

AN ABSTRACT OF THE THESIS OF

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Abstract approved:

Marjorie Reed

Abstract Body:

Through examination of empirical evidence on individuals with Asperger's Syndrome and related Pervasive Developmental Disorders, the author attempts to provide an overview of the social deficiencies associated with these disorders. Points of primary concern are the social deficiencies in developing competence in experience-sharing and demonstrating empathy, especially in how they apply in everyday interactions. The author's own experiences have provided insight for suggesting modifications of existing intervention techniques. The intervention techniques would benefit from providing target individuals with additional self-awareness and intrinsic motivation for changing behaviors. In addition, a more thorough approach in developing an understanding of social norms and basic scripts, as well as recognition of context, is important. Finally, more advanced intervention can focus on ways to develop techniques to adapt social scripts in varied contexts. By suggesting ways to rethink interventions, and by providing insight based on the author's own personal experiences, this paper attempts to provide evidence that there is hope for those with Asperger's to obtain a more normal level of social functioning.

Key Words: Asperger's Syndrome, Autism, Autism Spectrum, Intervention, Social Competence

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Asperger's Syndrome: Research and Personal Insight into
Social Characteristics and Intervention Techniques

by

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David Brian Rinaldi, Jr., Author

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LIST OF ACRONYMS

Acronym	Meaning
AS	Asperger's Syndrome
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4 th Edition
HFA	High-Functioning Autism
ICD-10	International Classification of Diseases, 10 th Edition

Asperger's Syndrome: Research and Personal Insight into Social Characteristics and Intervention Techniques

PERSONAL INTRODUCTION

Imagine not being able to understand the nuances of language and body language so that understanding a conversation might be like trying to understand a doctoral thesis when you only have a beginning grasp on the subject. You may understand a few details, but the vast majority of it is lost to you. The social life of a person diagnosed with Asperger's Syndrome (AS) might feel like this.

The beginning of my eighth grade year, in 1996, was a trying experience, but it also helped define my own personal directions. I was diagnosed with AS after difficulty in my family situation. While it took me nearly seven years to accept my own diagnosis, I slowly began to make steps to find ways around my social deficiencies.

One of the steps I took was to attend a meeting for people with AS and their families in order to learn more about it. During this meeting, a car commercial was shown to illustrate where difficulties may be seen in social interpretation. The car commercial is one where the word 'dude' is used with various voice inflections and in slightly different situations to mean different things. It is first used as a greeting between the friends in the commercial. Later, when holding drinks and about to drive over railroad tracks, it's said with warning and concern since the bumpy tracks may cause them to spill their drinks. Finally, the group holds it's breath as they cross over though it ends up a smooth ride instead of the numerous bumps they expected. The final usage of

‘dude’ is one indicating a good impression of something cool – in this case, the car being advertised. A person with normal social functioning would understand the differences in the usage of the word and thus understand the point and direction of the commercial. A person with AS will typically be confused and unsure of the message. The reason is that he or she typically misses the various meanings in the facial expression and voice inflection that causes the same word ‘dude’ to take on many different meanings over the course of the commercial, which in turn provides the intended message.

By the time I reached this group meeting, I had progressed in my own self-awareness and was able to discern the meaning of the commercial without any difficulty. This skill, however, did not come overnight but as a result of years of my own attempts to figure out the world around me and understand why I never fit in. As a result of my awareness, I now am able to focus my energies on learning the fundamental social skills in the hope that one day I may be able to fully function in the social world. This experience, along with research on AS, will allow me to provide a voice of experience for those in a similar situation and for those interested in learning more about the syndrome and the possibilities for relatively normal functioning. By discussing professional and academic research on coping with the social deficiencies characteristic of AS, I will incorporate my own experiences in post-secondary education to show that the syndrome can be dealt with through a repetitive learning process and a conscious awareness.

BACKGROUND

Asperger's Syndrome (AS) was first observed in a group of boys by Hans Asperger in 1944. The syndrome was initially characterized by "a lack of empathy, little ability to form friendships, one-sided conversations, intense absorption in a special interest and clumsy movements" (Attwood, 1998, p.11). Hans Asperger, however, did not live to see his work gain international recognition. In 1981, the year after his passing, Lorna Wing published a paper coining the name Asperger's Syndrome as it is recognized today (Attwood, 1998). While there is no firm agreement on the diagnostic criteria, AS was added to the 10th edition of the World Health Organization's *International Classification of Diseases* (1993, see Appendix) and the 4th edition of the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (1994, see Appendix) in the early 1990s. For simplicity, these documents will be referred to as the ICD-10 and DSM-IV, respectively. Diagnostic criteria have also been published by other organizations around the world making it difficult to agree on a definitive set of diagnostic criteria.

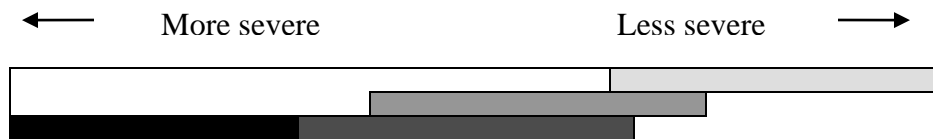
The criteria cover impairment in social interactions and restricted, repetitive, and stereotyped patterns of behavior, interests and activities where the resulting disturbance may cause significant impairment in normal social, occupational or other important areas of functioning. Frequently, this manifests itself in an inability to be flexible beyond a set of rules and an intense focus on a particular subject area. For example, a child with AS may be willing to play a game, but anything varying from his or her interpretation of the rules can be cause for distress. An example of an intense focus may be trains, where the

individual is so engrossed in his or her interest that the subject typically dominates any social interaction. The repetitive aspects may also involve motor mannerisms, such as hand twisting or flapping, or a higher sensory sensitivity, such as a preoccupation with certain colors or feelings of objects or abnormal sensitivity to loud or high pitched noises.

The “DSM-IV and ICD-10 both exclude individuals from having Asperger Syndrome if they have ever met diagnostic criteria for autism (e.g., the ‘precedence rule’), and if they had early language delay” (Volkmar, Lord, Bailey, Schultz and Klin, 2004, p. 137). In addition to exclusion criteria, all publications agree that social interaction is a central area of difficulty. As a result, this paper will be primarily concerned with the impairment in social interactions irrespective of which set of criteria one may have been diagnosed under.

While Hans Asperger published his doctoral thesis on a set of children who had unusual social, linguistic and cognitive abilities, Leo Kanner also published similar information that has since been associated with characteristics of autistic children (Attwood, 1998). Both authors used similar terms and described similar patterns of symptoms. Kanner’s description included more severe characteristics, while Asperger’s description covered children with less extreme characteristics. However, the similarities between AS and Autism, the inability of organizations to decide on a single set of diagnostic criteria, and the existence of a ‘precedence rule’ in the diagnostic criteria for AS have given rise to a debate as to whether AS should be a distinct diagnosis or a part of a larger ‘autism spectrum’. Freeman, Cronin and Candela (2002) found that most research indicates an overlap between AS and Autism, especially in the realm of social deficits. They also recognized that although they are distinct diagnostic categories, a

spectrum of severity exists within each category due to variability in individual symptoms (refer to Figure 1). Given this information, the similarities can be grouped together into the single autism spectrum and can then be characterized by the range of severity of the symptoms. Social deficits are a common overlap between the diagnostic categories and can provide a means of comparison for placement on the spectrum, though other symptoms can be chosen to form comparisons. Using this model, rudimentarily displayed in Figure 1 below, Autism will be on the extreme end with High Functioning Autism (HFA) being less severe. Though similar to HFA, AS is considered slightly less severe and would be placed closer to the less severe end. Normally developing individuals have been added to the spectrum for the sake of comparison.



Legend	
■	Autism
■	High-Functioning Autism
■	Asperger's Syndrome
■	Normally Developing

Figure 1 – Autism Spectrum: Social Skills Impairment

One can deduce that a placement on this spectrum will negatively correlate with the ability to acclimate with the social norms of society. That is, the more severe symptoms, the less likely one will be able to function normally in the social environment. Though many struggle with social interactions, “in contrast to most other children on the autism spectrum, individuals with AS *desire* social interactions with others” (Myles and Simpson, 2002, p. 133). As defined by the diagnostic criteria, a person with AS has little or no language delay or deficiency. A person with HFA, by contrast, may have some language deficiency though not the cognitive deficits often associated with autism – thus their status as High Functioning. Though HFA and AS are separate diagnoses, the similarities between them cause many researchers to group subjects together. Indeed, some researchers argue there is no difference and that recognition of AS as a distinct diagnostic category may be premature (Ghaziuddin, 2002). The lack of distinction, however, has little bearing on the focus of this document wherein I will be more concerned with social deficiencies which are typically common between the groups. Specifically, any research cited will be properly identified with the diagnosis it is describing.

A Swedish study that indicates the frequency of AS may be higher than a previously estimated rate of one in one thousand children (Ehlers and Gillberg 1993, cited in Attwood, 1998). In fact, the study suggests the rate may be as high as one in three hundred. Another estimate corroborates this by placing the prevalence as high as 48 per 10,000 children (Kadesjo, Gillberg, and Nagberg, 1999, cited by Myles and Simpson, 2002). While there is debate on whether AS should be a distinct diagnosis, it is obvious that with such rates of occurrence, the effects of social impairment should be

evaluated more closely, especially in how to provide assistance for more normal functioning within typical social circumstances.

