falling prey to bias, we ensured we were actively and consciously involved in not only gathering data and making decisions about what to observe, but managing it on many levels. We observed, took notes, and decided when to participate and when to observe. Not only were the learners observed, but notes where made of the environments and other external elements that could have an impact on the outcome of the findings. Personal notes (memos) were written concurrently while observation was taking place. The main focus was to keep the reasoning behind the capturing of data a priority. Henning (2007, p. 85) argues that the goal of participatory observation is to render a thick description, filled with discussion and analysis, and rich in explanation and argument.

Sampling

We intentionally selected two individuals likely to provide is with a greater understanding of the concept under scrutiny. We located two learners, aged between five and seven years of age, who had been clinically diagnosed with AS. They were attending a Grade R class in and around the Cape Peninsula.

Data analysis

During our analysis of the data, we transcribed all the interviews and looked for common themes that arose, and proceeded to compare them to observational data recorded. The information gathered were categorised and interpreted manually. To obtain corroboration and confirmation of our findings we received written consent letters from both parents, as these learners were too young to give consent themselves. In this letter, a guarantee that all responses would be kept confidential and anonymous was given to both parents. To honour this agreement the respondents' names were not used in this study. The learners were referred to as 'learner 1' and 'learner 2'.

Results

The data highlighted the sensory processing difficulties the two AS learners experienced during the observation period. The analysis also showed the impact it had on their learning and development in terms of the NCS (2002).

In order to answer the main research question, "What are the sensory processing difficulties experienced by AS learners within a mainstream Grade R class?" we observed the learners in their regular classroom settings to get to know their particular method of interacting with their immediate environment.

The two learners were observed:

- Across settings (physical, cultural, social, and group and task);

- The way they used their senses of tactile, auditory, visual, gustatory, olfactory, vestibular and proprioception in their responses; and
- How they interacted and responded (interaction and communication).

The results of each will be discussed individually.

AS learners observed across all settings (physical, cultural, social, and group and task)

The data from the interviews with the educators of the two learners, and the psychologist, was added to give a richer texture to the findings. Flowing from the data collected from the observations and the interviews, a pictorial table was designed to show how learners 1 and 2 experienced sensory processing difficulties across all these four environments as in Figure 1 (on the following page).

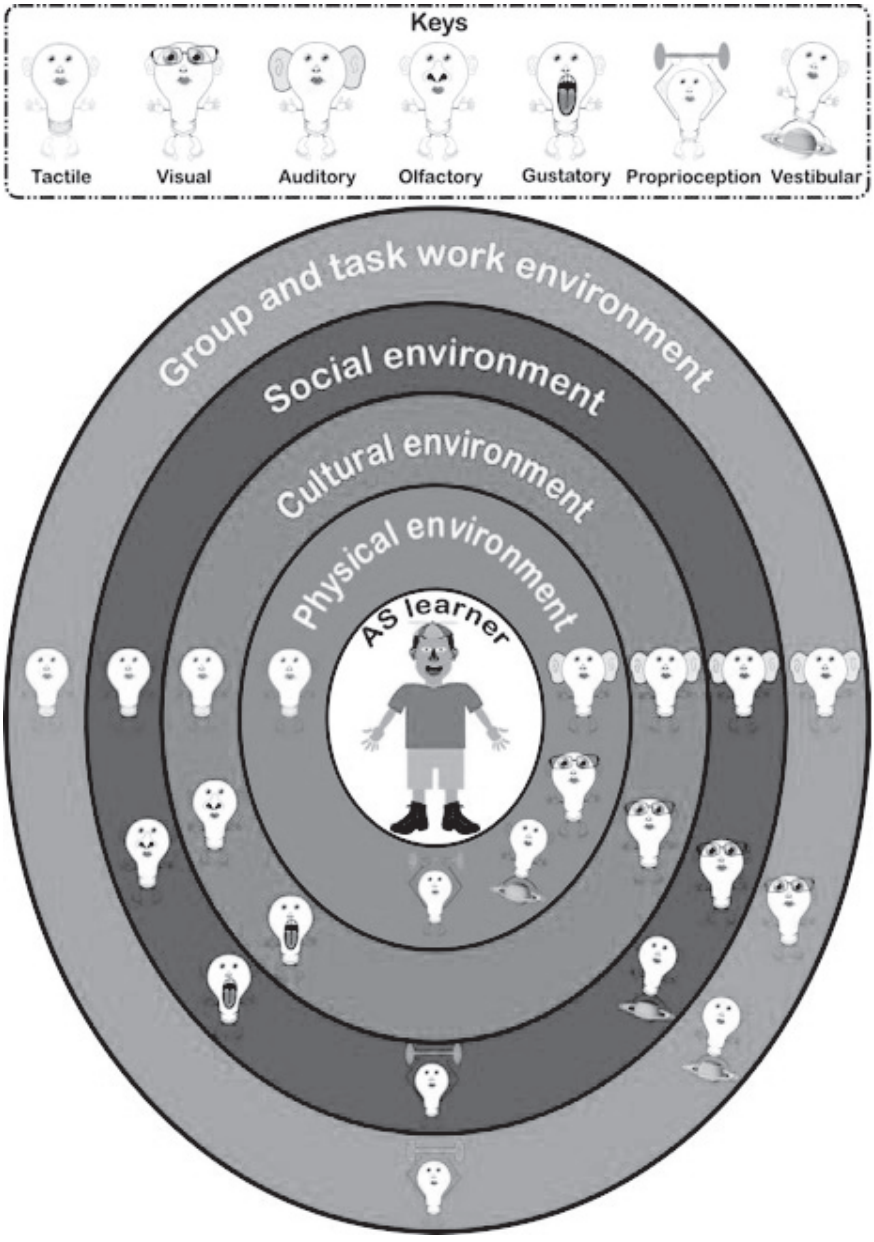
Both learners randomly experienced sensory processing difficulties from all seven senses; they were tactile, visual, auditory, proprioceptive, vestibular, olfactory and gustatory. The three sensory difficulties experienced throughout all environments were: tactile, auditory and visual. Sensory processing difficulties using senses proprioceptive and vestibular difficulties were prominent and olfactory and gustatory difficulties were occasionally observed.

