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Asperger Syndrome: Literature Review

Jeanie Floyd

Lynchburg College

Characteristics of Intellectual and Developmental Disabilities

Dr. Polloway

April 25, 2009

*Standing at the bottom of the stairs that led up to his son's room, he voiced... "Adam, it's time to leave for school." Using the same calm voice that he had used every morning to call his son down from his room had become a regular, expected, and necessary routine. As Adam fumbled down the stairs, almost tripping several times, he eventually entered into the kitchen. With backpack in hand, he motioned past his father, glancing only faintly into his face, knowing that was what his father was expecting. He plopped his backpack down on the kitchen floor and sat down in his chair at the ever familiar table, following the same routine he had grown accustomed to. It was comfortable to him, allowing a sense of calmness to radiate throughout his self. On the table laid the pop tarts he so enjoyed, the ones that didn't have the icing on top, the ones with only cherry filling. He handled a pop tart, picking the crust off prior to placing a small portion into his mouth. He nibbled quietly to himself, often smiling between bites. And then slowly he began to hum a rendition of a song, as if there was a concert playing in his head. His fingers tapped lightly on the table's edge as if to echo the beat that played in his head. His father sat quietly while watching his son begin to fully act out his part in the concert...guitar playing, drum rolls, facial grimaces of the band members he must of seen on the TV...all quite normal for a Monday morning.*

*Breakfast was over and it was time to leave. Adam's father said, "Adam, we have 5 minutes before we have to leave." Adam didn't acknowledge his father, but instead continued his concert. A few moments*

later, “Adam, we have 2 minutes left.” At that time, Adam tensed and refocused on his father’s words. He didn’t understand why this was so hard. He had been doing this for a number of years now, so why was it so difficult to stop...to move on? He looked down at his plate in front of him to see that only half of the pop tart was gone. “I haven’t finished,” he thought to himself. This caused frustration to reel up inside his head, extending out into the outer most parts of his body. This tension, the feeling of confusion, was a normal feeling, one he has learned to better control, but it was still quite a chore...at least to Adam. He could remember how this would have thrown him into a ‘fit’ in prior years, resulting in tears, anger, or losing his ability to fluently express his thoughts. He gained control. He stood up abruptly, causing the chair to fall back against the tiled floor. “Oops!” he said with a smile, awkwardly trying to reposition the chair back in its upright position.

His father stood waiting for his son to gather his belongings. Adam’s dad said, “Adam, did you remember to get your homework folder from the dining room?” Reminders were a part of life in this household. Adam slowly turned and headed towards the adjacent room to grab the folder, a typical action he performed practically every morning...often forgetting items that he would need for the day. He grabbed the folder and his backpack, and then headed towards the back kitchen door, traveling right past his waiting father, who was standing, struggling with both hands to hold a heavy, large brown box which contained materials he needed to

*bring to work that day. Adam opened the back door and stepped out into the garage, feeling the warm, clean air on his face. His father started to follow. But Adam quickly slammed the door behind him before his father could exit. His father stood in the kitchen, his face detailing the utter confusion he was feeling, and the only word that came to mind was 'typical'.*

Asperger syndrome (AS), “a developmental disability marked by impairments in social relationships and in verbal and nonverbal communication and by restrictive, repetitive patterns of behavior, interests, and activities” (Barnhill, 2001, p. 46), has become a widely known disorder in recent years. The prevailing view is that AS is not considered a separate disorder from autism, but rather on part of a continuum, with AS placed on the milder end of the spectrum (Frith, 2004). However, debate continues over the classification of AS in relationship to autism and high functioning autism (Myles & Simpson, 2002; Church, Alisanski, Amanullah, 2000). Both AS and autism share the common characteristics of social ineptness and communication failure; however, individuals with AS typically possess stronger communication skills and often are able to productively adapt to their familiar surroundings (Frith, 1991).