SOCIAL CHARACTERISTICS

A lack of social competence is perhaps the single most defining aspect of AS. Its effects extend beyond mere social interaction and, in fact, influence many aspects of everyday life. The inability to form and maintain normal relationships affects the perceived quality of life, job performance, living arrangements, serious relationships, and everyday interactions with acquaintances or even strangers. As a result, the development of social competence is essential. “The inability to develop social competence is the leading factor in the failure of most adults with autism to attain even a minimal level of quality in their lives” (Howlin & Goode 2000, cited by Gutstein and Whitney, 2002, p. 161). An adult with AS will also find a lack of social competence to be a debilitating factor, leading to a lower quality of life. In fact, they may be more prone to depression than a person with autism due to their desire to attempt social interactions and the resulting awareness of their social deficiencies.

Social Competence

“Autistic friendships may be of poor quality so that the children in question do not gain the feeling of security or companionship which are required to reduce feelings of loneliness” (Bauminger and Kasari, 2000 p.453, cited by Gutstein and Whitney, 2002, p. 162). Gutstein and Whitney then conclude that the outlook for those with AS does not appear good. The bleak outlook and the inability for people with AS to achieve social

competence, despite various intervention techniques, makes it important to understand what can be done to enhance the ability to provide successful intervention strategies.

“Social competence comprises three separate areas of social development that must function in an integrated fashion to produce eventual success: (a) secure attachment, (b) instrumental social learning, and (c) experience-sharing relationships” (Gutstein and Whitney, 2002, p. 162). In addition, a true understanding of empathy is essential to the proper development of social competence. Each of these will be discussed in further detail as they relate to the social difficulties experienced by people with AS.

Secure Attachment

The development of secure attachment will typically occur in the early years of life. This bond allows a child to gain a sense of security by viewing a parental figure as a safe haven from the unknown. Secure attachment can then be generalized so that others, such as a baby-sitter, can provide that safety. Gutstein and Whitney (2002) provided a number of examples of behaviors indicating a secure attachment:

- “A baby falls and quickly reaches out to mother to be comforted.
- A stranger walks into the room and the young child runs over to the safety of a parent.
- A preschooler accidentally calls his teacher “mommy” while she is comforting him.

- A young child is waiting for her mother, who is late, to pick her up from school. The child comforts herself by saying, ‘It’s okay. Mommy will be here. She always comes and gets me’ ” (p. 162).

The ability to develop secure attachment has been shown in those with HFA (Gutstein and Whitney, 2002). Though this research specifically targeted those with HFA, it is reasonable to believe that individuals with AS, who typically have fewer social problems, would also have formed secure attachments. Therefore, we must explore other parts of social competence to understand where the deficiencies lie.

Instrumental Social Learning

The ability to develop a sense of the cause-and-effect aspects of social interactions, that supply the basis for understanding communication of needs and the ability to tailor those actions for specifically desired outcomes, is called instrumental social learning. Generally, these actions can be viewed as a scripted set of rules for actions designed to garner a desired response in social situations. Competence in this area resides in the ability to store the scripts and recall them in the appropriate situations in order to obtain the desired consequences. Gutstein and Whitney (2002) provided the following examples of instrumental actions:

- “pointing to obtain an out-of-reach toy,

- inviting another child to play checkers so that you can win,
- following classroom behavior rules to obtain a reward,
- standing in line at the checkout counter of the supermarket to get your food, and
- asking for instruction in math so you can get a better grade” (p. 163).

The inability to master instrumental social learning can have dire consequences. The structure of societal institutions relies heavily on the ability for people to understand this concept. For example, educational institutions rely heavily on the nature of instrumental social learning for individuals to follow rules and learn course material. Fortunately, those with HFA have also been shown to be capable of developing instrumental social learning and follow patterned sets of rules (Travis & Sigman, 1998, cited by Gutstein and Whitney, 2002). Again, it is reasonable to assume individuals with AS would also have this ability.

Experience-Sharing Relationships

Experience-sharing relationships occur without regard for external rewards. Unlike instrumental social learning, experience-sharing does not follow a set of scripts. This allows a large variety of circumstances and types of interaction such that the social situation will never be exactly the same. The participants in experience-sharing social

interactions need to adapt their actions in response to the emotions and actions of the other participants. As a result, experience-sharing is perhaps the hardest of the three core aspects of social competence to master. Gutstein and Whitney (2002) provide these examples:

- “After losing the big football game, the entire high school team huddles together to console one another.
- You and a buddy ride bikes side-by-side, just for the fun of it, going no place in particular.
- When you and your pal meet, you always tell a silly joke that makes you both laugh, for no apparent reason.
- You meet a new classmate and get excited when you find out you share many of the same beliefs and opinions.
- You work hard as part of a group to produce a new product, and when it is completed, you celebrate together and feel a special strength and camaraderie.
- You fall in love and want to know the innermost feelings and thoughts of your lover, so you can feel closer to each other” (p. 163).

Experience-sharing is the core area where those with HFA and AS lack skills necessary to become socially competent (Gutstein and Whitney, 2002). An important part of experience-sharing is the ability to read and understand another’s feelings and

react appropriately. This demonstration of empathy, therefore, should be investigated further.

Empathy

Titchener invented the word 'empathy' as a translation of the German word "Einfühlung", which means "to project yourself into what you observe" (Titchener, 1909, cited by Baron-Cohen and Wheelwright, 2004). In order to demonstrate empathy, one must be able to read the emotional state of another individual and elicit an appropriate emotional response. "Empathy allows us to understand the intentions of others, predict their behavior, and experience an emotion triggered by their emotion" (Baron-Cohen and Wheelwright, 2004, p.163). It is a crucial part of everyday social interaction and, as a result, empathy ties in closely with and indeed is a part of social competence, such that an inability to show empathy will also make one unlikely to develop successful social relationships.

Sympathy, as opposed to empathy, makes one feel an urge to react appropriately to another's emotion, though not necessarily act on that urge. For example, when we see that a friend is sad, a demonstration of sympathy would be the desire to act to comfort the friend. As a result, sympathy can be viewed as a response to the initial empathic reaction. For the purposes of social competence, a lack of empathy is sufficient to demonstrate difficulty in social competence.

Baron-Cohen and Wheelwright (2004) were able to demonstrate that individuals with AS or HFA scored lower than those in the control group in a measurement of

empathy using the Empathy Quotient test. The Empathy Quotient questionnaire includes 60 questions, 40 concentrating on aspects of empathy and 20 filler questions to distract a participant from too much focus on empathy. The empathy questions were varied to obtain different answers to demonstrate the empathic response. For example, “I can easily tell if someone else wants to enter a conversation” was designed to obtain a “strongly agree”, while “It doesn’t bother me too much if I am late meeting a friend” was designed to obtain a “strongly disagree” for the empathic response (Baron-Cohen and Wheelwright, 2004, p. 171-172).

Baron-Cohen and Wheelwright also found a negative correlation between the scores obtained on the Empathy Quotient test and the scores on the Autism Spectrum Quotient test, a test developed by Baron-Cohen, Wheelwright, Skinner, Martin and Clubley (2001) for adults with HFA or AS. The Autism Spectrum Quotient, which uses a 50-item self-report scale, attempts to test for autistic tendencies by asking an individual for the level of agreement with a set of statements that include the ability to read and react to other people’s emotions. It does not, however, make any attempt at diagnosis. The negative correlation between the Autism Spectrum Quotient test and the Empathy Quotient test indicates that a person who shows more autistic tendencies is likely to be less competent in demonstrating empathic skills.

A second study in the same report by Baron-Cohen and Wheelwright demonstrated that women were superior in demonstrating empathy. The result helps account for some reasons why there has been a male dominance in diagnosis of AS, determined to be a 10 to 1 male to female ratio (Gillberg, 1989, cited by Lawson, Baron-Cohen, and Wheelwright, 2004). This superiority in empathy may act as a protective

factor for women possibly making them less subject to social deficiencies. The extremely social environment for adolescent girls, as compared with the typical activity-based social environment of adolescent males, provides ample opportunity for those who might otherwise fall into the category of AS to develop more normal social abilities. By functioning more normally, these deficiencies may go unnoticed. The results of another study by Lawson, Baron-Cohen, and Wheelwright (2004) corroborate the male dominance, though they also admitted other possible explanations of the results. One of these explanations included gender socialization, where male and female children are treated differently from birth. Typically female socialization places more emphasis on awareness and concern for the feelings of others than male socialization.

The correlation between social competence and empathy should be no surprise. The ability to read and understand another person is critical to developing experience-based relationships, thus a competence in empathy is also necessary to become successful socially. Naturally, core similarities exist between the two: ability to elicit an appropriate corresponding emotional response to another person's emotional state; and developing the ability to understand and/or predict someone else's thoughts, feelings or actions. As a result, competence in empathy is a necessary, but not sufficient, criterion to demonstrate social competence.

Social Competence as it Applies to Asperger's Syndrome

The components of social competence are important in their own respects. However, Gutstein and Whitney (2002) mention that several studies tend to report that

those with HFA indeed develop a sense of secure attachment and instrumental social learning. They found those with HFA are able to react differently to parental figures and strangers in demonstrating attachment. Also, they make a similar number of requests to adults when compared to their normal counterparts (Travis and Sigman, 1998, cited by Gutstein and Whitney, 2002). In general, these conclusions should also be true for those with AS. As a result, the primary deficiency appears to lie in the realm of development in experience-sharing and the expression of empathy. It should be noted, however, that a deficiency in empathy does not mean that a person with AS lacks the ability to care for others. Instead, it's more that they do not know how to interpret and react to the social cues in a given environment. Without proper development of the core social skills in experience-sharing and empathy, many people with AS continue to struggle in social interactions as simple as conversations with acquaintances, obviously having even more difficulty as the complexity increases with friendships, careers and intimate relationships.

