

How to Identify Students with High-Functioning Autism

by

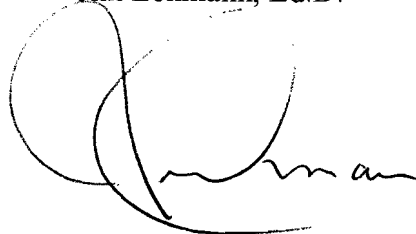
Tammy Berdeaux

A Research Review
Submitted in Partial Fulfillment of the
Requirements for the

Master of Science Degree
in
Education

Approved: 2 Semester Credits

Jim Lehmann, Ed.D.

A handwritten signature in black ink, appearing to read "Jim Lehmann", with a date "2/4/08" written to its right.

The Graduate School

University of Wisconsin-Stout

February 4th, 2008

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ABSTRACT

This paper reviews past and contemporary conceptualizations of High Functioning Autism (HFA) as being different from Asperger's syndrome (AS) disorder. Primarily areas published over the past 15- years includes: social communication, social skills, neurobehavioral skills, sensory characteristics, sensorimotor integration, neurocognitive aspects, and co-morbidity, treatment and intervention studies. Most HFA's are labeled with AS due primarily to the American Psychiatric Association's "Pervasive developmental disorders" diagnostic and statistical manual of mental disorders (DSM-IV-TR) standards, which does not have a separate category for HFA. Diagnostic criteria for AS and the lack of diagnostic criteria for HFA as a separate condition creates definitional and boundary issues and is a major research concern to this researcher.

Studies focusing on descriptions and specific social deficits in HFA dominate the literature of the past 5 to 10 years. A promising area of research, but with almost a total lack of information, are the various human genomes decoding projects appearing in current research. The search for genetic pathways to HFA seems to be the new move toward research. The review of a

growing body of scientific and medical information, genetic, and neuro-behavioral evidence seems to distinguish high functioning autism from Asperger's Syndrome, also. With current and expanding research in HFA and AS it is too early to rule out the possibility that these disorders may be clinically, and possibly neurobiologically separate. Finally, based on this research of papers, there is a clear need to develop better understanding for families raising children with HFA.

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Chapter I: Introduction

The research objective is to develop an overview of High functioning autism (HFA) as an educational disorder separate from Asperger syndrome (AS). High functioning autism is the condition of students who are able to function close to or above a normal level in society. HFA is sometimes identified as synonymous with AS, however this is a misuse of the term. The difference is, for AS there is no linguistic delay to understand and use language both written and spoken. However, there is a delay in HFA, although most children will develop enough language even after the delay to function (Baron-Cohen et al, 1985). The research should result in a working HFA key component list to consider if a child needs further evaluation for autism eligibility criteria for special education or related services.

Some research suggests that the basic neuropsychological insufficiency is different for the two conditions, but others are uncertain that any meaningful distinction can be made between them. This researcher will distinguish HFA as different based on the proposition that there is linguistic delay for HFA.

Many high-functioning autistic students are not diagnosed until later in their educational process, largely due to being misdiagnosed with AS, rather than sooner for more effective intervention. Some essential characteristics for assessing HFA students are communication skills, sensorimotor integration, social behavior, neurobehavioral and sensory information. The manifestation of these essential characteristics emerge in their sense of vision, hearing, touch, movement, taste, and smell which are often poorly integrated due to oversensitivity or under reactivity to;

1. touch, movement, sights, or sounds;
2. physical clumsiness or carelessness and poor body awareness;

3. a tendency to be easily distracted with impulsive physical or verbal behavior;
4. an activity level that is unusually high or low and not unwinding or calming oneself;
5. difficulty learning new movements; difficulty in making transitions from one situation to another; social and/or emotional problems;
6. Delays in speech, language or motor skills; specific learning difficulties/delays in academic achievement.

Such lack of integration often affects behavior, academic performance, functional self-help skills, and school performance. Teachers and other staff need to have an understanding of HFA because many students are being allowed to “slip” through the system undiagnosed and not receiving needed services. The importance of identifying and servicing students as early in their educational program, as possible, is because most cases of HFA are diagnosed at approximately age seven or later, rather than before they start school (Gillberg, 1998). For eligibility criteria, special education and related services, the primary targets are the classroom teacher delivering services and parents of children with HFA. The secondary audience is school staff, and administration.

Statement of the Problem

There are a number of issues to address the problem of identification of children with HFA. A major issue is to investigate how to identify students with high-functioning autism for the classroom teacher and parent, and to determine the characteristics that make HFA a separate category classification from AS, hopefully prior to school attendance.

Purpose of the Study

The purpose is to develop an overview of high-functioning autism as an educational disorder. The result is to be a working key component list to consider when deciding if a child needs further evaluation for autism eligibility criteria for special education and related services. The key purpose is that students are identified at an early age and start the necessary services.