How both AS learners used their senses to process what was happening in their environment

Personal and physical development areas incorporated body awareness, body movement and control. This explains why the three senses, proprioceptive (body awareness), tactile (touch), and vestibular (balance) worked together to determine how we physically interact with our world. These senses connect us with our world and bond us with others through touch and movement (Kranowitz, 2005). According to the data collected, both these learners experienced an ineffective processing of sensations perceived through their skin (tactile) and through movement (proprioceptive and vestibular).

Good body awareness is important to engage effectively with the environment, in order to gain additional cues to give meaning about people and objects around them (Smith Myles, *et al*, 2005). Having good body awareness is vital in refining the skills needed for development and learning to take place in the immediate environment. The lack of body awareness due to tactile difficulties and inadequate understanding of body movement due to vestibular sensory difficulties caused the lack of confidence to participate in movement activities. This directly impacted on their learning and development.

Figure 1: Overview of the components of the investigation and its conceptual framework



Both learners found it difficult to manipulate objects in their environment correctly in order to gain additional cues, to focus on the learning that was taking place, or to express emotions that were not irritating or harmful to themselves or others. By refusing to participate, they also missed out the learning experience that took place, adjusting to the classroom routine, and following an instruction given by their educator. These responses, not only, caused undue stress and disruption, but cause the learners on missing out on developing a positive body image that is needed for developing and learning new skills. The skills we identified them as missing out on were; finding their own personal space, developing of sense of direction, practising balancing activities or correctly identifying the left and right sides of their body.

Learners need to be aware of where their body is in relation to their environment. A learner who feels uncomfortable in his own skin may have poor motor-planning skills. He/she may move awkwardly and have difficulty planning his/her movements, due to tactile and vestibular hypersensitivity. Having good body awareness, motor planning and control is needed to develop skills to effectively participate in activities that promote movement and physical development. Both learners displayed difficulties in conceptualising, organising and carrying out the sequence of the movement, which forms an integral part of their learning and development. We also observed that both learners struggled to cross the mid-line. The inner awareness of left and right and the lateral purposeful movements of the body, and the skill of eye-hand coordination were hampered, since both learners are tactile hyposensitive, or hypersensitive, and vestibularly uncoordinated.