It is easy to say that a person with AS has a deficiency in the ability to develop normal experience-based relationships. But what exactly does that mean or entail? It is best to understand exactly what aspects may hamper his or her attempts to engage socially. There are a number of deficiencies in particular that make social interaction difficult: difficulty reading body language, failure to utilize proper eye contact, literal interpretation of language, inconsistent verbal fluency, adherence to routine, motor clumsiness, sensory sensitivity, inability to infer the thoughts of others, and a lack of understanding of social norms (Attwood, 1998). For the purposes of this paper, I will focus on the difficulty of reading body language, literal interpretation of language and lack of understanding of social norms.

The inability to read and express body language should be seen as a difficulty in understanding the expression of emotions. Discerning facial and bodily expressions that indicate another's emotional state is a skill that is not fully developed in those with AS (Attwood, 1998). As a result, a lack of an appropriate empathic response may be attributed to the fact that the person with AS did not properly read the emotions of another person to begin with. While those with AS may be able to recognize the extreme or exaggerated expression of certain emotions, such as happiness or anger, subtle variances in these expressions can quickly lead to confusion and misinterpretation. There are a number of story books and illustrations that can help those with AS understand the differences in expression (Attwood, 1998). In my own experience, however, the cartoon-like drawings were not as helpful as actually seeing a real expression on a person. Video demonstrations may provide simple examples of emotional expression that are more realistic, but the lack of an interactive environment limits the potential for gaining competence in displaying appropriate responses to emotional states in actual social interaction. Because emotional expressions can change within the space of a few seconds, practicing identifying and responding to them with a live partner would provide a more realistic understanding of social interactions. The same realism cannot be easily taught through illustrations, and even video cannot properly teach emotional reciprocity.

A large portion of our daily conversations base some level of understanding on metaphorical context. That is, much understanding is gained through the use of descriptive techniques that may be interpreted and used in many different ways and in different contexts. A person with AS, however, typically has a rigid understanding of language thus a literal interpretation of the use of that language. As a result, common

phrases and idioms may be completely misunderstood. A few examples, such as “cat got your tongue?” and “pull yourself together” can easily cause confusion until an explanation is given (Attwood, 1998). As a result, common teasing may be completely misunderstood as a serious conversation. This rigid understanding also makes it very difficult for a person with AS to properly follow the progression of a conversation and understand how to react and participate. In the author’s own experience, this effect is very detrimental because the temptation to become withdrawn and just listen to the group conversation limits the ability to properly understand the group dynamics. This problem is a recurring loop where the experience necessary to remove yourself from the loop is difficult to obtain. That is, due to misunderstanding, a person with AS is likely to withdraw from conversations, which results in inadequate experience to develop conversational skills, which causes continued misunderstanding and further withdrawal.

Finally, a lack of understanding of social norms is another problem associated with AS. Typically, this is manifested by not understanding how the context of a situation changes the rules of what is an appropriate type of interaction. Tony Attwood (1998) gave the example of a child with AS addressing his mom with “Hey, you” when she was with a group of her friends. The child obviously did not understand the social norm of how to address others in public, where the more appropriate response would have been to address her as “Mom” or an equivalent variation. The inability to modify behavior as the context changes makes those with AS even more awkward in various social situations.

The difficulty in reading body language, literal interpretation of non-literal language, and a lack of understanding of social norms make it very difficult for a person

with AS to fit in and obtain the experience necessary to develop experience-based relationships. This lack of experience only exacerbates the problem and the causes compound the issue because it is less likely that he or she will actually understand what went wrong. Even though a person with AS may have these deficiencies, it does not mean that person cannot learn better social skills. In fact, with an active interest in improving their own situation, a person with AS can seek out intervention techniques to help them learn to cope with the symptoms and develop strategies to counteract them in order to obtain a relatively normal level of social functioning.

Perceptions of Friendship

The transition to adolescence usually is accompanied by a change in the perception of friendship from shared activities to more experience-sharing interaction, or simply spending time with a friend. This change in the perception of friendship does not appear to occur for those with AS due to a lack of social skills. A person with AS tends to focus on their areas of interest with such intensity that they exclude other subjects and avoid social interaction. This causes a divergence of their personal and social experiences where they then focus on non-social discoveries within their environment. The lack of time spent practicing social interaction has a large impact on the ability of children with AS to develop normal social relationships. The variations in experience can be readily apparent as a child enters adolescence, where social interactions can become highly based on experience-sharing. As a result, it appears the perceptions of

friendship for an adolescent with AS may be different from that of a more normally developing adolescent.

In fact, responses of adolescents with AS in a study conducted by Carrington, Templeton and Papinczak (2003) “indicate a lack of insight into what constitutes friendship and a general difficulty in using and understanding the language to describe friendship issues” (p. 216). In this study, 5 adolescents were interviewed. The participants were from 14 to 17 years of age and consisted of 1 female and 4 male. Though this is a small sample and the findings should be generalized with appropriate caution, I personally found the results to coincide with my own experiences. The study asked the following research question: “What are the perceptions of friendship for a group of secondary school student who have Asperger syndrome?” Using the individual interview responses, the study concluded that while the adolescents would generally cite a number of friends, their friendships were likely to be “superficial”, or lacking depth, and were likely to change frequently. In fact, a number of the participants in the study had “best friendships” that were centered about a specific interest, such as computers or video games. To differentiate these from normal interactions, it is important to note that an adolescent with AS will develop these friendships based on the interest in the activity in contrast to more normal friendships where emphasis is on the time spent together and the interest in the activity is secondary. While these friendships focusing on specific interests can provide mutual grounds for enjoyment of each other’s company, the activities are generally not very conducive to mutual social interaction, and thus make it even more difficult for the person with AS to have the opportunity to gain the skills necessary for true experience-sharing relationships.

Critical skills necessary to develop experience-sharing, and therefore friendships, are the concepts of social referencing and co-regulation (Fogel, 1993, cited by Gutstein and Whitney, 2002). Social referencing is important in understanding the emotional state and the intentions of another person. It can be viewed as a demonstration of empathy. Co-regulation involves the adaptation of one's actions to the perceived state of others. As a result, this is an ongoing process that all participants take part in. An individual with AS tends to lack the appropriate level of skill in both social referencing and co-regulation.

The ability to regulate one's own interactions based on the perceptions of the emotional state of the other participants is important, not only because it cannot be taught in a scripted environment, but also because it has important relationships in the social deficits found in AS. Indeed, those with AS are content with spending time by themselves where they can avoid failure because they can control the situation. Typically, he or she will engage in social interaction only when there is adherence to his or her rule structure (Attwood, 1998). This rigidity is manifested, for example, in interactions such participation in childhood games. By maintaining this rigidity and limiting their interactions to situations where he or she can control the activity, those with AS fail to gain the proper experience necessary to learn social referencing and co-regulation.

My own middle school experiences involved many 'friends' that I interacted with only during school hours or scheduled activities. Those interactions tended to center around common interests rather than spending time together, which is typical of social interactions for someone with AS. While I'd had friendships prior to middle school, they

were limited in nature. Subsequently, the friendships were difficult to maintain because we attended different middle schools.

In general, my social interactions primarily consisted of adult-directed activities such as sports. It wasn't until late high school that I was able to build interactive relationships beyond such a structured environment and begin to understand and learn the dynamics necessary to have a true friendship. During my senior year, I was finally able to enjoy time spent together with friends instead of requiring an activity to base the interaction on.

The few years without significant friendships, from early middle school through high school, was enough to distort my sense of friendship. The ability to have a few key people willing to spend time with me allowed me to understand where I had built up walls. Initially, I found it extremely awkward to try to be an active participant in social interaction. Becoming sensitive to the nuances of communication and trying to understand how to change my own actions to accommodate another person were very difficult steps, but despite my clumsiness I was able to become more comfortable with the situation. Getting past insecurities such as these allowed me to open up, try new things, and learn how to decrease the rigidity of some of my views. For example, I had to learn to regulate my own social interaction in response to the other person's emotions instead of thinking that my own values and perceptions were enough. In effect, I eliminated the rigidity of my self-centered view to better incorporate others in the activity or interest. Without the patience of a few key people, I never would have had the opportunity to learn to understand where my own perceptions were incorrect and be able to take steps to make adjustments.

Many adolescents with AS may be susceptible to influences from peers. It has been suggested that peer pressure is likely to be a misnomer. Martyn Denscombe (2001) suggests that individuals choose their peer groups based on common interests, thus it is the individual, not the group who chooses their interactions. A suggestion has also been introduced that peer pressure is just a myth created by adults to explain teenage behavior (Ungar, 2000). While these statements may hold merit for normally functioning individuals, it may not necessarily be true for those with AS. Because they typically desire social interaction but are less skilled in achieving it, they may be more susceptible to influences from peer groups.

In their interest to feel accepted socially, I think it may be more likely that an individual with AS could be susceptible to group 'pressure' in order to attempt to fit in even if those pressures may not quite fit with the values for that individual. In reality, the group may not directly pressure the individual, but it is the desire to fit in that creates a pressure to join in.