Assumptions of the Study

This study assumes that the nature of the problem is many high-functioning autistic students are not diagnosed until later in their educational setting rather than sooner for more effective intervention. During the search of the academic literature and clinical studies, there emerged a debate as to whether high-functioning autism is a unique disorder. The question for this researcher becomes, does HFA have its own profile of abilities that does not occur in any other type or form of autism with a higher intelligent quotient? That question is the basic assumption of high-functioning autism as a unique disorder within the range of disorders known as Pervasive Developmental Disorders (PDD) or Autistic Spectrum Disorders (Simpson & Zions, 1999).

New studies suggest brain overgrowth in 1-year-olds is linked to the development of autism. In a recent study, with lead researcher Piven (ACNP, 2007), observed a link between post-natal behavioral symptoms and brain overgrowth in the latter part of an infant's first year. The conclusion on brain overgrowth is it may contribute to the onset of autistic characteristics, according to research presented December 11, 2007 at the American College of Neuropsychopharmacology (ACNP, 2007) annual meeting. These findings support concurrent research which has found brain overgrowth in autistic children as young as two years old. This discovery is important because during normal brain development, neuronal connections are

eliminated by a process called “pruning.” This “pruning” process improves normal brain connections and increases the efficiency of the remaining connections in the brain. Piven (ACNP, 2007) suggested one possibility, that there is less pruning in children with autism and therefore, their brains become larger than in children without autism. Previous studies of both brain development using magnetic resonance imaging (MRI), e.g., method used to study the connections growth, and behavioral development have not been conducted in children this young and at risk for an autism spectrum disorder. His study suggests important new information on brain changes in infancy is associated with the development of autistic symptoms. But, this is not without controversy due to a debate as to whether high-functioning autism is a unique disorder.

Definition of Terms

Asperger Syndrome (AS): One of five neurobiological pervasive developmental disorders (PDD) that are characterized by deficiencies in social and communication skills.

Autism: A developmental disability and a neurophysiological disorder and usually diagnosed through observed characteristics and social behaviors.

Capacity for Joint Attention: The difficulty coordinating attention between people and objects.

Capacity for Symbol Use: The difficulty learning conventional or shared meanings for symbols and is evident in acquiring gestures, words, imitation, and play.

Communication Skill: The verbal and nonverbal communication needs of the child.

Comparative Analysis: A method of logical comparison of research cases as a combination of causal and outcome conditions. These combinations can be compared with each other and then logically simplified through a bottom-up process of paired comparison.

Effective Practice: Any valid procedure supporting learning growth in students with autism. May or may not be researched-based.

Executive Function: A term for functions such as planning, working memory, impulse control, inhibition and mental flexibility, as well as for the initiation and monitoring of action.

High-Functioning Autism (HFA): The condition of individuals who display some symptoms of autism but who are able to function close to or above a normal level in society.

Inductive Research: The process of inducing a feeling, idea, or state resulting in logical generalizations to produce a universal claim or principle.

Linguistics: The study of the nature, structure, and variation of language, including phonetics, phonology, morphology, syntax, semantics, sociolinguistics, and pragmatics.

Linguistic Ability: The ability of a person to learn a language and construct a system of rules and principles and to understand and use language both written and spoken.

Meta-cognitive: Self-regulatory activities of control processes under the learner's direction such as knowledge of your own thoughts and the factors that influence your thinking.

Neurobiologically: Has to do with the neural networks processing language in early childhood as comparing HFA and AS. HFA is a neurobiologically based disorder.

Neuropsychological (Neuropsychology): The branch of psychology that deals with the relationship between the nervous system, especially the brain, and cerebral or mental functions such as language, memory, and perception.

Pervasive Developmental Disorder: The umbrella category under which autism falls in the Diagnostic and Statistical Manual (DSM-IV).

Pragmatics: The ability of people to comprehend and produce a communicative act or speech act in a concrete speech situation which is usually a conversation.

Quantitative Research: A type of research relying primarily on the collection of quantitative data (i.e., numerical data), (Online Survey Glossary, 2005).

Qualitative research: A continual interplay between theory and analysis of quantitative research and other qualitative research.

Sensorimotor Integration: A process, by which the nervous system receives, organizes filters and integrates sensory and motor information in order to make an appropriate response.

Social Communication: The ability to display a greater capacity to both *initiate* and *follow* the conversational focus of a social partner are more competent social communicators (Marans, Rubin & Laurent, 2005).

Social Skills: These are skills a person uses to interact and communicate with others to assist status in the social structure and for other motivations.

Limitations of the Study

Research of the literature reveals limitations of the diagnostic systems currently in use, which complicates the process to identify those in need of specialized services. It remains important to address the symptoms currently presented by individuals in need of services.

Methodology

This study investigates how to identify students with high-functioning autism for the classroom teacher and parent(s). A qualitative review of the literature has been compiled to determine the types of characteristics which HFA exhibit and intervention techniques and methods working with children with HFA being used in community settings.