Diagnostic systems, based on the current research, are not without flaws; however, there are various diagnostic systems that are currently used in diagnosing individuals with AS. Two of the most widely known include the *International Classification of Diseases (ICD-10*; World Health Organization, 1993) and *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV*, American Psychiatric Association, 1994) criteria. With the World Health Organization (WHO) distribution of the *ICD-10* in 1993 and in the

following year, publication from the American Psychiatric Association (APA) of the *DSM-IV*, Asperger syndrome was formally recognized (McLaughlin-Cheng, 1998; Myles, 2002). This was the first time AS had been included in these manuals, with both descriptions sharing similar attributes. Diagnostic criteria centered on social impairments, stereotypic and repetitive behaviors, no language delays, no delay in cognitive or behavioral development, and age of onset. Age of onset is often a differentiating component used to increase accurate diagnosis of AS, with the “diagnosis of Asperger syndrome made much later than the diagnosis of autism” (Frith, p. 675). Based on the *DSM-IV* criteria, additional categorical areas which may also help differentiate between autism and AS include: “communication, restricted behaviors, and comorbidity” (McLaughlin-Cheng, 1998, p. 238). Other criterion methods are also commonly used by diagnosticians that are more in line with the initial descriptions reported by Hans Asperger, which includes Gillberg’s criteria (Attwood, 2007; Fitzgerald & Corvin, 2001).

This paper provides information centered on the general categories of academic and social functioning of individuals with AS. Prior to this review, a summary of important contributors in this field is deemed appropriate.

### **Historical Founders of Asperger Syndrome**

Two pioneers in the field include Hans Asperger and Leo Kanner. According to Lyons and Fitzgerald (2007), Kanner has always “been seen as the pioneer of autism research, with Hans Asperger being thought of as the second in line” (p. 2022). Kanner’s description, as stated by Lyons and Fitzgerald (2007), provided one of the first descriptions for autism as well as its characteristics. Kanner provided five clinical

characteristics for the basis of diagnosis which included: “(a) a lack of affective relationships; (b) an insistence for sameness; (c) a fascination with inanimate objects; (d) an absence of language or the failure to use language for the purpose of communication; and (e) in those children who speak, an exceptional memory ability in some specific area” (McLaughlin-Cheng, 1998, p. 235). In 1956, Kanner modified his previous description to include more of the behavioral and language deficits often seen with individuals with AS (Wing, 1991).

In 1944, Hans Asperger of Austria presented a long, detailed paper recognizing what society now knows as Asperger syndrome. His research and documentation, later brought to life in 1981 by Wing, provided foundational literature identifying the characteristics of individuals with AS. The American Psychiatric Association (APA), however, “did not recognize Asperger syndrome as a specific pervasive developmental disorder until 1994” (Barnhill, 2001, p. 46). According to Wing (1981), Asperger identified prevailing features of this disorder which included deficits in the areas of speech, non-verbal communication, social interactions, movement, and adaptability. However, Asperger’s detailed descriptions did not provide for clear diagnostic criteria (Attwood, 2001) and “remained obscure until a review article by Lorna Wing in 1981” (Fitzgerald & Corvin, 2001, p.1).

Others have impacted the field of autism spectrum disorders. Wing’s (1981) proposed features for diagnostic purposes of AS are commonly used today, which include difficulty with showing empathy towards others, difficulty with reciprocal conversations, poor non-verbal skills, lack of peer relationships, a clumsy gait, and, at times, frequent or

long durations of idiosyncratic topics of interest. Another set of criteria developed by Gillberg in 1989, later revised in 1991, is also often used as it most closely resembles the original descriptions of Asperger (Attwood, 2007).

### **Academic Functioning**

Many children with AS participate in the general education classroom with their same age peers who are non-disabled (Myles & Simpson, 2002). Myles and Simpson (2002) further stated that individuals with AS “typically have average to above-average intellectual abilities, are motivated to be with their general education peers, and have good rote memory skills” (p. 134). The general academic performance of students can vary, but performance consistencies are noted in specific domains. Academic performance may vary from individual to individual, across school levels (elementary, middle, high), and among various subjects. Information provided below addresses general academic performance, school performance and a focus on reading comprehension abilities which appear to typify a consistent difficulty among individuals with AS in the academic setting.