My own desire to be social, and the fact that a number of my peers found joy in letting loose with alcohol, led me to excess alcohol use in social situations. These parties became a social haven where I felt like I belonged. However, it took me a couple years to realize that the parties existed for consumption first, socializing second. At that point in time, I understood a number of things about myself, including how easy it is to confuse actual social interactions with casual, alcohol-induced ones. This helped me re-define what I found important. As a result, the friendships I've maintained in the years since are more rewarding because they're based on mutual experience and excitement, especially my friendships in the realm of ballroom dance. In the end, I've realized a lot about

myself because of my own attempts to feel like a normal social participant in what are supposed to be the best years of my life. The activities I've chosen to involve myself in have unintentionally had important effects on my ability to develop my social skills. These activities will be discussed in further detail later in the section on intervention.

The concept of peer 'pressure', while beyond the focus of this document, should be an important consideration for additional research. Because those with AS desire social interaction, it seems more likely that they are subject to the pressures of their peers without properly evaluating how the activities fit within their own value structure. A search of primary psychology databases yielded no articles covering peer pressure and AS. A search even on autism and peer pressure only gave articles hinting at benefits of good peer models for developing social competence. The ramifications of peer pressure can be significant and while they should be considered with more scrutiny, it is beyond the scope of this article.

While I had my own problems with peer pressure, I was able to learn from my mistakes. Since entering college, I've been increasingly successful at negotiating social experiences and learning how to adapt my own interactions to become a more active player while within group situations. Without an active awareness on my part, I find myself regressing when tired or distracted. Though I have occasional regressions, I am generally able to feel less like an outsider and more a part of the whole. In the final year of college, I've furthered my participation in ballroom dance and have quickly found myself to be a part of the group instead of just a peripheral participant. The quality of my interactions during these events has increased dramatically compared to the previous

year. As a result, my own feelings of belonging and contentment have greatly improved my own perceptions of myself and my surroundings.

Careers

The ability to perform well at a place of employment is important to job success. However, the glue that holds a career together is the social interactions that are required as part of daily tasks. Since many areas of advancement require competence in social situations in order to properly communicate information between co-workers, customers, managers, etc., people with AS may find it very difficult to find success in the workplace.

Gutstein and Whitney (2002) cite a number of studies that highlight the problems facing those with HFA and AS. One study “found that of the 18 young men with HFA they studied, 1 was married, 4 were living independently, and 6 were employed at least part-time in relatively low-level jobs” (Venter, Lord and Schopler, 1993, cited by Gutstein and Whitney, 2002, p. 161). It has also been found that, for those with HFA, “social difficulties in the workplace were reported as the leading cause of job failure” (Barnard, Harvey, Potter, and Prior, 2001, cited by Gutstein and Whitney, 2002, p. 162). These difficulties will also be apparent in those with AS.

Lack of social competence appears to be a major cause for the inability of those with AS to maintain gainful employment. This creates a burden on the person with AS, their families and friends, and ultimately society as a whole. Their areas of focus make them extremely knowledgeable in their fields and this problem with social interaction directly affects their ability to find success despite their obvious strengths.

In my own experience, social difficulties have complicated my search for gainful employment. At this point in time, I'm uncertain what career path I'd like, having chosen my major for the knowledge not the career. Obviously, my own uncertainty comes across in the interview despite my best attempts to express interest and my own ability to learn and accomplish any task given to me. While I have no doubt I'd be able to fit in and perform satisfactorily, my own social misunderstandings are keeping me from being able to present myself in an appropriate manner in this relatively new area of job interviewing.

Relationships

In normal development, it's natural for a person to desire more intimate contact with another person. In fact, "by age 15 or 16, 40% to 50% of adolescents report a current romantic relationship" (Feiring, 1996, cited by Connolly, Furman, and Konarski, 2000, p. 1395). However, because many diagnosed with AS already have a tough time developing experience-based friendships, a relationship can appear overwhelming. The prospect of sharing even the most intimate details of your life with someone else can prove daunting due to inherent communication difficulties.

People with AS, already struggling with normal social interaction, will likely find intimate social relationships to be extremely difficult. The following studies show the extent of the problem. One found that of 18 young men studied, only 1 was married (Venter, Lord and Schopler, 1993, cited by, Gutstein and Whitney, 2002). Another study found that, of 16 young adults diagnosed with AS and HFA, only 1 was married and only

3 had any dating experience (Szatmari, Bartolucci, and Bremmer, 1989, cited by Gutstein and Whitney, 2002).

While it may appear to be extremely difficult for a person with AS to enter and maintain a more intimate relationship, there is hope. Just as it is possible to learn how to develop the skills necessary to maintain friendships, those same skills can be utilized and adapted for the advanced mastery necessary for intimate relationships. In this case, the ability to adapt not only your actions but also your own perceptions and values as you accommodate another individual into most aspects of your life becomes vitally important. A low sense of social competence will result in poor communication skills and a lack of open communication attempts resulting in an inability to develop real trust. Without communication and trust, many relationships will fail. As a result, it is critical to understand and develop social competence so that an intimate relationship can be built.

In my own experience, it took years to develop even basic social skills. My skills eventually were developed to such a degree that most who met me assume I was shy, but would not have guessed, even after reading about AS, that anything else might be present. Though I'd developed basic skills, the perception that I was shy still hindered my ability to successfully date. Therefore, I believe my ability to cope has been sufficient to hide most obvious qualities, but continual trials in social interaction and additional areas of maturity were necessary to allow me to master more advanced social skills.

While developing my social skills, my dating experience was nearly non-existent. When I did date, I was lucky if I successfully landed a second date. I still did not understand the social rules related to dating. By the beginning of college, I was able to

develop my social skills to the point that I could maintain friendships with women without feeling completely awkward. It is important to note here that mastering friendships requires a base set of skills, but I did notice much more difficulty developing friendships with women as compared to developing friendships with men. I believe this difference is not a direct result of AS but instead the typical social differences between men and women exacerbated by social incompetence. My upbringing with male values made it easier for me to relate to men as compared to women, but the same underlying skills allowed me to slowly adapt what I'd learned to develop friendships with women.

Connolly, et. al (2000) found “that the structural characteristics of adolescents’ peer groups ... influence the initiation of romantic relationships and that the qualitative features of friendships ... influence the qualitative features of romantic relationships” (p. 1404). They noted that having “other-sex” peers in an individual’s peer networks was associated with having romantic relationships. Noting the results of this study, the development of my own friendships and peer groups apparently may have had an influence on my ability to begin developing stronger friendships with women and move toward intimate relationships.

Once I was able to successfully develop friendships with women, I found it easier to understand how to relate. Using this experience, I was able to enhance my dating so that by my final year in school I was successfully able to have more than one date and eventually was able to enter my first relationship at age 22. While that relationship was hindered by communication difficulties, some of which were beyond my control, it provided a learning experience to develop a number of skills: the ability to listen, be assertive in communicating my needs, communicate non-verbally, and adapt my

environment for another person. While many of the difficulties I was able to identify and explore during the course of the relationship were personal issues, they were directly affected by aspects of AS. My own interest in developing competence allows me to grow beyond both AS and my personal shortcomings. As a result, my dating experience is now more fulfilling and, while I still have a lot to learn, it will hopefully progress to developing a long-term relationship.

Depression

Humans are viewed as intensely social beings, defining their environments and even themselves through social interactions. For those with AS, there is a deficiency in social competence. As a result, it seems reasonable that difficulty in social interaction could lead to depressive tendencies. It is important, then, to discuss connections to depression to better understand potential causes.

Barnhill (2001) conducted a study that concluded there was strong positive correlation between depressive symptoms and ability attributions for social failure for adolescents with AS. Their study involved 33 adolescent participants, 30 male and 3 female, with IQ ranges from 71 to 144. The study used two instruments, the Student Social Attribution Scale and the Children's Depression Inventory, to measure the level of self-attribution in the domain of social success and the severity of depressive tendencies. "Results indicated that the more participants attributed social failure to their ability or to the sum of their ability and effort, the higher was their depressive symptoms score" (p. 50). The study also found a relationship with intelligence, noting that the more intelligent

the participant, the less likely they were to attribute failure to themselves, indicating perhaps a higher cognitive awareness in understanding that social failure may result from multiple, complex factors. The ability to recognize that factors other than their own abilities may play into the ability to be socially successful proved to be an important factor in decreasing susceptibility to depressive symptoms.

Comparing this study with my own past experiences, I find strong correlation between the times I thought my own abilities were at fault and the level of depressed feelings I had at the time. However, since then I learned to consider many other possibilities and began to understand there was a more complex world around me that was never easily understood. At the risk of being thought conceited, I should note that upon diagnosis of Asperger's Syndrome at the beginning of 8th grade, I was also informed that my mental age was that at the level of an 11th or 12th grader. This insight, I believe, proves important to my own ability to reason and develop skills to cope with my own social shortcomings. I believe my own experiences are in complete agreement with the findings presented by Barnhill.

Conclusions on Social Competence

Social competence is extremely important to forming and maintaining normal social relationships. As a result, the deficiencies characteristic of an individual with AS can severely limit their ability to succeed in everyday interactions. From early development throughout adulthood, these interactions provide the basis of friendships, serious relationships, employment, and other important aspects of life. The social

incompetence results in not only personal issues of quality of life, but societal issues in order to integrate individuals with AS as productive members of the community.

Lying at the core of this problem is the inability for those with AS to participate in experience-sharing. While he or she may be able to go through some of the basic motions for social interaction, demonstrating secure attachment and instrumental social learning, his or her inability to interact in experience-sharing gradually causes him or her to be left behind. Depression is only a natural result of the feeling of being left out. In order to break this trend and develop social competence in experience-based relationships, the ability to demonstrate empathy is critical to being able to adjust one's actions with respect to that of another's actions, feelings or thoughts. Only at that point will a person with AS be able to really take part in everyday social interaction, gain a higher quality of life, and become a truly active participant in society.