Chapter II: Literature Review

There is a question in the academic literature and some clinical studies, as to whether HFA is a unique disorder with its own profile of abilities that does not occur in any other syndrome or rather a form of autism with a higher intelligent quotient. This research addresses this question and refers to five categories for literature reviews in relation to profile of abilities, they are; (a) communication, (b) social skills, (c) behavioral skills, (d) sensory information, and (e) sensorimotor integration. To separate high-functioning autism into a separate autistic category there needs to be profile differences of HFA abilities compared to other forms of autism. One example for the linguistic ability or level of competence a significant speech delay characteristic is found for HFA and its affect on communications skills.

Communication and Social Skills

Social communication skills or lack thereof play a major role in our success or inability to form those relationships that allow us to function happily and effectively in the communities within which we live according to Marans, Rubin, and Laurent (2005). One underlying theme, from the research, that differentiates High Function Autism (HFA) from Asperger's Syndrome (AS) is children with HFA have a linguistic delay resulting in a major communication difficulty in the child's early years. A basic challenge for HFA is the capacity for joint attention and the capacity for symbol use. Symbol use can enable the child to communicate using increasingly sophisticated nonverbal communicative forms that have a "shared meaning" enabling the child to represent social events through symbolic play, role play, or narrative discourse. For the HFA child, early language and cognitive development are delayed or marked by an uneven growth profile (NRC, 2001). A good example is that HFA child's speech is often monotonous with a limited range of intonation and they are sometimes described as passive communicators. In

addition, these children have a reduced rate of spontaneous communication resulting in their difficulty to establish joint attention focus related to gestures, faces, and prosody, for the diversity of communication, language, and speech profiles of HFA children.

For the HFA child there is a reduced rate of spontaneously initiated communication due to the difficulty of establishing joint attention focus orienting and responding to offers for interactions from others. Fluency is often reported as “jerky” (Klin et al, 1995). This is the primary difference from AS because language and cognitive development seem to be intact in the early years for Asperger’s children. This intactness becomes evident for HFA when looking over the nonverbal IQ research. Drawing some conclusions from this research, it seems to be higher than verbal IQ in profiles of HFA groups of children. Comparing groups of AS children it shows a reverse profile with verbal IQ, which is higher than nonverbal IQ showing the differences between HFA and AS to be language acquisition related (Joseph et al, 2002; Klin et al, 1995). As a child progresses towards the use of increasingly sophisticated language, they need to develop an awareness of the conventions of appropriate social and communicative behavior across settings such as expressing emotions, organization, and planning for stressful events (Prizant et al., 2002).

Because of the nonverbal and verbal IQ’s in profiles of children with HFA or AS, it is essential to characterize the extent and nature of skills in joint attention and symbol use because of the implications for HFA language outcomes. According to research by Venter, Lord, and Schopler (1992), “the presence of fluent speech, defined as using multiword combinations spontaneously, communicatively, and regularly, before the age of five continues to be a good prognostic indicator of IQ, language measures, adaptive skills, and later academic achievement in adolescence” (p. 13). Therefore, from this research, there is a strong implication for the

necessity for early diagnoses and intervention for difficulties with communication skills.

Communication difficulties deny the student with HFA the opportunity to be a part of the literate community. In contemporary society an individual is considered part of the literate community if the student can perform at an age appropriate pace. Performing at an age appropriate pace is assumed to be a cognitively based conformity, to the expressive and perceptive language and communication (Kliewer, 1998). But, there can be a range of difficulties in expressive and perceptive language and communication.

In the range of HFA difficulties, expressed speech can have some unusual qualities with limited communicative function. Some HFA children, for example, may be low-verbal while others may have extensive language with a lack of skills in the area for pragmatics.

Communication skills also reflect certain behavioral manifestations of an inability to understand that others have beliefs, intentions, thoughts, and points of view that can be different from that of the child with HFA. An inability to understand others' mental states is sometimes referred to as Theory of Mind, a specific cognitive capacity characteristic common for students with HFA due to communications skills based partly on a delay in linguistic ability (Baron-Cohen, 1985).

Linguistic Ability

Linguistic ability is sensitivity to the meaning of words and the different functions of language; particularly a significant speech delay is defined in the Diagnostic and Statistical Manual-Fourth Edition as the separating characteristic between Asperger's syndrome with no delay, and other autistic disorders. This research uses this same characteristic to separate HFA into a separate autistic category. High-functioning autism is not sanctioned, as a separate category like Asperger's syndrome and other autistic disorders, by the American Psychiatric Association. But for the purposes of this inquiry, HFA is being classified as a separate category

because the child is delayed in developing the ability to make his or her needs known (see High Functioning Check List, Appendix A). An additional characteristic of a communication difficulty, related more to HFA and relatively easy to identify, is the child showing relatively little interest in what social groups are doing, or being a part of it (Lord, 1984). This behavior is manifested by the child's tendency to follow their own desires and beliefs rather than paying attention to, or being easily influenced by others' desires and beliefs (Baron- Cohen, Leslie & Frith, 1992). The child's view of what is relevant and important in a situation may not coincide with others, an important consideration for intervention techniques (Frith, 1992).