#### **General Academic Performance**

Individuals with AS demonstrate various cognitive strengths. Cognitive abilities for individuals with AS are demonstrated through strengths in rote memorization, oral expression and reading recognition (Myles & Simpson, 2002; Wing, 1981). As noted previously, individuals with AS often focus on specific topics of interest, with rote memorization of facts concerning that topic. Historical information lends itself to memorization and tends to be an area where individuals with AS perform well

academically (Myles & Simpson, 2002). The comprehension and rote memorization of factual material is a positive characteristic that can often aid individuals with AS in compensating and succeeding in the general academic setting. Wing (1981) stated, that although they have excellent ability for memorization of information and can talk at lengths on their topic of interest, they typically “have little grasp of the meaning of the facts they learn” (p. 117).

According to Myles and Simpson (2002), individuals with AS also demonstrate strengths in nonverbal concept formations, which is the “process of integrating a series of features that group together to form a class of ideas or objects” (Swartz, n.d., #5). Often, the features are represented in the mind as mental images thus supporting the individual in learning through visual methods (Swartz, n.s., #9). Additionally, perceptual organization and spatial visualization are relative strengths (Myles & Simpson, 2002). Their demonstrated strengths in these areas may often “mask the deficits in higher order thinking and comprehension skills of some students with AS” (Myles & Simpson, 2002, p. 135).

Although various areas are typically affected, weaker performance often centers on difficulty in the social domain. Researchers report that weaker abilities included difficulty with understanding social customs as well as interpersonal situations (Frith, 2004; Gibbons & Goins, 2008; Myles & Simpson, 2002). Additionally, Myles and Simpson (2002) discerned that individuals with AS demonstrate difficulty with “social judgment, common sense, and understanding of social conventions” (p. 134) as well as understanding of idioms and metaphors which require abstract reasoning abilities. Frith

(1991) stated that individuals with AS, due to social and communication deficits, may experience academic failure. Frith (1991) further proposed that the social and communication deficits that may impact academic performance include restricted interests, concrete and literal thinking, difficulty with solving problems, lack of organizational abilities, and having difficulty deciphering information. Their “thought processes are confined to a narrow, pedantic, literal, but logical, chain of reasoning” (Wing, 1981, p. 117) which impacts their ability to understand abstract ideas and affecting common sense judgment (Wing, 1981). The effect these difficulties may impact an individual in the academic setting is dependent on various factors, which may include age, supports in place, and severity of condition (Frith, 1991). There appears to be shifts in academic performance which may be impacted as some student’s progress throughout their schooling years.

### **School Performance**

In elementary school, some students with AS navigate through the academic and social curriculum without signaling major concerns from teachers. Possible reasons for successful independent participation of students with AS at the elementary level may include: (a) assigned an individual teacher for most of the day, (b) provided a consistent, known environment with minimal transitions (c) social play is more action based than conversational based, and (d) more guidance, flexibility and leniency with regard to the school curriculum (Attwood, 2007). Church, Alisanki, and Amanullah (2000), through a review of experiences of children with AS, found that in elementary school most students

with AS demonstrated some difficulty with reading comprehension, especially with fictional material.

As students with AS progress into their middle school years, they are likely to show increased difficulty with planning, organizational skills, and completion of assignments on time (Attwood, 2007). This is not a reflection of decreased intellectual abilities, but rather a change in assessment measures at this level. According to Attwood (2007), measurements of knowledge at this stage are moving away from memorization of dates and facts, which are typically stronger skills for a student with AS, and towards comprehensive essays and tasks that require organization and assimilation of information and ideas, as well as the ability to “read between the lines, especially in the study of English” (Attwood, 2007, p. 19). Reading comprehension, with regards to academic performance, appears to represent a concern worth further investigations.