The research on AS is limited and can only be generalized with caution. Most studies introduced have few participants. It appears obvious that those with AS have difficulty demonstrating social competence that affect their ability to function in society. However, more research is necessary to properly understand reasons behind the lack of social competence and the inability to demonstrate empathy. Once additional research has been done, a more focused approach can be developed to properly address the characteristic deficiencies of AS.

The inability to become successful in experience-sharing relationships has ramifications throughout the life of the individual. In my own experience, I've noticed a definite difference in quality and duration of friendships throughout middle school and high school that were much less than those of my peers. It wasn't until I reached my

collegiate years that I started finding ways to change my social interactions to be more conducive to the development of mutual experience-based friendships. It certainly hasn't been an easy transition, but the quality of my interactions since my first efforts to improve has increased dramatically. Instead of constantly feeling alone, I can at least find a few good friends with whom I can talk. This contrast comes as a great relief to me, but also provides the possibility that there may be ways that an individual with AS can develop the skills necessary for social success. The road isn't easy and will put much strain on the participating individual, but if he or she has the patience and desire necessary for the years it takes to improve, I believe there is hope for the development of an effective intervention style. Participation in this intervention would provide individuals with AS the ability to develop at least a minimal level of social competence and obtain at least a minimal level of quality in their lives. This subject of intervention and related details will be covered in the next chapter.

INTERVENTION

Labeling of syndromes and disorders indicates an acknowledgement of abnormal functioning. The next step should be a development of effective intervention techniques to provide opportunities to integrate affected people into normal society. Unfortunately, there has been little research to date to show progress in identifying effective intervention techniques for those with AS. A major drawback with many existing interventions appears to be the difficulty in generalizing situations from a scripted intervention environment to the variable environment found in real social interaction (Barnhill, Cook, Tebbenkamp, and Myles, 2002). While intervention will require tailoring to each individual based on their specific needs, an overview of social story intervention and social skills intervention will provide a background on what has been tried. After describing the interventions and their shortcomings, I will suggest ways to improve upon these strategies by drawing from my own experience and highlighting the important aspects that have worked in my own attempts to become a more normal social participant.

Intervention techniques should be perceived as a style of interactions that are intended to teach an individual various methods to cope with their deficiencies in order to achieve a more normal level of functioning. In this case, for those with AS, the focus will be on intervention techniques targeting social deficiencies. The attempt is to provide skills which can be both comprehended and generalized. The intervention can be used to convey information about social concepts or provide an opportunity to gain experience in learning how to adapt to different social situations. Of course, attempting these skills in a

social setting provides additional complications that need to be considered for those with AS. Providing intervention for those with AS may entail not only providing a social script, but explaining how to read body language, respond appropriately in the given situation and adapt the reaction as the context changes. Therefore, the intervention technique will need to be more in-depth and comprehensive than a similar intervention for a more socially competent person. For example, a normal anger management session would likely prove ineffective for those with AS. Instead, the session would need to be varied to incorporate more comprehensive lessons on reading the body language of other people and learning how to infer what the other person is thinking.

Obviously, with social deficiencies, the environment and interactions need to be carefully considered and tailored for the individual in order to achieve the best outcome. Due to variability in individual characteristics and interests, it may be very difficult to find a single set of procedures that will become an effective intervention technique for everyone. However, if we at least understand where the deficiencies lie and have a set of available methods to employ, there may be hope of being able to construct an individual intervention style that can be effective.

Social Story Intervention

Adams, Gouvousis, VanLue and Waldron (2004) examined a social story intervention on a 7-year-old male with an autism spectrum disorder. Their technique involved using numerous homework sessions with the child's parents in the attempt to introduce new routines and teach appropriate behaviors by varying the strategy employed

during individual sessions. The intervention consisted of 4 phases, each lasting 3 weeks and involving 12 homework sessions, for a total of 48 recorded sessions. The phases were employed using an ABAB design to measure the effectiveness of using a social story. In the first and third phases, baseline behavior was measured to compare to differences in behavior during the intervention phases (the second and fourth phases).

The social story technique presents a story that targets specific areas in a child's behavior by describing a situation and an appropriate response. Tony Attwood (1998) also cites the concept of social stories by Carol Gray (in press at the time of Attwood's publication). He gives the following example of a social story:

“My school has many rooms (descriptive). One room is called the lunch room (descriptive). Usually the children eat lunch in the lunch room (descriptive). The children hear the lunch bell (perspective). The children know the lunch bell tells them to line up at the door (perspective). We have a line to be fair to those who have waited there the longest (perspective). As each person arrives they join the end of the line (directive). When I arrive I will try to join the end of the line (directive). The children are hungry. They want to eat (perspective). I will try to stand quietly in the lunch line until it is my turn to buy my lunch (directive). Lunch lines and turtles are both very slow (control). Sometimes they stop, sometimes they go (control). My teacher will be pleased that I have waited quietly (perspective)” (p. 34).

This form of intervention has some significant merits. It provides both a context and a directive for the desired actions. It also appears to be very conducive to varying education levels since the complexity in writing can vary as necessary for understanding and it can also be highly customized for the individual it is targeting. The example given by Attwood above was targeted to a child with a special interest in reptiles.

After Adams, et. al (2004) identified target behaviors for their study, a social story was developed to address those behaviors. This method deviated from other

implementations of this method in that it targeted four behaviors at once instead of focusing on a single behavior. By examining behavioral observations and parent and teacher report data, the study found that undesirable behavior was diminished in the homework sessions as well as noting a decrease in similar behaviors in the school environment.

Though the study only covered a single individual and the problem behaviors did not disappear entirely, it did find that there was improvement in the child's behavior in both the home and the school settings. This shows some promise for developing an intervention technique for a child with AS that can result in generalization beyond the intervention environment.

Sansosti and Powell-Smith (2006) also analyzed the use of social stories to improve social behavior in children with AS. Their study was conducted with 3 boys, between the ages of 9 and 11, using different social stories for each to target their own deficiencies. The children and their parents kept journals during the process to allow the investigators to determine whether the social story was being implemented correctly. Initially, baseline data was obtained followed by an intervention stage where the child would read his social story twice a day. Following the intervention phase of the study, the participants were instructed to read the social story less frequently over a period of 2 weeks until the story was not read at all.

The study found notable improvements in 2 of the 3 children with only marginal and inconsistent improvements in the third. The study did not observe the maintenance of the improvements, however there was a drop in the frequency of positive behaviors in each child after the intervention phase. Therefore, while there is an indication of

promising results, it is not generally consistent for all participants, nor was it conclusive that maintenance is possible after this intervention.

Social stories and comic strip conversations were also employed by Rogers and Myles (2001) with a single adolescent boy. They noted changed behavior as a result of this technique. The subject subsequently requested additional explanation from teachers about social situations. While this technique appeared effective, Rogers and Myles admit that additional research is necessary to validate the results. The authors also note the flexibility of this intervention, in that social stories are easily understood by students and adults, and that the social story intervention does not need to be administered in any specific location.

Social Skills Intervention

Social skills intervention provides a method to integrate individual treatments based on strengths and weaknesses and combine these opportunities generally in a group environment where more advanced skills can be practiced. It has also been suggested that including normal children may also allow for additional benefits in the ability to practice in a more natural setting (Attwood, 1998).

Barnhill, Cook, Tebbenkamp, and Myles (2002) conducted a study to evaluate the effectiveness of social skills intervention in targeting nonverbal communication for those with AS and related Pervasive Developmental Disorders. Their study included 8 adolescents: 6 of whom were diagnosed with AS from a physician; one was diagnosed as having Pervasive Developmental Disorder–Not Otherwise Specified; and the other was

considered to have some form of Pervasive Developmental Disorder by their physician but was awaiting a definitive evaluation at the time of the study. Of these participants, 7 were male and 1 was female. Specifically, the study utilized the Diagnostic Analysis of Nonverbal Accuracy 2 (Nowicki, 1997, cited by Barnhill, et. al, 2002) test as a formal assessment instrument to measure pre- and post-intervention abilities to recognize emotions in facial expressions and tone of voice. During the study, participants were introduced to lessons on how to identify and respond to emotional indications from others. These indications included the meanings of various sounds, rates of speech and possible meanings, variations of meanings due to word emphasis, and facial expressions. The intervention was conducted in 1 hour lessons, once a week for 8 weeks. After each lesson, recreational activities lasting 2 or 3 hours were conducted in the community. This opportunity to practice in public was used to reinforce the sensitivity and appropriate responses to nonverbal communication.

The results of the study conducted by Barnhill, et. al (2002) showed no statistically significant differences in the pre- and post-test measures in the ability to recognize emotions in facial expressions and tone of voice. However, the article claimed that, through visual examination of the scores, slight improvement was shown in most of the participants. While there was minimal improvement, the study noted two major positive outcomes of participation in the intervention program: the development and maintenance of social relationships between participants and the ability to read nonverbal communication of others, though not necessarily understand how to act on that information. The first outcome was initially noticed through observation during the intervention. It was reinforced after intervention, where half the participants had

contacted one another to get together indicating development of friendships. The second outcome was noted in continued observation in natural social settings after intervention. Participants appeared to identify facial expressions, but did not know how to appropriately reply. For example, one adolescent was able to recognize that a friend was sad, but not understand how to respond.

Noted limitations to this study include “small sample size, unequal gender distribution and inclusions of adolescents with other autism spectrum disabilities in addition to AS” (Barnhill, et. al, 2002, p. 117). In addition, insufficient time may have been spent developing targeted skills. Also, while improvement was shown during the lessons, not all participants were able to generalize these skills to varied environments outside the social skills group. The outside environments included the activities in the community or further observation in natural social settings.