Individuals with HFA lack a theory of mind and this can be responsible for their "unawareness" of the feelings and intentions of others around them and having a propensity to talk about their own needs. The lack of theory of mind creates difficulties in the ability of the child to understand appropriate communications and this has an influence on their interactive behavior. They seem to have no basic understanding to the purpose of communication, besides conveying their own will when they want something. A lack of theory of mind seems to be responsible for the inability of a child with HFA to express their thoughts and emotions to others and having the ability to understand and predict others behavior (Buitelaar & van der Wees, 1997). What is important, as noted by Michael Powers (2000) in his book on autism, is high functioning children can be taught to communicate and usually better able to develop a connection with others around them, than are lower functioning children with autism.

Behavioral and Sensory Information

High-functioning autism children many times require that objects be placed in a certain spot or that processes, such as getting dressed, are carried out in a very ordered routine. There are two things that seem to separate this need for routine from other disorders. First, according to

Rita Jordan (1997) objects and routines mean more or they have more of an attachment to objects and routines than other people do and this needs to be accepted by those around the HFA child. Second, Michael Powers (2000) stated those children with autism “become extremely distressed when objects and routines are changed and they cannot adapt to a different way of organizing themselves readily” (p.16). This demand for sameness differs in intensity from child to child. Recognizing these patterns in a classroom may offer a great deal of insight into how the child might be better incorporated into the educational environment. The educational environment of a student with HFA can be affected by the way a student sees the world, particularly their interest or their indifference.

Children with HFA seem to have this lack of interest or indifference to almost any social setting in which they find themselves (Hinerman, 1983). An intervention strategy, for example, is for a teacher or parent to try and keep transitions to a minimum and to avoid surprises such as bringing a new person into the HFA child’s environment without prior planning and conditioning the child in advance of any changes to the regular schedule whenever possible. If the HFA student has to change programs, classrooms, or schools, they should be allowed to visit the new site, meet the new people and become familiar with the expected routines.

Autism, particularly HFA, is very difficult to define and to diagnose because the characteristics associated with the disorder are shared characteristics and behaviors from the group of disorders known as Pervasive Development Disorders (Siegel, 1996). Trevarthen et al. (1998) points out the disorder are present at birth, but the symptoms are often not noticeable until one or two years of age, when the child begins to become aware of their surroundings. Following are some behavioral characteristics that can be used to determine if screening or evaluation is required to determine or identify HFA: (a) has strong and persistent interests, (b) spends more

time involved with objects and physical systems than with people, (c) a strong drive to collect categories of objects, and (d) a strong preference for experiences that are controllable rather than unpredictable.

Some additional characteristics that can be used to determine if screening or evaluation is required is qualitative impairment in social interaction that are manifested by at least two of the following from the American Psychiatric Association manual of mental disorders (APA, 2000):

1. marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
2. failure to develop peer relationships appropriate to the child's 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)
4. lack of social or emotional reciprocity

Looking over these examples of impairments in social interaction there are a number of learning objectives that can be attempted for "self-regulation". First there is the opportunity to learn and interact with others, for example while "gaming"; the child can demonstrate the ability to inhibit actions and behaviors while persisting with some of the demanding task required by some video games. Second is the regulation of excitement through behavioral strategies, language, and meta-cognitive strategies. These are strategies that need initial supervision and teaching how to use a range of strategies to regulate excitement in social situations. Inhibiting behavior in response to situational demands is also multidimensional in nature and it is not clear which aspects of impulsivity are impaired in children with HFA, but many children have ADHD

in association with HFA or some other forms of autism. Sometimes the problem can be measured or defined as a pattern of rapid, incorrect responses to tasks or it may also be poor responses, poor delay of gratification or an impaired obedience to commands to regulate or inhibit behavior in social contexts (Barkley, 1989).

Sensorimotor Integration

According to the American Academy of Pediatrics technical report (2001), there is no single instrument developed to have the ideal balance of sensitivity and specificity required for the purpose of general screening for any form of autism. Therefore, active observation may detect children with developmental disorders at the earliest possible time.

Children with HFA can be affected by over stimulation of any one of their senses, depending on the child (Quill, 1995). Children with any form of autism are very sensitive to the environments around them. In choosing an environment for learners with autism it is important to take into account the sensory factors associated with the disorder (Marcus, 2006). Particular emphases should be placed on factors that may affect the child's visual, auditory, and tactile senses because of their tendency to shut out or in some way remove the over stimulation of these senses. Effective teaching and learning is dependent on the child's ability to have a comfortable and safe environment so that the child can concentrate on and enjoy the process of learning. There are many differences, strengths and weaknesses determining the learning style for a HFA child. Some strength's are (a) in visual-spatial perception and visual memory, (b) preferences for static visual cues or visually presented supports, but there is a weakness in expressive and receptive language and verbal memory.