### **Reading Comprehension Abilities**

In order to comprehend reading material, “students must understand the author’s vocabulary, style of writing, and story structure as well as characters’ social experiences and how these contribute to the development of motivations, goals, and actions within a story setting” (Gately, 2008, p. 40). Gately (2008) further stated students must have the ability to identify and relate to the emotional states of the characters, as well as understand how the emotional states influence characters’ choices in order to make meaning of text. Students with AS often have difficulty with the emotional state of empathy (Griswold et al., 2002), which may impact their ability to grasp the concepts presented in certain texts. To understand the motivation of characters and appreciate their intents are considered

“higher level comprehension skills which may be difficult for children with AS” (Gately, 2008, p. 40) at all levels. Thus, difficulty with understanding the emotional states of others impacts the ability to comprehend most notably, fictional text. Additionally, individuals with AS often focus on the details (Gately, 2008), thus preventing them from seeing the whole picture; relating all the parts into a whole.

In an analysis on the reading abilities of children with AS, Myles et al. (2002) found that silent reading and independent reading levels were below grade level in comparison to oral reading ability. They suggested that the additional auditory input received when orally reading increased the students’ comprehension as well as helped to focus attention on the reading material, providing more or less a shield obscuring outside distractions. When reading silently, it was hypothesized that variables such as attention, motivation, and time-on-task may negatively affect reading comprehension results in individuals with AS. This study also suggested that a significant difference existed between the comprehensions of literal versus inferential based questions (Myles et al., 2002). The results documented “these individuals comprehended approximately one third more material that was rote based” (p. 46) supporting the belief that individuals with AS demonstrated weaknesses in making meaning of abstract material. The authors of this study stated when “students are required to make inferences, individuals with AS will likely be unsuccessful unless provided appropriate accommodations and structure.” (Myles et al., 2002, p. 46). This functioning may actually be overstated since the testing was conducted in a one-to-one setting, which is not representative of the typical classroom, thus performance may actually be poorer than previously stated.

A variety of strategies can assist individuals with comprehension skills, many of which are beneficial to all students. These may “include priming background knowledge, picture walks, visual mapping, think-alouds, reciprocal thinking, understanding narrative text structure, goal structure mapping, emotional thermometers, and social stories” (Gately, 2008, p.41), all providing a foundation to assist students with AS in becoming independent, successful learners.

### **Social Performance**

According to Myles and Simpson (2002), “AS is foremost a social disorder” (p. 132). Children typically learn social conventions at an early age and are able to apply the rules with flexibility to new situations as they arise. It is like an acquired ability that most children easily manage to attain and generalize across settings and relationships. Children with AS have difficulty with application of social conventions. They apply the rules of social communication universally with rigidity and consistency, an impractical approach due to the variability within social conventions (Myles & Simpson, 2002). Individuals with AS also have difficulty with seeing things from other peoples perspective; they have their own thoughts and feelings, and have difficulty understanding that the thoughts and feelings of others may differ (Barnhill, 2001; Myles & Simpson, 2002). They are unable to put themselves in another’s shoes. This difficulty in understanding other people’s perspective is often referred to as theory of mind (Barnhill, 2001).

According to Myles and Simpson (2002), difficulty with theory of mind may result in “(a) difficulty inferring the intentions of others, (b) a lack of understanding of how their own behavior affects others, and (c) difficulty with turn-taking or other reciprocal skills”

(p. 133). Baron-Cohen (2001) supports this contention by stating that “theory of mind is a core deficit of AS” (p. 171). In a study conducted by Kalnad et al. (2002, p. 524) regarding advanced theory of mind, the authors concluded that individuals in this study “had significantly less success in inferring *mental* as compared with *physical states*”. Although memory has been reported in various literature as relatively intact for individuals with AS, this study suggested that the “differences between the groups on the mental inference tasks were robust, yielding a substantial *effect size*” (Kalnad et al., 2002, p.524).

### **Social Language**

Social language difficulties may also be impacted by the inadequacy of individuals with AS to demonstrate adequate pragmatic speech ability (Saalasti et al., 2008). Their speech is typically fluent, but pragmatically impaired, often demonstrating difficulty understanding idioms, humor, metaphors, and irony (Saalist et al., 2002). Overall, problems with receptive language are more common than expressive language (Kjelgaard & Tager-Flusberg, 2001). Attwood (1998) described the vocabulary use of children with AS as adult like. There is no consensus on the fundamental psychological or neural deficits underlying the impairments of communication and language in AS (Saalasti et al., 2008).

Problems in executive dysfunctions have long been associated with AS (Saalasti et al, 2008). It is suggested that the deficits in executive function may in part be due to a failure to use language as inner speech to plan and direct their behaviors. In a study by Saalasti et al. (2008), investigations into the language competence of individuals with AS

was conducted. This study involved 22 children with AS and 23 typically developing children, and the results concluded significant differences existed between the groups in the area of comprehension of verbal instructions with the children with AS demonstrating greater difficulty in this area as compared to the control group. To perform well in comprehension of verbal instructions, in addition to possessing language skills, one must also possess short-term memory, motor planning and spatial perception.

Children with AS may have performed lower in this area due to deficient short-term memory (Saalasti et al., 2008). Additionally, the lower performance “may also be linked to deficits in self-regulation, and planning and execution of a motor action once the linguistic information has to be put into action” (Saalasti et al., 2008, p. 1578). Results from this study demonstrated that differences exist in linguistic ability between children with AS and typically developing children in language reception. These suggested deficits in language reception may impact an individual’s ability to comprehend social language thus impacting social behavior, inevitably contributing to social communication problems typical of these children.

According to the APA (1994), “AS is included within the spectrum of autism disorders, but there are differences between AS and traditional autism” (Gibbons & Goins, 2008, p.348). AS has some common features with autism, including social deficits, stereotypic behaviors, and low eye contact, however, individuals with AS do not share the impaired cognitive functioning that individuals with autism typically do. Additionally, there is usually minimal concern over language development with individuals with AS (Gibbons & Goins, 2008). Social impairment is a primary and significant characteristic of

AS. Unlike autism, individuals with AS have the aspiration to socially interact and develop friendships and relationships (Gibbons & Goins, 2008; Myles & Simpson, 2002); they “want to be a part of the social environment that they inhabit” (McLaughlin-Cheng, 1998, p. 236), however they lack the skills in initiating, responding, and inferring the feelings of others (Church, Alisanski, & Amanullah, 2000) which makes social relationships difficult. Individuals with AS are often viewed as egocentric, typically seen as self-absorbed and disinterested in the interests or emotions of others (Frith, 2004). They appear as “socially awkward or self-centered” (Carrington, Templeton, & Papinczak, 2003, p. 211), appearing perhaps as a ‘little professor’. Individuals with AS have difficulty reading social cues or non-verbal language such as body posture or facial expressions (Simpson, 2002), which all impact the ability of an individual to initiate, develop, maintain, and fully understand reciprocal social interactions.

In 1990, Green proposed social functioning as the pervading primary deficit of the syndrome. Although the individuals with AS were eager for social interactions, they often lacked the social skills to meet the task. He additionally stated that the social behavior of children with AS can span the full range of social interactions, from passivity to full involvement, albeit awkward and one-sided involvement. Green (1990) referred to the cognitive ability of children with AS of one of normal development of language and language abilities; however peculiarities in the rhythm, inflection, and language content were noted. Additionally, although language comprehension typically falls within normal limits, it is often very concrete, and the hidden meaning of language is often overlooked (Green, 1990). Difficulties with learning unspoken social rules of conduct can place individuals with AS as easy targets for bullying (Safran, 2002), thus compounding the

anxiety and frustration associated with this disorder. This may lead to further complications, such as depression and anxiety (Barnhill, 2001). According to Barnhill and Myles (2001), up to 80% of adolescents they studied were on prescription medication, specifically antidepressants.

### **Social Behaviors**

Individuals often exhibit stereotypic behaviors, which may include “repetitive motor behaviors such as rocking, pacing, or hand-flapping” (Griswold, Barnhill, Myles, Hagiwara, & Simpson, 2002, p. 94). These behaviors may often signal them out in public situations, not always in a positive light. Their restricted interests in topics impacts successful reciprocal conversations. Additionally, a climate of sameness often reigns in the world of an individual with AS, thus limiting changes to routines, relationships, and overall daily life. Clumsiness is also often apparent, perhaps signifying a difficulty with locating their body in space. This may impact their ability to participate effectively in sports or physical activities, causing further isolation from social situations.