Another study, focusing on “social adjustment enhancement intervention”, presents itself as social skills intervention. This study, by Solomon, Goodlin-Jones and Anders (2004), was conducted in weekly 1.5 hour sessions over a course of 20 weeks with 18 boys, aged 8 to 12, with prior diagnoses of HFA, AS and Pervasive Developmental Disorder – Not Otherwise Specified. Nine were chosen at random to participate in the intervention group, while the other nine acted as the control group. The curriculum was designed to focus on three areas: emotion recognition and understanding; perspective taking; and real life type problem solving. The group sessions were broken up into two 10 week modules. The first six weeks focused on empathy and respect, and on emotional awareness. This was followed by conversation skills. The second 10 week

module elaborated on friendship and conversation skills as well as group and individual problem solving skills.

The three areas of focus used different measures. To cover facial expression recognition, Solomon, et. al (2004) used the Diagnostic Analysis of Non-Verbal Accuracy-2, Adult Facial Expressions and Child Facial Expressions. Theory of mind was tested using a set of Faux Pas stories with control stories interspersed. Faux Pas stories involve the recognition of social mistakes. Executive functions were tested using the Test of Problem Solving. Specifically, this test involves interpreting a social situation and suggesting solutions to a social problem.

The study found that ability to recognize facial expressions increased significantly more for children in the intervention group than in the control group. It also found improved abilities in problem solving skills. There were no significant improvements in participant ability in perspective taking. Notable issues raised included the possibility that those who respond differently to treatment may possibly viewed as a different subtype of an autism spectrum disorder. Another issue included factors where the control group scores actually dropped from pre- to post-test. Finally, there was no information given on post-test maintenance, therefore no conclusions can be made about how the individual progress would fair in the long-term.

Considerations for Intervention

My own experiences give me insight into ways a person with AS can learn social skills. I've been able to adapt my own choices to provide myself with the best

opportunity to develop my social skills. While my experiences are just that, my own, I have attempted to analyze what I've done on a more general level that might be applied to others in similar situations. This section will focus first on the factors that I believe are necessary in an effective intervention strategy, and then suggest ways to alter current techniques to enhance their effectiveness and relevance. Specific differences in target age groups will also be mentioned since the strategy must vary based on the level of development in the target individual.

Current research appears to be very limited in both scope and depth. Two major intervention techniques have been introduced, both of which have their strengths and weaknesses. The research itself shows promise, but has significant deficits in number of participants and length of study. As a result, it is difficult to generalize any results with any degree of certainty. This is especially true because of the large variation in symptom severity in a disorder like AS. In addition, few studies spend much time evaluating the maintenance of target skills beyond the intervention. Those that include follow-up assessments don't monitor skills long enough to gain any meaningful evaluation of long-term maintenance of learned skills. Additional research is necessary to provide adequate follow-up to determine intervention effectiveness. My own suggestions attempt to build on the strengths of these interventions and provide ideas to strengthen areas of weakness.

Self-Awareness

The development of self-awareness is a critical step in internalizing new methods and ideas, which in turn is important to being able to change the way one perceives their

environment. Once this connection is made, the development and understanding necessary to improve social competence is possible. In my own experiences, I'd made strides in improving my communicative abilities after diagnosis, but at rates that were extremely slow. I had developed my own internal motivation to learn and improve, but because I was using a method of trial and error, I had no focus. As a result, my self-confidence in social situations quickly eroded. As a person of much resilience and patience, I was able to continually return to the social realm, even after continuous failure. However, it wasn't until 7 years after my diagnosis, when I finally fully accepted and acknowledged my diagnosis, that I began to make more progress. Admitting to myself that I had AS was the hardest step, but afterward, I was able to set plausible goals and plan my interactions to allow for improvement in areas where I knew I had deficiencies. With this more direct approach, I was able to focus specifically on altering my social interactions and groups so that I could gain the most from my situation. I removed myself from environments focused on objective involvement and found new activities that involved peer interaction.

Deci and Flaste (1995) in *Why We Do What We Do* spend considerable time discussing the issue of intrinsic vs. extrinsic motivation. The development of motivation through internal factors, primarily an internal desire and curiosity, is referred to as intrinsic motivation. On the other hand, extrinsic motivation involves external factors, including the involvement of rewards and compensation such as money. They also provide ample research to show that those who are driven by intrinsic motivation are far more likely to be active participants, gain positive results, maintain information longer, and actually understand what is presented to them. As a result, it only makes sense that

the first step in developing an intervention technique is to get the participants personally interested in their own development and improvement. A personal acceptance of a diagnosis may also be important to make the intervention seems relevant for the individual. The understanding of where one's own problems lie and an interest in solving them provide strong motivation for an individual to become an active and able participant in strategies for their own improvement.

Granted, if one is developing an intervention technique for young children, expecting detailed awareness of their problems is not developmentally appropriate. However, even these young children will realize they are different. By encouraging interest in their own improvement, if only to allow them to perceive themselves as more competent with their classmates and friends, these children will have a personal reason to try to change their behavior.

I believe the individual's awareness of their problem and the resulting interest in improvement influence the amount of progress he or she can make in adapting his or her own behaviors. By providing only external controls, and thus extrinsic motivation, the task of intervention becomes much more difficult. Indeed, once individuals are truly interested in changing their own situation, they are intrinsically motivated to improve themselves and can optimally benefit from an intervention program.

Social Norms

Once self-awareness has been established, a logical step in preparing an intervention technique is to provide ample background information about social situations

so that the individual can increase their likelihood of success. By introducing the concepts of appropriate social actions in various situations, or social norms, an intervention may provide a basis for understanding why certain actions are looked upon with favor or disgust at a given time.

Social norms will be understood in varying degrees by different individuals. In the Social Characteristics chapter, I mentioned an example of a child who attempted to get his mom's attention by addressing her with "Hey, you". Obviously this child did not understand the social norms relating to addressing his elders in public. By providing this individual with reasons why this is perceived as inappropriate, we can provide him with the knowledge necessary to change his own behavior when he recognizes similar circumstances. The situation does not need to be examined with such specificity that the child will associate the behavior with a single situation; in fact, it is better that we provide for generalization and teach the child how to recognize varied circumstances where the appropriate behavior has changed. If we were to examine this situation in specific detail, we would teach the child that he should address his mother as "mom" instead of "you" when she is with her friends. Instead, it would be better to introduce the idea as a more general subject of using formal address in different social situations. This allows the child to understand that there are more situations that require the use of formal addressing and that his mother is not the only person to which this social norm would apply. To present this information, an examination of social scripts and context is necessary.

Understanding Social Scripts and Social Context

In order to properly understand social norms, an understanding of social scripts and how to decipher varied social contexts is necessary. By learning base scripts, an individual can gain a fundamental understanding of appropriate responses in given situations. The identification of cues identifying specific contexts where the script would be appropriate then allows an individual to understand where those scripts can be applied. Base scripts alone are not sufficient as the social context is never truly identical. Instruction on how to adapt social scripts in response to recognition of changes in social context is essential to an individual's ability to properly function in the real social world. Each of these steps will be examined in more depth in this section.

While all social situations are inherently different, many share subtle similarities. By recognizing these similarities, an individual attempting to master social skills can learn to apply social scripts, varying them as necessary, to become a competent participant.

Base social scripts provide a set of appropriate responses to a given social situation that an individual can follow. Ideally, these scripts are more universal than specific; that is, they apply to more than a single social situation. For example, a base social script may be the introduction of the concept of addressing your elders with a sense of formality since this is a demonstration of respect. This base script reinforces a social norm and provides appropriate actions for a given situation. In this case, the elder may be a person's mother, their teacher, an older family friend, etc. For those with AS, the reasons behind the base script should also be explained so they understand not only the

appropriate actions for the situation, but also why those actions are considered appropriate. This might be integrated into a social story as follows:

My mom and I like to walk in the park. When we meet up with her friends, I address her as “Mom”. By using “Mom”, I acknowledge that she is an adult. This form of address shows proper respect for my elders. In general, society has deemed it appropriate to show respect for your elders. Therefore, addressing my mom as “Mom”, a societal formality, is the respectful and appropriate way to communicate. I should also address other adults, such as my teachers, family friends, etc. with this same level of respect. When addressing adults, the right thing to do is use a title and the adult’s last name. For example, a neighbor named Bob Johnson should be addressed as Mr. Johnson. By properly addressing adults, I avoid embarrassing or indicating a lack of respect for the individual I’m attempting to talk to.

By providing instruction on the appropriate action, reasons behind why that action is appropriate, and even hinting at how this could be applied in other similar situations, this social story is an example of a way we can teach a base script to an individual. While modifying this interaction for other situations is better considered an adaptation of social scripts, which will be discussed a little later, providing an explanation without limiting the choices is a good way to introduce desired behaviors.

In addition to knowing the base script, it is also necessary to understand how context affects appropriate use of the script. Without being able to understand context, application of social scripts in the real world is nearly impossible. Learning how to recognize context, however, is no trivial matter. Many people learn it automatically during normal development. Unfortunately, as a part of their general deficiency in social competence, those with AS appear to have difficulties understanding and recognizing differences in context. This may be, in part, due to their inability to read and interpret

body language and infer the thoughts of others, directly limiting their ability to properly understand their current social situation (Attwood, 1998).