Therefore, a strong indicator of a neurobehavioral related sensory interference or problem is when the child does not feel comfortable and safe. Some sensory manifestations are accurate

perceptions of information details, for example a fascination of patterned material, whether it is visual as with shapes, numeric, or alphanumeric (Plaisted, O'Riordan, & Baron-Cohen, 1998a; Plaisted, O'Riordan, & Baron-Cohen, 1998b).

Many HFA children are over-sensitive or under-sensitive to touch, sound, and vision. “Approximately 40% of autistic children express discomfort when exposed to certain sounds or frequencies” (Edelson, Sensory impairments section, ¶ 25). Although some sensory experience might be unbearable or amplified for the child with HFA, other sensory experiences might be overly attractive. For some examples, a child with HFA may become fixated by the feel or wearing of a certain garment, or the child may become visually fixated by a certain object or pattern like the feel of a certain video game controller or the visual aspect of a video game such as “Yoshi”. Yoshi’s Island game is one of the best platforms ever made. It is a fun Mario-style game with an interesting mix of game play ideas. Its appealing crayon-inspired visual style is also unlike anything seen up to that point and can easily hold a HFA child fixated.

The educational environment for the HFA child is very dependent on the sensory stimulation in which they can function comfortably. Many children, on all levels of the spectrum, have difficulties dealing with a flood to their senses in a typical classroom environment. If a child’s sensory system is overloaded, they will have a tendency to shutdown and close themselves off from their environment and no longer be receptive to information coming in. These overloads and shutdowns are clues for discussing learning style and any necessity for further screening and evaluation as opposed to non-HFA kids that do not need or require coping skills to deal with environmental issues.

Concluding, it seems that because a child has HFA, in which they are more object-focused than people-focused, they are viewed as having a disability in an environment that

expects everyone to be social. Part of the problem is qualitative communications impairments which are usually manifested by at least one of the following:

1. The development of spoken language many times is accompanied by an attempt to compensate through alternative modes of communication such as gestures or mime.
2. In individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others.
3. Stereotyped and repetitive use of language or idiosyncratic language.
4. Lack of varied spontaneous make-believe play or social imitative play appropriate to developmental level (APA, 2000).

According to Baron- Cohen, Leslie, and Frith (1985), for a number of reasons one could argue that the child with HFA is less influenced by others because they do not spontaneously stop to consider other people's points of view, feelings and thoughts. Additionally, they may communicate less and may be less socially focused for the same reason. Finally, their unusual perceptions may occur because of their "weak" central coherence or their strong interests may reflect a "failure" to flexibly switch attention. But this strong interest or focus is an advantage in many situations, particularly if properly channeled educationally in the classroom.

Chapter III: Methodology

This study investigates how to identify students with high-functioning autism for the classroom teacher and parent(s). The qualitative review of the literature on high functioning autism (HFA) looked over various types of intervention techniques being used in community settings.

Subject Selection, Instrumentation, and Description

Qualitative research is a type of research that relies primarily on the collection of qualitative data such as non-numerical data like words and pictures (Online Survey Glossary, 2005). The compilation of the qualitative research information in this paper is synthesized from the literature of recent research on high-functioning autism.

The researcher's initial conjecture, based on a review of the literature, allows a closed-loop feedback system to organize inductive research. The feedback process is to research and accumulate data, then reduced and refined it by comparative analysis, which may or may not alter the study design and the use of comparative analysis method. The comparative analysis method uses continuous feedback from analyzing the literature, allows for a summation or conclusion at any point in the process due to this comparison of the various literature sources. The process of constant comparison "stimulates thought that leads to both descriptive and explanatory categories" (Lincoln & Guba, 1985, p. 341).

The flexibility of comparative analysis allows one to continually compare structure, data, outcomes, and assumptions with the literature research, thereby continually testing the data for reliability and validity. To widen the spectrum of conceptualization of reliability and revealing the equivalence of reliability and validity in qualitative research as stated by Lincoln and Guba

(1985), "Since there can be no validity without reliability, a demonstration of the former [validity] is sufficient to establish the latter [reliability;]" (p. 316).

Lincoln and Guba (1985) argued that sustaining the trustworthiness of a research report depends on the issues, quantitatively, discussed as validity and reliability. The idea of discovering truth through measures of reliability and validity is replaced for compilation of the qualitative research information by the idea of trustworthiness, which is "defensible" (Johnson 1997, p. 282) and establishing confidence in the findings (Lincoln & Guba, 1985).

Grounded Theory Methodology

The association of quantitative paradigm with qualitative research through validity and reliability has changed the traditional meaning of reliability and validity from the qualitative researchers' perspectives. Reliability and validity are conceptualized as trustworthiness, rigor and quality in qualitative paradigm. The outcome is called a grounded theory (Davidson, 2002), and begins with a theory based on experience and intuition and ends with a theory that is grounded on data.

Grounded Theory is most accurately described as a research method in which the theory is developed from the data, rather than the other way around. That makes this an inductive approach, meaning that it moves from the specific to the more general. Grounded Theory is essentially based on three elements: concepts, categories and propositions, or what was originally called "hypotheses". However, concepts are the key elements of analysis since the theory is developed from the conceptualization of data, rather than the actual data (Davidson, 2002). This method uses a constant comparative system to identify the following primary themes, to identify those characteristics they share, and characteristics that distinguished them from others. Primary themes use research-based practices that are evidence based to determine specific interventions.

Concepts, themes, and patterns are identified by reading and rereading the studies. In this process, the researcher can determine primary and secondary themes that are made by authors of the studies (and usually found in the discussion and conclusion section of an article). However, it is recognized that all reported data are the product of author interpretation. Associated with the themes, i.e., sensory processing, memory, stereotypical behaviors, social interaction, and empathy, are exploration of the participants' perceptions, mental processes, executive function, and experiences of living as a high functioning autistic.

Limitations

The limitations, in one sense are dependent on the research of others and therefore data collection could include participant observation, formal and informal interviewing, correspondence, and collection of personal documents. Additionally, research of the literature reveals limitations of the diagnostic systems currently in use for original research, which complicates the process used to identify those in need of specialized services. There is a need to improve the diagnostic clarity of the criteria used for high-functioning. The basis for improvement are level of language skill and prosody, social adaptability, social pragmatic language, cognition, sensory motor integration and maladaptive behavior are categorical aspects of high-functioning. These categories of behavior are most often referred to as component characteristics of a complete picture or profile of the functioning of a person with a high-functioning diagnosis.

The limitations of the diagnostic systems in current use complicate the process used to identify those in need of specialized services. For example, there is no definitive “test” for high-function autism. It remains important to address the symptoms currently presented by individuals in need of services. And hopefully, the revision of the DSM-IV in 2010 will result in an

improved system for the depiction of a person with high-functioning autism. Researchers and psychologist are currently using The Social Skills Rating Scale (Gresham & Elliott, 1990). The rating scale consists of three forms (self, parent, and teacher) and assesses social skills in a variety of categories: cooperation, assertion, empathy, self-control, externalizing and internalizing behaviors, and academic competence. A comparison of the responses from student, parent and teacher provides an overview of the student's self-assessment skills. Finally, qualitative researchers are not settled on one standard for judging the quality of research (Belk, 2006, p. 339).

Summary

A limitation for the research using qualitative, as compared to quantitative research, is that it is a closed-loop system of comparative analysis. The qualitative researcher cannot define the system and its variables with the relevancy and accuracy of the quantitative researcher. The researcher, therefore, creates an initial theory, and proceeds to organize the research, apply tools, and gather data. As data accumulate and are reduced, the researcher may redefine the model and alter the study design employing a refining method called comparative analysis. When not compared to quantitative research, it is not a limitation but an advantage because this study is not using the "scientific method" in the same sense as the quantitative research process is linear and unidirectional or "open loop" to isolate and define the study or experimental system parameters.

The external validity (or credibility), results can only be judged or validated, by those attempting the transfer of the results of this review to a different context. Therefore, it is the judgment of the person or group, which attempts the transfer of results to a different context and how reasonable the transfer is in relation to that context.

The research question that high functioning autism is an educational disorder separate from Asperger syndrome considers how the study will relate to the actual classroom instruction and settings. The methodology follows the research question, "How To Identify Students With High-Functioning Autism" by using literature search, clinical research using quantitative data, personal participation using past, current experience and knowledge, and observation. Finally, the resulting product addresses issues and implications for the classroom and high-functioning autistic students as an educational disorder.

Chapter IV: Results

High Functioning Autism (HFA) is diagnosed on the basis of abnormalities in the areas of social development, communicative development, and imagination. Additionally, diagnoses are marked with repetitive or obsessional behavior or unusual and narrow interests (see Diagnostic Methods, Appendix B). Individuals with autism may have an IQ at any level. By convention, if an individual with autism has an IQ in the normal range (or above), they can be said to be high-functioning autistic (Klin et al, 2000). In this research, the focus was on HFA with some comparison to AS since it is accepted that an individual who is lower-functioning necessarily has a disability in the form of retardation. What is not clear, and therefore the subject of the debate presented next, is whether individuals with HFA necessarily have a disability. For this research, the researcher considered the arguments in relation to HFA and AS. There was no attempt to draw any specific distinction between either to support this premise that HFA and AS are separate category classifications based on early language development.

This review compared the profiles of individuals with high-functioning autism (HFA) and Asperger's syndrome (AS) from many reviews, empirical research, and books on the subject. Only the HFA group seems to demonstrate a lack of theory of mind and verbal memory, performing more poorly than AS in characteristics comparison. These review findings suggest that HFA and AS are empirically distinguishable on measures independent of diagnostic criteria. Neurobehavioral theories of autism have hypothesized core deficits in sensory input or perception. These theories are due to basic attentional abilities or generalized attention to extra personal space, auditory information processing, conceptual reasoning abilities, and control mechanisms of attention.

Chapter V: Discussion

High Functioning Autism (HFA) and Asperger's Syndrome (AS) similarities has recently created some controversy regarding their being separate diagnostic entities. Some researchers have reported evidence that HFA and AS only differ in terms of level of severity, while other researchers have reported evidence suggesting that the neuropsychological profiles differ between the two. This study was to investigate the similarities and differences between children with HFA and AS. Assessment used by the researchers included measures of adaptive functioning, verbal abilities and nonverbal abilities as well as measures of social skills, behavioral problems, and emotional issues. In contrast to previous research, AS subjects did not differ from the HFA subjects in nonverbal abilities, noticeably. Further similarities between the groups included below average adaptive functioning (executive function), social skills, and significant behavioral problems among both groups. Another important distinguishing feature included a tendency toward better verbal abilities among the children with AS, which is consistent with previous research. In contrast to previous literature, in more contemporary literature, was a tendency for relatively weaker executive functioning among the AS group. Furthermore, the groups differed in the patterns of associations between cognitive, adaptive, and behavioral functioning. This review has determined the important distinguishing feature between HFA and AS is the tendency toward late verbal abilities for HFA and better verbal abilities among the children with AS. This distinguishing feature is consistent with the research and the original premise of this study for classification purposes to differentiate between HFA and AS.

Conclusions

The findings document a range of current research confirming that children and adolescents with HFA or AS appear to be deficient in social skills that involve self-referencing, empathy, determination of emotions in others or inferring the thoughts of others. Some neuro-cognitive studies suggest that HFA and AS are distinct disorders. A variety of social-behavioral interventions appeared in the literature with generally positive outcomes, although not a focus of this review.

Through the changing definitions of autism in successive editions of the Diagnostic and Statistical Manual, society still has just been given more or less a single view of autism and more specifically to HFA and AS: i.e., essentially negative view in which children or adults with autism are characterized as "impaired". This review disagrees with this view through a slight shift of emphasis. Instead of HFA/AS as a deficiency, it instead considers autism to be characterized as a *different* cognitive style. This is not an original idea on the part of this writer, but can be traced to Frith's (1989) book , and has been recently discussed in relation to "central coherence" theory , but needs further research and publication due to the implications, i.e., "different" rather than "deficient", of such a shift of emphasis. Frith (1989) commented that normal individuals have a need and desire to achieve high-level "meaning". She called this central coherence, and claimed that it can be achieved in various ways. Fundamental to her theory is the need to integrate information, which is described as global processing, parallel processing, and integrating information in context. Her theory is general to encompass a broad theory that can addresses the strengths and weaknesses in HFA.

The world is getting more connected, and in this world people are expected to be social. This expectation creates the view that people with HFA or AS are seen as disabled and this

creates the implication that placed in another environment, for example a room full of HFA's, they may not necessarily be viewed as disabled, but may respond in a "normal" manner. Concepts of disability are relational, for example, in particular environments the concepts of disability and handicap is relative to or not relative to, a particular environment. One can imagine, for example, people with HFA/AS might not necessarily be disabled in an environment in which they can exert greater control of events in their lives.

For the HFA, the social world is hard to control, but the technological world of machines is in principle highly controllable and seems to be an ideal environment for the HFA person. There is the implication that HFA people should be looking toward careers in computers, math, music, engineering or science, etc due to their mind-set for precise detail and the ability to maintain a focus in certain areas for extended periods of time – a video game designer would be an excellent example.

The excitement of new theories and ideas about HFA and the possibilities of good intervention seem to rest in educating the public, particular government and educational institution personnel. This review starts with the idea that HFA and AS are separate conditions and should be viewed as such. This has been established for this researcher and the study was a success in that respect. In addition to resolving the "separate conditions" issue, this study reveals HFA/AS as a 'difference' are more compatible with the 'continuum' notion, and may be morally more defensible. Therefore, it seems that not only institutions may need revision, but the legal system also; in that a child who's HFA "difference" leads to the special needs and support they need as an individual rather than a category.

Recommendations

The new field of human genome decoding projects offers the best solution to the HFA, and the rest of the autism spectrum disorder continuum, for genetic pathways to HFA. All the speculation, testing, experiments to find intervention solutions will not change the fact that HFA will not change unless there is a genetic key to open the door to autism. This researcher, having gotten a glimpse of this process, feels that within the next five years or less a genetic factor for autism will be discovered. This researcher recommends a concentrated focus for a genetic key to unlock the minds of autistic children and adults and broaden the options for high functioning autism.

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Appendix A

High Functioning Check List

A problem exist that many high-functioning autistic students are not diagnosed until later in their educational setting rather than sooner for more effective practice. Some essential methods for assessing behaviors in HFA students are sensorimotor integration, communication skills, social, behavioral and sensory information. Their senses of vision, hearing, touch, movement, taste, and smell are often poorly integrated due to oversensitivity or under reactivity;

- To touch, movement, sights, or sounds;
- Physical clumsiness or carelessness and poor body awareness;
- A tendency to be easily distracted with impulsive physical or verbal behavior;
- An activity level that is unusually high or low and not unwinding or calming oneself;
- Difficulty learning new movements; difficulty in making transitions from one situation to another; social and/or emotional problems;
- Delays in speech, language or motor skills; specific learning difficulties/delays in academic achievement.