Understanding of facial cues and body posture is often misunderstood or completely overlooked by many individuals with AS. They maintain minimal eye contact with others, and if they do look at their conversational counterpart, they often only view the mouth region, not the full facial landscape. Perhaps, their lack of understanding is directly correlated to their lack of exposure to facial expressions (Barnhill, 2009). Language is communicated not only through oral means but also through body language, to include facial expressions. Individuals with AS have difficulty in interpreting

information from non-verbal methods, thus allowing them to only glean partial information from conversations.

### **Social Perceptions**

Limited research exists on the perceptions of individuals with AS towards social relationships, including perceptions of friendships (Carrington, Templeton & Papinczak, 2003). Social competence in situations involving peer relations is important to most individuals; however this may be difficult for individuals with AS to obtain. According to Gutstein and Whitney (2002), individuals who are socially competent typically progressed through three social development periods which include “(a) secure attachment, (b) instrumental social learning, and (c) experience-sharing relationships” (p.162). Individuals with AS often are capable of experiencing success with the first two stages, however demonstrate difficulty with “the experience-sharing forms of social interaction” (p.169). Unfortunately, social skill programs typically support the survival social skills (instrumental social learning) and not experience-sharing social interactions.

A study by Carrington, Templeton, and Papinczak (2003) stated that, based on the data they compiled, individuals with AS relayed limited understanding of friendship. They were able to describe some of the characteristics of what a friend represents and does not represent, but in terms that were readily definable, such as a “students who are sent to the office” (p. 214) would not be considered a friend. Overall, they had difficulty with defining the emotional feelings associated with typical friendships. With a desire for social interactions with peers, individuals with AS often try to accommodate for their perceived social deficits. When asked how they cope with their deficits in social

relationships, a response included masquerading, where the individual with AS tries to “mask their deficits” (Carrington et al., 2003, p. 215). Attwood (2007) also provided several types of compensatory strategies often used by individuals with AS to mask their social deficits, which include reactive depression, escape into imagination, denial and arrogance, and imitation. Through the individuals’ application of strategies to help with social deficits, it is evident that individuals with AS are typically cognizant of their deficit in social functioning. They develop strategies to assist with them with friendship participation which may make social interaction appear more typical, yet understanding of friendship is not always evident.

### **Discussion**

In summary, individuals with Asperger syndrome will continue to receive notable investigations as current understanding, although vast, has not completely uncovered the intricate workings of this disorder. Social deficits appear to have the greatest lifelong impact, influencing all aspects of the individual’s life, from schooling and family life to career placement and overall life enjoyment. Social deficits often impact an individual’s ability to function appropriately according to social norms, which may be a result of language processing, comprehension, or some other underlying deficits. Social deficits also impact an individual’s ability to develop close relationships, which are typically vital in successful and productive inclusion within society today. Job interviews, work place socialization, marriage and even childrearing all require productive social interactions.

Advocating for direct social skills intervention and training should continue to be a high priority in our school and workplace environments. It is believed that the younger a child receives an effective social skills training program, the more likely he or she will be

able to learn to adapt successfully to his or her environment. Often, systems in place may position academic functioning on the highest tier of importance, with social functioning placed on a lower tier, thus signifying it is not of equal importance. If academic functioning is high, limited focus may be directed towards instruction in the social domain, at least not as frequently or consistently as it would be for academic deficits.

Overall, individuals with AS possess average to above average intellectual ability, however, language and social deficits may negatively limit the individuals ability to successfully demonstrate their competencies based on societal norms. As a society, further understanding of Asperger syndrome is warranted to further advance the potential of such individuals. Increased efforts in the area of social skills training within the school systems is necessary, as well as work place initiatives to assist individuals with AS to learn how to socially perform within the complex social world. Advocates for individuals with AS can assist parents and individuals with maneuvering through the complex avenues that life lays out for all individuals.

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