When both the learners were involved in the manipulation of writing and working objects that involved strengthening the learners' fine-motor skills, like cutting and drawing, they showed a lack of confidence and skill. This was observed when they both found it difficult to sit and work upright at the table, and when they manipulated a pair of scissors, or drawing utensils.

Through observations made, it became clear that creating objects out of art, from various materials, goes way beyond the final project. The whole process of interaction with various materials is more of a learning experience, and it is through exploration that learners build knowledge of the objects in the world around them. During this process they learn to make independent choices and decisions that mould their appreciation for the art forms.

The sensory difficulties observed from both learners, while being involved in creative art activities, influenced them in various ways. By not participating in any of the creative activities set out, these learners missed the chance to acquire any of the exploratory, experimental, and problem-solving possibilities. As most of the activities involved the manipulation of materials, they overlooked an opportunity to develop skills like cutting, pasting, drawing or the manipulation of small materials. It was observed that both these learners found the creative time with art and waste materials very challenging. They were very careful at selecting the materials they were willing to manipulate. Their responses, when being involved in creative activities, were

very similar. These learners had difficulty in achieving the outcomes and assessment standards stipulated for contribution to the development of their creativity.

How both AS learners interacted and responded to their environment

When children participate in activities with classmates, the feedback they give to each other builds self-esteem by helping them learn to accept criticism and praise from others. Small group activities also help children practice important social skills, such as taking turns, sharing, and negotiating for materials.

Our findings revealed that both these learners found it difficult to stay focussed and often found it difficult to participate in all the activities. Here all seven senses contributed to these learners' adaptation to their environment. The following examples obtained from our data, will explain this in more detail.

It was evident from observations made that both these learners struggled to follow the rules and regulations set out by the class educator. They both took at least ten minutes to join a group discussion, or to settle down and do an activity. This behavioural response, we believe can be attributed to their own awareness of their spatial insecurity. This was observed when learner 1 displayed a similar response when it was 'toilet routine', and he refused to join the group. Learner 2 refused to sit on a rubber mat during an outside gathering, and went to sit in the ablution block for the duration of the time. This meant that they missed the learning experience that was incorporated in the discussions.

As already established, one AS characteristic is that they often do not perceive body language and expressions correctly. By added sensory difficulty it can result in added stress and anxiety. Learner 1, in more than one instance, was very upset that his peers would exclude him from their games (e.g. "Woolfie Woolfie what's the time?" a game with specific rules of participation). As he often reacted immaturely, by being impatient or by being over-sensitive to touch, his peers complained that he spoilt their game. Learner 2, when approached by a group of peers to join in his Dinosaur fantasy game, was teased when he displayed anxiety and refused to venture on the jungle gym or climb in the tree. He made matters worse when he threatened to try and pull his skin off, by saying: "Look I'm a Dinosaurs Rex and I'm not human". This response resulted in his peers walking away, thus leaving him isolated and out of the rest of the game.

When extra auditory and visual stimuli were added to their environment, it often caused both these learners to become anxious and distressed. They lost focus and interest in the learning experiences that were taking place. The following responses from the two learners will explain this statement.

During a music presentation learner 1 could not cope with the added guitar sound. He moved into a corner and sat with his hands over his ears and rocked back and forth to try and block out the noise. Leaner 2 responded similarly, but handled the situation more maturely, by removing himself and leaving the room. These inappropriate responses prevented any social interaction and learning experiences from taking place.

When unfamiliar smells, and certain taste sensations, were added to their environment these learners showed a distinct dislike to what they smelt (cleaning materials) and an outright refusal to participate in savouring certain tastes, such as fruit. Their over-exaggerated responses were, in both these cases, a disruption to the routine of the class. Both AS learners did not benefit from investigating relationships and solving problems in the scientific and environmental context.