Following are behavioral characteristics that can be used to determine if screening or evaluation is required to determine or identify HFA:

- A child with HFA has strong and persistent interests.
- A child with HFA spends more time involved with objects and physical systems than with people.
- A child with HFA may be fascinated by systems, such as simple light switches, water taps, or some more complex things like weather fronts, or even abstract mathematics.

□ A child with HFA may have a strong drive to collect categories of objects (e.g., Pokémon cards, etc.), or categories of information (types of birds, rocks, etc.).

□ A child with HFA has a strong preference for experiences that are controllable rather than unpredictable. The social world can be hard to control, whereas the technological world of machines is in principle highly controllable. Video games would be a good example of a controllable comfort zone for the child with HFA impairment in social interaction, as manifested by at least two of the following (APA, 2000):

- a. □ marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
- b. □ failure to develop peer relationships appropriate to developmental level
- c. □ 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)
- d. □ lack of social or emotional reciprocity

Following are four characteristics of major communication difficulties, related more to HFA than AS, that are relatively easy to identify:

- The child shows relatively little interest in what social groups are doing, or being a part of it (Lord, 1984),
- The child communicates less than other children do,
- the child tends to follow their own desires and beliefs rather than paying attention to, or being easily influenced by others' desires and beliefs (Baron-Cohen, Leslie & Frith, 1992), and

□ The child's view of what is relevant and important in a situation may not coincide with others (Frith, 1992).

A strong indicator of a behavioral related sensory interference or problem is that the child does not feel comfortable and safe. They may need screening or assessment for any degree of autism. Some examples of sensory manifestations are:

- The child is very accurate at perceiving the details of information (Plaisted, O'Riordan & Baron-Cohen, 1998a; Plaisted, O'Riordan & Baron-Cohen, 1998b).
- The child with HFA may be fascinated by patterned material, whether it is visual (shapes), numeric (times tables), alphanumeric (number plates), or lists (songs, etc.).
- The child with HFA notices and recalls things other people may not (Frith, 1992).

It seems that because a child has HFA, in which they are more object-focused than people-focused, they are viewed as having a disability in an environment that expects everyone to be social. The quality or character of communications impairments are usually manifested by at least one of the following:

- The development of spoken language many times is accompanied by an attempt to compensate through alternative modes of communication such as gestures or mime
- In individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others
- Stereotyped and repetitive use of language or idiosyncratic language
- Lack of varied spontaneous make-believe play or social imitative play appropriate to developmental level (APA, 2000).

Some challenges in the capacity of joint attention for HFA and AS that are similar for both are:

- Ability to perceive emotional states of others and the probable cause
- Ability to determine attentional focus, point of view, and intention of others
- Ability to initiate and maintain various types of conversations, e.g., expressing empathy, sharing experiences, praising others, etc.
- Ability to see and repair communications breakdowns (Klin et al, 1995).

Some challenges in the capacity for symbol use in typical development by HFA and AS that are similar to both are:

- Enables a child to communicate using increasingly sophisticated nonverbal communicative forms that have a “shared meaning” (e.g., gestures, faces, prosody),
 - Enables a child to use increasingly sophisticated language.
 - Enables a child to represent social events through symbolic play, role play, or narrative discourse,
 - Enables a child to develop an awareness of the conventions of appropriate social and communicative behavior across settings,
 - Enables a child to use language to express emotions, organize, and plan for stressful events.
- (Prizant et al., 2002)

Appendix B Diagnostic Methods

METHODS

The ADI-R, Scales of Independent Behavior-Revised and the following tools are some in instruments used diagnostic purposes.

Parent- and Teacher-Completed Questionnaires Social Communication Questionnaire (SCQ)

A 40-item, yes-or-no tool, completed by the primary caregiver.

Scores of ≥ 15 are the most effective cutoff for distinguishing children with ASD from other diagnoses. (Berument et.al, 1999)

PDD Behavior Inventory (PDDBI)

Six subscales—consisting of 124 items (90 items for non-verbal children)—are completed by parents or teachers to provide an “autism score”. Scores of ≥ 40 correctly identify 91% of children with autism. (Cohen, 2005)

High Functioning Autism Spectrum Screening Questionnaire (ASSQ)

A 27-item screening tool for parents or teachers. Items reflect behaviors of Asperger disorder. Scores of ≥ 19 (parents) and ≥ 22 (teachers) provide the most reasonable trade-off between sensitivity and specificity. (Ehlers, 1999)

Childhood Asperger Syndrome Test (CAST)

A 37-item, yes-or-no questionnaire completed by parents. Cutoff score of 15 discriminates well between children with Asperger disorder and typically developing children. (Scott et al, 2002)