The problem with context is the extremely amount of variability and the fact that differences between contexts may be very subtle. For the purposes of demonstrating this concept, however, a simple example should be sufficient. The example of the child and his mother is an appropriate one. The context, as originally introduced, is a social situation in public with his mother and her friends. In this case, knowing where you are and who you are with are the relevant points. This context may change with different people involved, such as spending time with a grandparent or older family friend, but that same social script for formal addressing applies. Thus, not all changes in context require changes in the scripted behavior. As a result, it is important that intervention techniques teach how individual scripts can apply in various situations.

Another example of context is illustrated by behavioral norms in a library. The Oregon State University Valley Library has both quiet areas and normal library areas. It is generally understood that a library is a more quiet area than other locations. This understanding is implied through other people's actions, generating a context and script for appropriate behaviors when in the library. The quiet areas of the library ask for even more respect in being very quiet to allow others to work without disruption. Understanding that the context has changed, simply by entering another area of the library, is important to understanding which social script needs to be applied and in what form. Simple application of base social scripts begins to become inadequate as an individual moves away from static environments and situations to the dynamic realm of social interaction. As a result, learning to adapt social scripts becomes more complex.

In the library example, the appropriate action after recognizing the context change into a more quiet area is as simple as applying a new social script. However, in most social interactions, it is not that simple. The variability of social interaction is so great it is safe to say that it is essentially impossible to encounter the same social situation twice in a lifetime. There may be similarities, but they involve different people, places, subjects and locations. Each of these provides some level of change, where adaptation of a learned social script becomes necessary to achieve a minimal level of competence in a situation.

Adaptation of social scripts requires a combination of many skills, including demonstration of empathy with the application of the scripts. By recognizing changes in context, an individual can modify their behavior to be appropriate for the given circumstance. For example, consider a casual, friendly conversation where the speaker accidentally said something hurtful. The context has changed. What was a relaxed conversation is now one where the speaker should re-evaluate what was just said and perhaps re-communicate it in a way that is not hurtful along with adding an apology. Recognition that the comment was hurtful requires noticing a change in facial expression and body language. Once that was processed, it will become obvious the context has changed and different action is required. A modification of an apology script is needed for this unique situation based on what was said and who the other individual is. Thus, the adaptation of scripts and combination of other skills becomes essential to demonstrating social competence.

Normally functioning individuals automatically recognize changes in context, so it becomes imperative that those with AS learn how to actively monitor situations and

apply adapted scripts. This is not an easy task. Especially early in learning, those with AS may have to extend considerable effort to recognize changes in situations and think of ways to change their behavior. Where normal individuals may be able to regulate their interactions in the span of no more than a few seconds, it may take those with AS considerably longer, especially when just beginning to learn these skills. Obviously, this creates an impression of social awkwardness, but persistent practice will allow those individuals to become more efficient at recognizing context and applying appropriately modified social scripts.

While the adaptation of social scripts is a complicated, even advanced, step, there is hope that those with AS can develop the skills necessary to apply their knowledge in order to become more socially competent. To gain skill in this area, practice is necessary; however, practice may be better achieved in some social situations than in others.

Environments for Social Learning

In order to practice the skills necessary to develop social competence, an individual must have an environment that is conducive to this learning. Before introducing some activities that were important in my own development, my experience suggests a few key points are important.

First, in choosing a set of activities for an individual, it is imperative that motivational factors are considered. An individual with AS will see far more success by getting involved in activities where they are actually interested in their own participation.

Intrinsic motivation, or an internal desire to do something, will lead to better results than a similar situation driven by external rewards. Therefore, if an individual actually wants to participate in an activity, he or she will be more likely to participate with high frequency, and thus get more practice, than if he or she were simply told to participate.

Second, although any activity could be chosen, better results might be achieved by choosing at least one activity that addresses aspects of nonverbal communication. If an individual desires to obtain competence in an activity which requires an understanding of nonverbal communication, it is likely he or she will begin to learn the subtle differences necessary to enhance their own competence.

Finally, an activity should also be chosen that provides opportunity to develop verbal communication skills. By participating in an activity of interest that provides practice in verbal communication, it is more likely that an individual with AS will begin to develop a stronger sense of competence.

In my own experience, I began involvement in a few activities that cover these points: ballroom dance, homework sessions, and dating. Ballroom dance became a personal love after taking an introductory course. Homework sessions were a means of utilizing group efforts to complete stressful assignments while gaining a better understanding of course material. Dating, as a natural progression through adolescence and early adulthood, became a method for me to learn communication skills and begin to prepare myself for additional life choices. I chose each of the activities in order to get involved. I started and maintained my involvement of my own volition, and believe that I have gained a great deal because of my participation.

After starting a beginning ballroom dance class in the fall of 2003, I became highly interested in dance, and desired to become better. The most important aspect of dance, aside from the safety of participants, is the understanding that it is a form of communication, primarily nonverbal, between partners to form an exciting experience. As a result, this activity is actually a form of experience-sharing where each partner has a role in affecting the outcome. As a male, I was instructed as a lead because this is the norm in social dance. I learned to provide a frame through my body and use that frame to lead my dance partner. This experience directly taught me how my actions and reactions affect my partner in a form of nonverbal communication. Through many hours of practice, I finally learned more about the subtleties of lead and follow. These subtleties allowed me to progress from a very hesitant and light lead to one of more clarity. In fact, I now get positive comments on my ability to lead. Learning how to follow a lead requires similar nonverbal communication skills, so ballroom dance could be a good learning situation for females as well as males.

All of the activities mentioned involved some level of verbal communication. Ballroom dance provided a social group, expanding my interactions beyond the dance floor to form strong friendships. Homework sessions also evolved into friendships as we spent considerable amounts of time together in and out of class. However, dating has proved the most difficult of all the activities in attempting to develop social skills.

By providing a more intimate level of interaction than casual friendships, dating required me to focus on other subtle means of nonverbal communication, as well as understanding multiple meanings of a statement and devising appropriate responses. Prior to this experience, I never would have understood what was meant by a “weighted

question”, where a person asks what appears to be a simple question on the surface, but actually has great emotional significance. Formulating an appropriately worded response is critical to properly conveying your own ideas and not upsetting the other person. This set of attempts to understand the dating world allowed me to further develop my social skills and understanding in varied social environments. The ability to understand different social environments, how they vary, and appropriate responses in those different contexts are absolutely critical to being able to become socially competent.

Suggestions for Modified Intervention Techniques

Each of the intervention techniques mentioned have their benefits and their drawbacks. Many of the benefits were mentioned in the initial analysis, however, I feel it is important to note where I see deficiencies and then provide suggestions on how the techniques may be modified to attempt to correct the deficiencies.

Both social story and social skills interventions require a lot of work, especially because the methods need at least some form of individualization to be most effective. Another problem plaguing both styles of intervention is their limited success in the ability of participants to generalize learned skills to other environments. While the social story study conducted by Adams, et. al (2004) mentions generalization to the classroom, the homework and classroom environments are very similar because school work situations will follow the same set of rules regardless of the location. It is not clear that these same techniques can lead to generalization in variable social environments, where those with AS have the most difficulty.

Social story and social skill interventions also appear to use suggestions that don't provide enough explanation as to why they should be followed. Granted, in many circumstances the reason is because it's a generally accepted social practice, but such situations may not be the most valuable focus of intervention. The participants in an intervention should not only have a cognitive understanding of why the suggested behavior is the correct thing to do, but more importantly, why they should want to internalize this rule structure. The concept of internalization and autonomous functioning beyond an intervention environment is perhaps better directed towards older subjects – from adolescence on. The older subjects would be better suited to develop the necessary intrinsic motivation to consciously monitor their behavior to allow for better generalization. However, younger subjects can also develop intrinsic motivation, but the focus of intervention should be different to take into account the developmental differences. With the correct focus the intervention technique would then act as a catalyst for development of internal strategies for improvement that would persist in everyday interactions.

Barnhill, et. al (2002) noted that, beyond understanding nonverbal communication, those with various Pervasive Developmental Disorders will need general scripts that they can use to guide behavior in specific social situations. While I agree that base scripts are necessary, a major limitation for those with AS is in being able to understand the differences in social situations and how to manipulate the scripts to be appropriate as the contexts change. Since social environments are never identical, simply providing a set of scripts without focusing on instructing how to understand the situation for those scripts and how both the situation and the reaction may vary will not actually

accomplish the intended goal. Barnhill, et. al's data indicated that skill improvements within the training environment were stronger than the generalization to other settings.

My personal experience suggests ways to modify the approaches so that they may be more effective and certainly have a better chance of being generalized to other situations. Surprisingly, neither intervention provides explanations of the reasons for the development of new skills. Considering that those with AS tend to have a more literal interpretation of language and a relatively poor understanding of social contexts, the lack of explanation appears to be an important oversight. Along these same lines, the techniques presented are heavily centered on a specific context or situation and provide little instruction of how the same skills can apply in other situations. More importantly, no mention was made of training on how to adapt the skills to slightly different situations. The focus of intervention seems to spend far too much time introducing a very specialized tool without providing sufficient instruction on how that tool can be used in the given context, let alone how that tool can be utilized and adapted for different contexts. Current intervention techniques are based on the correct ideas of introducing basic skills and providing social practice for generalization in a more natural setting, but obviously additional considerations need to be in place to enhance their effectiveness.

Various articles mention that people with AS tend to focus on their interest areas instead of practicing social skills by socializing and learning from their peers. This disparity grows over time, causing them to fall further and further behind their age mates. Earlier interventions may improve the outcomes by encouraging the practice of social skills when the disparities are smaller. This provides an argument for beginning with intervention techniques that are simple to understand, such as social story intervention.