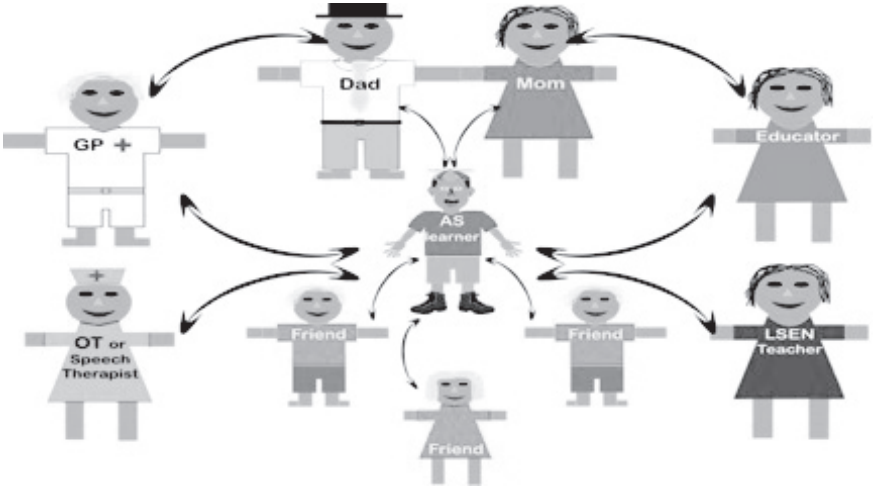
Recommendations

It has become apparent that placing AS learners in inclusive settings without support will not result in meaningful outcomes. Based on the findings of the study the following recommendations are proposed:

- Pre-school and Grade R educators in South African schools should all be made aware of the characteristics that young children experiencing AS display. Research done by Gillberg (1998), Wing (1981) and Attwood (1998; 2007), has shown that some young learners, aged between two and four years old, are more often diagnosed with 'autism' rather than AS. However, as the children grow older, by the time they are five or six years old, they are then diagnosed with AS. It is recommended once AS characteristics are identified that support structures be put in place to assist the child make better sense of his/her world.
- All the diagnostic criteria mentioned in this study acknowledge a qualitative impairment in social interaction and a difference in the understanding and expression of emotions in AS individuals. Attwood (2007, p. 55) mentions that the best way people deal with these characteristics of AS individuals is to allow them to withdraw from society and their world. It is advised that teachers in training, educators, peers and parents must be made aware of this anti-social behaviour, and be encouraged to find ways and means to assist these learners to develop social and emotional strategies to interact positively within their environment.
- One of the characteristics that define AS is their restricted, repetitive and stereotypical pattern of behaviour, interests and activities. It is recommended that educators recognise the learners' special interests and build on them to develop the necessary skills. Individuals working with AS learners need to acknowledge that these special interests, can embrace certain functions, for example, to overcome anxiety, provide pleasure, to help understand the physical world, to show a specific intellectual ability and to create a sense of identity of the AS learner (Attwood, 2007, p. 200).
- Educators need to be made aware of the AS learners' distinctive learning styles and make provision for this in the inclusive learning environment. It is recommended that educators get to know their learners' strengths and challenges early in the year, so that provision can be made for the inclusion of their special interest in the curriculum throughout the year.

- Early childhood special education, general education and therapeutic interventions are 'blended' in practice. Learners experiencing AS need to receive a comprehensive, developmentally appropriate programme side-by-side with peers, who participate in the same activities, with adaptations to those activities, as and where needed. It is of vital importance to include a multidisciplinary support team, consisting of educators, parents, health workers, Learners with Special Educational Needs (LSEN) educators, and capable peers.
- This complex set of relationships can assist learners with AS, not just to develop to their full potential, but to one day become valuable contributors to society. In turn, the learners themselves can promote more positive encouraging attitudes towards individuals experiencing AS. Figure 2 depicts this complex relationship that can assist an AS learner to make sense of his/her world.

Figure 2: Effective learning and development in a complex set of relationships



Conclusion

There are many children in South African urban and rural schools who experience AS, but who have not yet been formally diagnosed. To assist young learners with AS, the NDoE needs to make educators aware of the characteristics of these learners, so they can be identified. Support structures can then be put in place and implemented. When an AS learner is identified, training should be provided for the teacher trainers, educators and additional assistance given, where the parents are not able to afford a private facilitator.

Although the challenges associated with AS may be debilitating, many AS individuals display positive achievements, particularly in the area less dependent on

social interaction, such as mathematics, engineering, physics and computer science. AS adult learners can contribute to society, should be acknowledged and given further opportunities.

Therefore, it is our opinion that in South Africa, based on our past and ongoing research, our objectives should be to develop instruments or tools, which will assist in early and easy identification. Appropriate resources should be made available, as well as properly trained personnel so that parents with AS learners can have hope that their children will be able to develop to their optimum potential and live balanced and fulfilling lives.

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