However, it should be noted that it is still extremely important to find ways to teach the participant reasons why the changes requested by intervention are important for them in their everyday interactions. Interventions will be more effective when the person is intrinsically motivated to change their situation. Simply introducing new rules without providing personal reasons why they should be followed is not sufficient for the most successful behavior change.

By focusing on specific deficiencies, an intervention technique can direct instruction effectively. Indeed, current intervention techniques appear to be properly focused. Emphasizing reasons behind basic skills will allow the initial components of the intervention to be more effective. Once the basics have been mastered, more advanced forms of skills can be taught. These advanced skills can emphasize how to recognize changes in context and understanding how to effectively adapt social scripts accordingly. All of these steps will require considerable practice.

Because individuals with AS often avoid social interaction, it will be important to encourage them to practice newly learned skills in real social interactions. Patience, then, also becomes a key skill because failure, even for normally functioning individuals, is an inevitable occurrence during attempted social interactions. By combining patience and frequent repetition, an individual with AS can reinforce learned skills to the extent that he or she may be able to comfortably adapt scripts on their own. However, this skill may take years of practice to develop, and some individuals will require more assistance than others.

I have personally seen the benefits from repetition in the development of social competence. I have found it most effective to focus on a single skill or set of similar

skills. For individuals that have not yet figured out how to evaluate their own deficiencies, intervention techniques that take into account the suggested considerations can provide a starting point to learn how to develop at least a minimal level of social competence. Properly introducing self-awareness provides the target individual with the ability to develop intrinsic motivation to affect his or her situation, increasing the likelihood that skills may be generalized more effectively. By also understanding social norms and context, an individual can take basic scripts to develop rudimentary social skills. With sufficient practice, more advanced skills, including recognition of context changes and corresponding adaptation of scripts, can be learned and mastered. Therefore, by adapting current intervention techniques to incorporate my suggested changes, individuals may be better poised to gain competence in basic social skills. With additional practice coupled with the patience to persist in spite of inevitable failures, an individual with AS has the potential to develop social skills necessary to demonstrate a more normal level of social competence.

REFERENCES

- Adams, L., Gouvousis, A., VanLue, M. and Waldron, C. (2004), Social story intervention: improving communication skills in a child with an autism spectrum disorder, *Focus on Autism and Other Developmental Disabilities*, 19 (2), 87-94.
- American Psychiatric Association (1994), *Diagnostic and Statistical Manual of Mental Disorders, 4th ed.*, Washington, DC: American Psychiatric Association.
- Attwood, T. (1998), *Asperger's Syndrome: A Guide for Parents and Professionals*, Philadelphia: Jessica Kingsley Publishers.
- Barnhill, G. P. (2001), Social attributions and depression in adolescents with asperger syndrome, *Focus on Autism and Other Developmental Disabilities*, 16 (1), 46-53.
- Barnhill, G., Cook, K., Tebbenkamp, K. and Myles, B. S. (2002), The effectiveness of social skills intervention targeting nonverbal communication for adolescents with asperger syndrome and related pervasive developmental delays, *Focus on Autism and Other Developmental Disabilities*, 17 (2), 112-118.
- Baron-Cohen, S. and Wheelwright, S. (2004), The empathy quotient: An investigation of adults with asperger syndrome or high functioning autism, and normal sex differences, *Journal of Autism and Developmental Disorders*, 34 (2), 163-175.
- Carrington, S., Templeton, E. and Papinczak, T. (2003), Adolescents with asperger syndrome and perceptions of friendship, *Focus on Autism and Other Developmental Disabilities*, 18 (4), 211-218.
- Connolly, J., Furman, W. and Konarski, R., The role of peers in the emergence of heterosexual romantic relationships in adolescence, *Child Development*, 71 (5), 1395-1408.
- Deci, E. L. and Flaste, R. (1995), *Why We Do What We Do*, New York: Penguin Books.
- Denscombe, M. (2001), Peer group pressure, young people and smoking: New developments and policy implications, *Drugs: education, prevention, and policy*, 8 (1), 7-32.
- Freeman, B. J., Cronin, P. and Candela, P. (2002), Asperger syndrome or autistic disorder? The diagnostic dilemma, *Focus on Autism and Other Developmental Disabilities*, 17 (3), 145-151.

- Ghaziuddin, M. (2002), Asperger syndrome: associated psychiatric and medical conditions, *Focus on Autism and Other Developmental Disabilities*, 17 (3), 138-144.
- Gutstein, S. E. and Whitney, T. (2002), Asperger syndrome and the development of social competence, *Focus on Autism and Other Developmental Disabilities*, 17 (3), 161-171.
- Lawson, J., Baron-Cohen, S. and Wheelwright, S. (2004), Empathising and systemising in adults with and without asperger syndrome, *Journal of Autism and Developmental Disorders*, 34 (3), 301-310.
- Myles, B. S. and Simpson, R. L. (2002), Asperger syndrome: An overview of characteristics, *Focus on Autism and Other Developmental Disabilities*, 17 (3), 132-137.
- Rogers, M. F. and Myles, B. S. (2001), Using social stories and comic strip conversations to interpret social situations for an adolescent with asperger syndrome, *Intervention in School and Clinic*, 38 (5), 310-313.
- Sansosti, F. J. and Powell-Smith, K. A. (2006), Using social stories to improve the social behavior of children with asperger syndrome, *Journal of Positive Behavior Interventions*, 8 (1), 43-57.
- Solomon, M., Goodlin-Jones, B. L. and Anders, T. F. (2004), A social adjustment enhancement intervention for high functioning autism, asperger's syndrome, and pervasive developmental disorder NOS, *Journal of Autism and Developmental Disorders*, 34 (6), 649-668.
- Ungar, M. T. (2000), The myth of peer pressure, *Adolescence*, 35 (137), 167-180.
- Volkmar, F. R., Lord, C., Bailey, A., Schultz, R. T. and Klin, A. (2004), Autism and pervasive developmental disorders, *Journal of Child Psychology and Psychiatry*, 45 (1), 135-170.
- World Health Organization (1993), *The ICD-10 Classification of Mental and Behavioral Disorders: Diagnostic criteria for research*, Geneva: World Health Organization.

APPENDIX – DIAGNOSTIC CRITERIA

*Table I - Asperger's Syndrome in the World Health Organization's
International Classification of Diseases 10th Edition (1993)*

- A. There is no clinically significant general delay in spoken or receptive language or cognitive development. Diagnosis requires that single words should have developed by 2 years of age or earlier and that communicative phrases be used by 3 years of age or earlier. Self-help skills, adaptive behaviour, and curiosity about the environment during the first 3 years should be at a level consistent with normal intellectual development. However, motor milestones may be somewhat delayed and motor clumsiness is usual (although not a necessary diagnostic feature). Isolated special skills, often related to abnormal preoccupations, are common, but are not required for diagnosis.
- B Qualitative abnormalities in reciprocal social interaction are manifest in at least two of the following areas:
- (a) failure adequately to use eye-to-eye gaze, facial express, body posture, and gesture to regulate social interaction;
 - (b) failure to develop (in a manner appropriate to mental age, and despite ample opportunities) peer relationships that involve a mutual sharing of interests, activities and emotions;

- (c) lack of socio-emotional reciprocity as shown by an impairment or deviant response to other people's emotions; or a lack of modulation of behaviour according to social context; or a weak integration of social, emotional and communicative behaviours;
 - (d) lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g. a lack of showing, bringing, or pointing out to other people objects of interest to the individual).
- C. The individual exhibits an unusually intense, circumscribed interest or restricted, repetitive and stereotyped patterns of behaviour, interests, and activities manifest in at least one of the following areas:
- (a) an encompassing preoccupation with stereotyped and restricted patterns of interest that are abnormal in content or focus; or one or more interests that are abnormal in their intensity and circumscribed nature though not in the content or focus;
 - (b) apparently compulsive adherence to specific, non-functional routines or rituals;
 - (c) stereotyped and repetitive motor mannerisms that involve either hand/finger flapping or twisting, or complex whole body movements;

- (d) preoccupation with part-objects or non-functional elements of play materials (such as their colour, the feel of their surface, or the noise/vibration that they generate);

However it would be less usual for these to include either motor mannerisms or preoccupations with part-objects or non-functional elements of play materials.

- D. The disorder is not attributable to the other varieties of pervasive developmental disorder: simple schizophrenia, schizo-typal disorder, obsessive-compulsive disorder, anankastic personality disorder, reactive and disinhibited attachment disorders of childhood.

Table II – Asperger’s Syndrome in the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders 4th Edition (1994)

- A. Qualitative impairment in social interaction, as manifested by at least two of the following:
- (1) marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial express, body postures, and gestures to regulate social interaction
 - (2) failure to develop peer relationships appropriate to developmental level
 - (3) a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing or pointing out objects of interest to pother people)
 - (4) lack of social or emotional reciprocity
- B. Restricted repetitive and stereotyped patterns of behavior, interests and activities, as manifested by at least one of the following:
- (1) encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus

- (2) apparently inflexible adherence to specific, nonfunctional routines or ritual
 - (3) stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)
 - (4) persistent preoccupation with parts or objects
- C. The disturbance causes clinically significant impairment in social, occupational, or other important areas of functioning.
- D. There is no clinically significant general delay in language (e.g. single words used by age 2 years, communicative phrases used by age 3 years).
- E. There is no clinically significant delay in cognitive development or in the development of age-appropriate self-help skills, adaptive behavior (other than in social interaction), and curiosity about the environment in childhood.
- F. Criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia.