PATTERNS OF INTERNALIZED AND EXTERNALIZED BEHAVIORS ON THE BASC-2 PRS IN HIGHER FUNCTIONING CHILDREN WITH AUTISM

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ABSTRACT

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With approximately 300,000 school-aged children in the United States currently diagnosed with autism and a reported 800% increase in diagnostic rates since 1993, there is a clear duty for researchers to further examine autism and its related disorders. This research study was conducted with 45 higher functioning children (8-18 years old) with previous diagnoses of the following Autism Spectrum Disorders (ASD): Asperger Disorder (AS), High Functioning Autism (HFA), or Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS). Specifically, scores on the internalized and externalized behavior scales on the Behavior Rating Scales for Children–Second Edition (BASC-2) Parent Rating Scale (PRS) were analyzed and then compared with three variables of functionality – age, I.Q., and social skills. The data used on the BASC-2 PRS include the following scales: Internalizing Problems, Anxiety, Depression, Somatization, Externalizing Problems, Hyperactivity, Aggression, Conduct Problems, and Social Skills. Results indicated a positive correlation between age and somatization and also a negative correlation between social skills and externalized behaviors. The data also revealed that the majority of the children in this study experienced above average (at risk and clinically

significant combined) levels of depression (64.5%) and hyperactivity (73.4%). Although fewer children experienced the other behaviors – anxiety (40%), somatization (28.9%), aggression (37.7%) and conduct problems (28.9%) – they can be helpful in painting a more accurate picture of children with ASD and how they function in the world.

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CHAPTER I

INTRODUCTION

Autism Spectrum Disorders

Joshua is a 13-year-old boy who is loud, talkative, and impulsive. He knows every detail about every type of airplane used in World Wars I and II, and he is eager to share this information with anyone who will listen to him. Conversations usually involve Joshua standing in close proximity to the other person, talking continuously about aircraft and not paying any attention to cues that the other person may wish to end the conversation. He does not have many friends his own age, and he prefers to associate with adults. He thinks they view him as smart since he knows so much about aircraft. His favorite activities are playing video games, watching television, and riding his bicycle. He also reads voraciously, such as reading the latest Harry Potter book cover to cover 3 times on the day it is released for sale. Joshua is clumsy and slightly overweight. His clothes are usually disheveled and he often eats with his hands, resulting in food stains on his clothing. He is content to leave his shoes untied, his hair astray, and his face soiled. He detests loud noises, bright lights, and tags in his shirts. Other children make fun of Joshua, calling him names, such as "nerd," "weirdo," and "freak." Adults admire his intellect but are confused by his strange interests, social habits, and mannerisms. Joshua has been diagnosed with Asperger's Disorder (AS), a pervasive developmental disorder that implies a relatively high level of functioning.

According to the United States Department of Education, during the 2003-04 school year, nearly 141,000 children aged 6 to 21 years of age were served in the schools because of a diagnosis of autism (Newschaffer, Falb, & Gurney, 2005). A recent report issued by the United States Department of Health and Human Services Centers for Disease Control and Prevention (CDC) estimates that "as of 2003-2004, autism had been diagnosed in at least 300,000 U.S. children aged 4-17 years" (Schieve, Rice, Boyle, Visser, & Blumberg, 2006, p. 481). Autism and its related disorders have been classified as the largest growing diagnostic population in the United States with an 800% increase in cases in the United States between 1993 and 2003, according to data released by the CDC (http://www.cdc.gov/ncbddd/autism/). Among this large population of children diagnosed with autism, there is a subset of higher functioning children who fit diagnostic criteria for Asperger Disorder (AS), High Functioning Autism (HFA), or Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS). Children who have been diagnosed with AS, HFA, or PDD-NOS can be grouped into a single category and said to have Autism Spectrum Disorders (ASD). Given the prevalence of ASD in our population, it is necessary to target this population for extensive research in an effort to learn more about the factors (e.g., physical, cognitive, social, emotional, educational) that are associated with ASD in children.

The story of Joshua illustrates some common characteristics of children with ASD and raises questions about the issues and challenges that such children face. In an effort to better understand children with ASD, it is necessary to explain how they differ from other children with autism who do not function as well. Higher functioning children with

ASD, by definition, possess higher cognitive abilities (IQ) and better social skills. They are better able to engage in socially appropriate behaviors and interactions, and this is evidenced by their engaging in fewer externalized behaviors (e.g., hitting). Although these children are sometimes able to act in socially acceptable ways, they are also sometimes unable to control their inappropriate behavioral impulses. With their increased IQ, they possess an awareness of the uncontrollable nature of their behavior. It seems logical to ask whether higher functioning children with ASD who struggle with the unpredictability of their social behaviors would develop greater internal abnormal behaviors (i.e., depression).

Research Question and Hypotheses

Based on information presented above, the following question arises: How do children with ASD express externalized behaviors and experience internalized behaviors? It is hypothesized that among children with ASD, the higher the level of functioning the lower the externalized behaviors and the higher the internalized behaviors. A child's level of functioning can be assessed in many ways, and this study focused on age, IQ, and social skills as measures of the children's level of functioning. Investigating each of these factors of functioning yielded the following five main hypotheses: (1) age correlates positively with internalized behaviors and negatively with externalized behaviors; (2) IQ correlates positively with internalized behaviors and negatively with externalized behaviors; (3) social skills correlates positively with internalized behaviors and negatively with externalized behaviors; (4) the internalized behavior of depression correlates the most strongly and positively with each of the factors of functionality (age,

IQ, and social skills); and (5) the externalized behavior of hyperactivity correlates the most strongly and negatively with each of the factors of functionality (age, IQ, and social skills). These hypotheses were tested using data gathered during a larger study of children with ASD.

Externalized and internalized behaviors were measured by using a number of scales derived from the Behavior Rating Scales for Children–Second Edition (BASC-2) Parent Rating Scale (PRS). Composite scales for Externalizing Problems and Internalizing Problems were used to test the above hypotheses, in addition to three individual externalized behavior scales – Hyperactivity, Aggression, and Conduct Problems – and three individual internalized behavior scales – Anxiety, Depression, and Somatization. Three components that reflect a child's level of functioning – age, IQ, and social skills – were obtained using three separate methods. Date of birth was provided by parents and used to calculate the age of each participating child. IQ was determined by administering the Woodcock-Johnson Tests of Cognitive Ability–Third Edition (WJ III COG) to each child and computing a General Intellectual Ability (GIA) score. Social skills level was assessed using the adaptive scale of Social Skills on the BASC-2 PRS completed by the child's parent(s).

Definition of Terms

The following definitions are provided for the purposes of this study:

Aggression or Aggressive behavior: "Any behavior that results in personal injury or in destruction of property" (Zlomke & Piersel, 1987, p.20).

Anxiety: "An unpleasant emotional state or condition" (Huberty, 1987, p.45) that can include worry and fear.

Asperger's Disorder (AS): A Pervasive Developmental Disorder characterized by "qualitative impairment in social interaction" and "restricted repetitive and stereotyped patterns of behavior, interests, and activities" (*DSM-IV-TR*, 2000, p. 84). The American Psychiatric Association calls this condition Asperger Disorder, as listed in their *DSM-IV-TR*. The World Health Organization, on the other hand, calls the condition Asperger Syndrome in their *International Classification of Diseases* (ICD-10). Further discussions in this paper will hereafter include the term Asperger's Disorder (AS).

Autism or Autistic Disorder: A Pervasive Developmental Disorder characterized by "qualitative impairment in social interaction," "qualitative impairments in communication," "restricted repetitive and stereotyped patterns of behavior, interests, and activities," and "delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play" (*DSM-IV-TR*, 2000, p. 75).

Autism Spectrum Disorders: Asperger Disorder, High Functioning Autism, and Pervasive Developmental Disorder – Not Otherwise Specified

Conduct Problems: A combination of aggressive behavior and noncompliance (Zlomke & Piersel, 1987).

Depression: A pervasive feeling of sadness; may include hypersensitivity, irritability, feelings of helplessness, self-deprecation, negative thinking, and suicidal thoughts (Saklofske & Janzen, 1987).

Externalized behaviors: Behaviors that are "under-controlled" (Reynolds & Kamphaus, 2004, p. 66), such as hyperactivity, aggression, and conduct problems.

High Functioning Autism (HFA): A condition along the autism spectrum which includes all of the characteristics of Asperger Disorder but includes a significant delay in language development. This condition is not recognized by the American Psychiatric Association (*DSM-IV*-TR, 2000) or the World Health Organization (*ICD-10*, 2003), and yet children are often diagnosed by professionals as having HFA.

Hyperactivity: "Excessive motor activity accompanied by impulsivity, distractibility, and short attention span" (Robertson, 1987, p.311).

Internalized behaviors: Behaviors that are "over-controlled" (Reynolds & Kamphaus, 2004, p. 67), such as anxiety, depression, and somatization.

Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS): A "severe and pervasive impairment in the development of reciprocal social interaction associated with impairment in either verbal or nonverbal communication skills or with the presence of stereotyped behavior, interests, and activities" (*DSM-IV-TR*, 2000, p.84), but criteria for another specified mental disorder are not met.

Somatization: "Medically unexplained physical symptoms" (Campo & Fritsch, 1994, p. 1223), or physiological response to psychological distress.

CHAPTER II

LITERATURE REVIEW

Autism is a term that was first coined by Leo Kanner of Johns Hopkins University in 1943. Just one year later, Hans Asperger described "autistic psychopathy," which was later termed Asperger's Syndrome in Lorna Wing's 1981 translation of Asperger's original research. In 1992, the tenth edition of the World Health Organization's *International Classification of Diseases* (*ICD-10*) listed Asperger Syndrome (AS) as a disorder for the first time. The American Psychiatric Association's (APA) 1994 version of the *Diagnostic and Statistical Manual of Mental Disorders - 4th Edition (DSM-IV)* listed Asperger's Disorder as a Disorder Usually First Diagnosed in Infancy, Childhood, or Adolescence. Information and diagnostic criteria for Asperger's Disorder are also included in the current edition of the APA's *Diagnostic and Statistical Manual of Mental Disorders - 4th Edition, Text Revision (DSM-IV-TR)*. Although it does not appear as an official diagnosis in the *ICD-10* nor the *DSV-IV-TR*, High Functioning Autism (HFA) has been used as a diagnosis for children with autistic characteristics who function relatively well in society. Both the *ICD-10* and the *DSM-IV-TR* indicate that children who do not fit the diagnostic criteria for autism or AS should be diagnosed with a Pervasive Developmental Disorder, Not Otherwise Specified (PDD-NOS).

AS, HFA, and PDD-NOS are three psychological diagnoses that fall on the autism spectrum, along which diagnoses vary in areas such as severity of symptoms, verbal

communication, and cognitive ability. Children with the autism spectrum disorders (ASD) of AS, HFA, and PDD-NOS typically exhibit these characteristics: underdeveloped social skills, deficits in reciprocal communication, difficulty with abstract thinking, repetitive behavior or interests, and resistance to change. Although some subsets of autism are comorbid with mental retardation, the diagnoses of AS, HFA, and PDD-NOS imply a level of cognitive ability within at least the average range of measured intelligence. In other words, children with AS, HFA, and PDD-NOS set themselves apart from other conditions along the autism spectrum by demonstrating a higher level of overall functioning.

Although many of the characteristics of AS, HFA, and PDD-NOS overlap, there are some behaviors that are used to distinguish among them. Children with AS typically possess exceptional verbal skills that are often used to inform others instead of being part of the give-and-take of conversation. Also, AS is characterized by passionate involvement in a limited scope of topics. Children diagnosed with HFA may exhibit delays in spoken language, difficulty beginning or sustaining conversation, and/or stereotyped or repetitive use of language. Children who are diagnosed with PDD-NOS do not meet all of the diagnostic criteria for autism, AS, or HFA. However, these young people are typified by social and communication difficulties and/or the demonstration of atypical behaviors or interests. Overall, the diagnostic criteria for AS, HFA, and PDD-NOS are remarkably similar and contribute to the ongoing debate regarding the possibility that they are versions of the same disorder. Current research is seeking to examine this question further. For the purposes of this paper, AS, HFA, and PDD-NOS

will be grouped into a single term and will hereafter be referred to as Autism Spectrum Disorders (ASD). The subjects of this investigation will be children with ASD ranging in age from 8 to 18 years old.

Internalized and Externalized Behaviors

This exploration of children with ASD begins with examining their social and emotional behaviors. All humans display a variety of behaviors, some of which they keep to themselves and some they share with others. Although the internalization and externalization of behaviors can be seen as a normal response to environmental and personality factors, when this process becomes extreme it can result in psychological distress. Barber (1992) explains the behavior of typical teenagers: "essentially the distinction is between inhibited, overcontrolled problems that are manifest privately or internally, and aggressive, antisocial, undercontrolled behavior that is exhibited externally, typically in interaction with other individuals or groups of people" (p. 71). Barber states that human behavior falls into two categories – internalized behaviors and externalized behaviors – as a function of a person's level of control of his or her emotions. Anxiety (feeling nervous and/or afraid), depression (feeling extremely sad), and somatization (physiological symptoms of distress) are examples of *internalized behaviors*. Hyperactivity (being overly active), aggression (being angry and hurtful), and conduct problems (being noncompliant) are examples of *externalized behaviors*. When examining the semantics of discussing behavior, it becomes clear that internalized behaviors imply feeling; whereas externalized behaviors imply action. When a person's

internalizing or externalizing behaviors significantly impair his or her ability to function in the world, the person can be said to be experiencing a psychological problem.

Evans, Canavera, Kleinpeter, Maccubbin, and Taga (2005) explored the dynamics of internalized and externalized behaviors in children with ASD. These researchers found significant relationships between several internalized and externalized behaviors. Evans et al. (2005) state that "externalized problems including conduct, impulsivity and hyperactivity, were associated with situation fears, fears of harm, medical and natural environment fears" (p. 22). This link between internalized behaviors (i.e., fear) and externalized behaviors (i.e., hyperactivity) demonstrates a potentially unique relationship that exists within the ASD population. Research conducted by Ghaziuddin, Ghaziuddin, and Greden (2002) revealed a similar connection between depression and behavior problems (i.e., hyperactivity, aggression). It appears that internalized and externalized behaviors are not mutually exclusive in children with ASD; instead, patterns of both types of behaviors may exist within this population. These behavioral patterns – internalized and externalized – among the ASD population will be further examined in this current study.

Internalized Behaviors

Anxiety

One internalized behavior affecting children with ASD is anxiety, the examination of which begins with an elaboration of the physiological, cognitive, and social elements related to this internalized behavior. Many animals experience similar physiological responses in relation to feelings of fear and anxiety. These symptoms

originate with the sympathetic nervous system which triggers increases in heart rate, blood flow to the muscles, and breathing rate (Groden, Cautela, Prince, & Berrryman, 1994). Evolutionary psychologists suggest that these biological responses prepare the animal to engage in fight or flight when presented with a fear-inducing stimulus. Children with ASD experience similar bodily reactions when they feel anxious. They may also find themselves thinking new thoughts related to their anxiety, based on fear. A child with an ASD in this situation might think, "What if I die?" "What's going to happen to me?" or "I'm trapped!" Social responses to anxiety may vary among individuals, but responses can be categorized into two main areas: withdrawal and lashing out. Feelings of anxiety, then, may produce more internalized behaviors, such as depression or somatization, or new externalized behaviors, such as hyperactivity, aggression, or conduct problems. The complexities of anxiety and its effects of children with ASD will be further explored below.

Anxiety in the ASD population often takes the form of social anxiety or unusual fears, such as fear of the dark, of thunderstorms, or of closed places (Evans et al., 2005). Kim, Szatmari, Bryson, Streiner, and Wilson (2000) found internalizing problems, such as anxiety, were more common in the "high-functioning PDD group than in the general community of children the same age" (p. 128). When compared to normally developing children, children with ASD "were reported to be more fearful of specific situations and medical fears" and also "exhibited more social anxiety" (Evans et al., 2005, p. 22). Gillott, Furniss, and Walter (2001) found evidence of "higher levels of anxiety" (p. 283) in children with autism as compared with children without autism. Clinically significant

levels of anxiety were discovered in children with ASD researched by Kim et al. These research results indicate that children with ASD experience anxiety, an internalized behavior, at greater levels than normally developing children. Anxiety may, in fact, be an integral part of the ASD profile. The question remains: why do children with ASD experience so much anxiety?

Underdeveloped social skills may be one reason why so many children with ASD feel anxious much of the time. It has been suggested that anxiety in children with ASD may generate from "self-awareness of their own difficulties when facing situations in which they are expected to display age-appropriate social judgment and social behavior" (Gillott et al., 2001, p. 278). Children with ASD often find themselves in situations where they are aware of the social expectations but are incapable of meeting them because of their developmental delays. Such frustrations can manifest into feelings of anxiety and fear about engaging in future social interactions. A woman who has lived with autism for many years described her feelings of anxiety:

> Like being dropped in a strange neighborhood where you 'know' you should not be – the apprehensive feelings can be intense and frightening no matter how familiar the environment to the autistic person who may show signs of being aloof or shy (Jones, Zahl, & Huws, 2001, p. 399).

Evans et al. (2005) highlighted the presence of unusual fears in the ASD population, which is yet another explanation for why they are often anxious. The ASD profile includes heightened sensory awareness and desire for consistency (Groden et al., 1994). Loud and/or novel social settings may be particularly disturbing for children with ASD

and often trigger feelings of fear and anxiety (Sofronoff, Attwood, & Hinton, 2005). These research results reveal that anxiety is one internalized behavior that is a significant element in the lives of children with ASD.

Although it is clear that anxiety is prevalent within the ASD population, it is necessary to explore how these children cope with feelings of anxiety when faced with fear and stress. The diagnostic criteria for ASD (*DSM-IV-TR*, 2000, p. 80-84) include significant developmental delays in multiple areas, which lead to underdeveloped skills. Social skills and general coping skills are two such areas which are often underdeveloped in children with ASD, causing them to engage in "self-injurious behavior…self-stimulatory behavior…tantrums and aggression" (Groden et al., 1994, p. 183). Some of the odd behaviors that characterize individuals with ASD may be related to their responses to anxiety-provoking and stressful social situations. Understanding the complexities of how anxiety is experienced by this population is one step towards developing intervention strategies for improving the lives of people living with ASD.

Depression

A second internalized behavior found in the ASD population is depression, which can be described as a normally-occurring adaptive function when a person's body and mind decrease their level of functioning because of stress or trauma. Physiological symptoms related to depression include a lack of energy, increased need for sleep, slower metabolism, and decreased reaction time. People who experience depression report primarily negative thoughts that may be absolutist in nature, such as "I can't do anything right," "I'll never get better," and "Everyone hates me." During states of depression, not

only are cognitive processes slowed but they are also clouded by pessimism. Social expressions of depression may include social isolation, lack of participation, general disinterest in activities, and even hostile outbursts. These physiological, cognitive, and social symptoms that accompany depression are the foundation from which an exploration of depression among the ASD population will begin.

Depression in children with ASD can be characterized by chronic unhappiness and loneliness (Green, Gilchrist, Burton, & Cox, 2000). Ghaziuddin et al. (2002) concluded that clinical depression is the "most common psychiatric disorder seen in persons with autism" (p. 304). Seventeen percent of children with ASD surveyed by Kim et al. (2000) exhibited clinically significant levels of depression. In a study conducted by Perry, Marston, Hinder, Munden, and Roy (2001), it was suggested that one of the reasons why depressive symptoms are exhibited so often by people with autism is that their communication deficits do not allow them to express their feelings to others. Depression may be directly related to a sense of discomfort in social situations where demands may be made on children with ASD and failure or incompetence is a possible outcome. Also, children with ASD may possess a level of awareness of social appropriateness that is incongruent with their ability to behave in socially appropriate ways. Butzer and Konstantareas's (2003) research highlighted this incongruence and revealed that "awareness of disability was related to a higher self-reported level of negative mood" (p. 70). When explaining his experiences of depression, a man with an ASD posted the following remarks on an internet site for people with high-functioning autism. "'High functioning'… are often scorned, ridiculed, shunned, and avoided to

where one's own life often becomes trivial" (Jones et al., 2001, p. 399). Such negative social experiences often lead children with ASD to experience feelings of depression and may result in a negative view of self.

The ASD population is especially susceptible to depression for a number of reasons explained below. Following ASD diagnostic criteria (*DSM-IV-TR*, 2000, p. 80-84), these young people have measured cognitive abilities in the average to above average range. Such a level of intelligence indicates a certain level of awareness or understanding, at least in certain areas of life. As mentioned above, children with ASD may be aware of what constitutes socially appropriate behavior but may be unable to act in socially appropriate ways. This inadequacy has been shown to be related to feelings of anxiety and/or depression. Also, these young people tend to be concrete thinkers, having difficulty thinking about abstract concepts. The "all or nothing," negative thoughts associated with depression are consistent with the ASD characteristic of thinking about the world in dualistic and concrete terms. Being unable to think abstractly or engage in socially appropriate conversations may result in a child with ASD becoming depressed because of an inability to express his or her emotions to others. Research conducted with children with ASD has concluded that depression is a comorbid clinical condition which warrants further investigation.

Somatization

A third internalized behavior that affects the ASD population is somatization, "medically unexplained physical symptoms" (Campo & Fritsch, 1994, p. 1223) or physiological response to psychological distress. Somatization can take on multiple forms

in a young person's body, including abdominal pain, headaches, sleep disturbances, low energy, and sore muscles (Campo et al., 2004; Campo & Fritsch, 1994). Somatization is typically "polysymptomatic" (Campo & Fritsch, p. 1225), meaning that a single patient will often express multiple types of physical discomfort. Somatic complaints are often directly related to significantly high levels of anxiety and/or depression (Campo & Fritsch, 1994). Specifically, Garralda (1999) found that somatic complaints often exist in conjunction with performance anxiety and perfectionism. In the previous discussions of anxiety and depression, the point was raised that children with ASD have an awareness of how they are supposed to behave but do not have the ability to behave in socially appropriate ways consistently. These individuals often become stressed, upset, anxious, and depressed because they feel that they should be able to perform but they cannot. This recipe of psychological distress may result in the development of somatic symptoms. The American Psychiatric Association (*DSM-IV-TR*, 2000, p. 486-511) lists a number of somatoform disorders, all of which have in common the exhibition of physical symptoms that negatively impact a person's ability to function and are not attributable to any diagnosable medical condition. Instead, the physiological discomfort is caused by unresolved emotional issues.

The many research results outlined above delineate the high prevalence of anxiety and depression among children with ASD. It is logical to explore, then, how these individuals express the internalized behavior of somatization in response to their anxious and depressed feelings. Unfortunately, there is a paucity of research examining the relationship between ASD and somatization.

Externalized Behaviors

The discussion of behaviors exhibited by children with ASD began with an in-depth exploration of three internalized behaviors – anxiety, depression, and somatization. It has been established that in order to understand what is it like to have an ASD, one must understand the internalized behaviors experienced by this population. Now is the opportunity to begin to explore how this population experiences externalized behaviors, specifically hyperactivity, aggression, and conduct problems.

Hyperactivity

Hyperactivity is an externalized behavior that is characterized by constant activity, fidgeting, and an inability to be still. These characteristics are part of the diagnostic criteria for Attention Deficit Hyperactivity Disorder, Primarily Hyperactive Type (ADHD) (*DSM-IV-TR*, 2000, pp. 92-93). Blacher, Kraemer, and Schalow (2003) cited that ADHD and AS have been found to be comorbid conditions in more than 60% of children with AS. Ghazuiddin et al. (2002) revealed that "a significant number of higher functioning children with autism/Asperger syndrome present with hyperactivity, impulsivity, and distractibility" (p. 301). The United States Centers for Disease Control found that 65.2% of the 567 parents who were surveyed reported moderate to high levels of hyperactivity in their children diagnosed with autism (Schieve, Rice, Boyle, Visser, & Blumberg, 2006). It is clear that hyperactivity is a significant concern for both children with ASD and the adults who work with them, and there has been some speculation regarding why these children exhibit these externalized behaviors on a regular basis.

Children with ASD are prone to over-stimulation stemming from their inherent hypersensitivity to sensory stimuli, such as light and sound. In their experience, "ordinary sensations are perceived as unbearably intense" (Attwood, 1998, p.129). Hyperactivity is one possible result of a child with ASD becoming over-stimulated. In settings which are bright and/or loud, children with ASD may respond by engaging in frenzied, overactive, or unfocused behaviors. Feeling over-stimulated is comparable to feeling anxious, as they are characterized by increased activity in the sympathetic nervous system and feelings of nervousness, fear, and loss of control. It may be said, then, that hyperactivity can be an externalized expression of internal feelings of anxiety. This combination of internalized and externalized behaviors is a significant issue in the daily lives of children with ASD. Also, hyperactivity has been cited as a coping mechanism for stress among both children with and without ASD who struggle to find ways to deal with feeling overwhelmed or anxious, especially in social situations. Hyperactive behaviors can assist these children in avoiding undesirable or anxiety-provoking tasks by diverting their attention and/or attracting negative attention from adults (Robertson, 1987).

Many researchers, such as Tony Attwood (1998), have explored the unique manner in which children with ASD process and associate with their environment. This research has led to the impression that children with ASD have unique educational needs. When academic material is presented in a manner that is not in sync with the child with ASD's manner of comprehending and therefore, not conducive to learning, these children may respond by feeling frustrated and/or bored. Such feelings may result in hyperactive behaviors as a way to release their anger or alleviate boredom. The ritualistic or repetitive

behaviors which are consistent with ASD diagnostic characteristics are similar to hyperactive behaviors, such as changing sitting positions and wringing their hands. Research findings support the idea that hyperactivity is experienced as an externalized behavior by children with ASD and that hyperactivity is related to over-stimulation, anxiety, frustration, and boredom (Blacher et al., 2003; Attwood, 1998). Although it is well understood among professionals that children with ASD exhibit the externalized behavior of hyperactivity, there is a paucity of research in this area.

Aggression

A second externalized behavior exhibited by children with ASD is aggression, which includes hitting, kicking, biting, throwing things, and breaking objects. Although many people have different opinions about which behaviors can be seen as aggressive, "most professionals define aggression as any behavior that results in personal injury or in destruction of property" (Zlomke & Piersel, 1987, p. 20). Zlomke and Piersel go on to explain that aggression in children can negatively impact a child's peer relationships and social skills, as well as increasing feelings of anxiety and depression. These elements – underdeveloped social skills, minimal friendships, anxiety, depression, and aggressive behaviors – are part of a negative and uncomfortable cycle for children with ASD, where each factor fuels the continuation of the cycle. For example, a child with ASD may feel depressed that his lack of social skills has resulted in him having no friends, and this feeling leads him to engage in aggressive behaviors, such as hitting a classmate. His aggression results in him feeling anxious around his classmates in the future, which leaves him unable to develop his social skills with peers. Aggression has been further

described as a "recurrent, habitual, and disruptive" (Dawson, Matson, & Cherry, 1998, p. 440) maladaptive behavior found in the ASD population.

Koegel, Camarata, and Koegel (1994) pinpointed the main cause of aggression in children with ASD as being communication difficulties or more specifically, "frustrated language interactions" (p. 167). When children feel that they are unable to communicate their wants and feelings to others, the result may be anger and aggressive behavior. These researchers suggest that the best way to reduce aggressive behaviors in the ASD population is to provide interventions that target functional communication skills. Given that communication is an element of social skills, it may be said that social skills training in general would result in decreased aggression. If the element of aggression were to be removed from the above mentioned cycle, perhaps other positive changes will occur. So far, hyperactivity and aggression have been shown to be part of the ASD profile of externalized behaviors.

Conduct Problems

Conduct problems is the third externalized behavior that will be examined in this paper, and it is directly related to both hyperactivity and aggression as previously described. In fact, conduct problems have been described as being a combination of aggression and noncompliance with the global definition being not following established rules. Green et al. (2000) suggest that poor social skills of children with ASD include an underdeveloped sense of empathy for others, and it is this deficit that often leads to conduct problems and other externalized behaviors.

As mentioned in the above explanations of hyperactivity and aggression in children with ASD, feeling anxious, depressed, confused, and overwhelmed is directly related to the demonstration of externalized behaviors. Evans et al. (2005) discovered a link between the fears of children with ASD and behavior problems. "Externalizing problems including conduct, impulsivity and hyperactivity, were associated with situational fears, fears of harm, medical and natural environmental fears" (Evans et al., p. 22). These researchers further attribute the high incidence of conduct problems to difficulties with emotional and behavioral regulation in children with ASD. Conduct problems may begin with these deficits in the ability to regulate themselves, but this externalized behavior feeds into the cycle previously presented, which includes feelings of anxiety and depression, as well as poor peer relations and social skills.

The above discussion has included the diagnostic characteristics of children with ASD and the internalized behaviors – anxiety, depression, and somatization – and externalized behaviors – hyperactivity, aggression, and conduct problems – which are commonly experienced by and cause significant distress to these children. In the process of painting a complete picture of children with ASD, three additional aspects must be addressed: intelligence, chronological age, and social skills.

Intelligence

Included in the diagnostic criteria for ASD as listed in the *DSM-IV-TR* is the assumption that these children have a level of measured intelligence (or IQ) at or above the average range. This level of cognitive ability is one of the diagnostic elements that distinguish among lower functioning and higher functioning children with autism. Recent

research has focused on how internalized and externalized behaviors are exhibited in children with ASD whose IQ's vary from average to above average to superior. It is commonly believed that awareness is a component of cognitive ability, or one's IQ score; therefore, it can be said that children with ASD who possess a higher IQ possess a greater awareness of the world and of themselves. The link between awareness and the internalized behaviors of anxiety and depression was described in a previous section. The data suggest that a child with ASD who is more aware of his or her surroundings and behaviors is more likely to experience an increase in internalized behaviors and attempt to decrease externalized behaviors. These children understand, at some level, what is expected of them in terms of socially appropriate behaviors; and yet, they are unable to control their externalized behaviors with consistency. The uncontrollable nature of their behaviors leads many of these children to experience significant levels of anxiety, depression, and somatization. By this logic, a child with ASD with a higher than average IQ would be likely to demonstrate an increased level of internalized behaviors and a decreased level of externalized behaviors.

The above mentioned idea is further supported by research conducted by Ghaziuddin et al. (2002) on depression in children with ASD. These researchers cite that children with ASD experience more depression as compared to lower functioning children with autism because these "higher functioning" children with ASD "consider themselves less competent and tend to have a lower self-worth" (Ghaziuddin et al., p. 303). It is perhaps the combination of greater awareness and lower self-esteem that can develop into depression. Although researchers pose a logical connection between IQ and

internalized behaviors, such as depression, in children with ASD there is a paucity of research that examines this relationship.

Age

Another factor that may be related to the expression of internalized and externalized behaviors within children with ASD is chronological age. All children experience a myriad of developmental changes – physical, cognitive, social, and emotional – as they approach adulthood. Developmental theorists, such as Sigmund Freud, Erik Erikson, and Jean Piaget, explained the typical developmental trend of children becoming better able to function in the world. As the child ages, his or her communication abilities, cognitive proficiency, social skills, and emotional regulation become more refined.

Children with ASD are unique in many ways, but they too experience similar developmental changes as they age. Ghaziuddin et al. (2002) cite that rates of depression among children with ASD increase with age, and more specifically with the onset of adolescence. Evans et al. (2005) explain how normal development involves a decrease in fears and anxieties related to early childhood. Shaw, Lacourse, and Nagin (2005) cite in their research a significant decrease in externalized problems, such as hyperactivity and aggression, as a child becomes older. These researchers talk about how it is normal for young children to fear the dark or feel anxious around strangers but that these internalized behaviors typically dissipate as the child grows older. For children with ASD, however, Evans et al. (2005) found that many fears and anxieties remain present through late childhood and adolescence. Green et al. (2000) explain how the social demands placed on

children increases as they enter adolescence. For a child with ASD, this increase in social demands and the importance of peer interactions may cause him or her to experience a greater level of internalized behaviors in response to social pressures. In the previous discussions of anxiety, depression, and somatization, it was mentioned that these behaviors typically increase in frequency when social pressures and general stress are significant. Adolescence is a time when pressure and stress are at an all-time high. So, although the child with ASD may have learned how to reduce his or her socially inappropriate externalized behaviors, he or she may respond to the pressures of adolescence by experiencing an increase in internalized behaviors.

Social Skills

Social skills can be defined as comprising the many ways that one person interacts with his or her environment, including the objects, people, and animals in it. In Greenway's (2000) study of prosocial behaviors in children with ASD, she cited three specific components of social skills: social interaction and relationships, social communication, and social understanding and imagination. A child who has developed good social skills would be expected to engage in few or no externalized behaviors, and instead exercise restraint and behave in socially appropriate ways most of the time. This is particularly challenging for the child with ASD. The social development of any child, autistic or not, is directly related to life experience, which increases with age. So, one may anticipate that as a child ages, his or her social skills will improve. Although social skill development may be slower, it can be assumed that the general trend of improvement with age exists for children within this population.

Social skills typically improve with experience and, in some cases, training. Intervention strategies, such as social communication training (Hwang & Hughes, 2000), social stories (Greenway, 2000), and Circle of Friends (Greenway, 2000) have been successful in improving the overall social skills of children with ASD. Some positive changes have included "social behavior, requesting assistance, greeting and social amenities, eye gaze, joint attention, and motor imitation" (Hwang & Hughes, 2000, p. 332). Other studies, such as Frea, Arnold, Vittimberga, and Koegel (2001), have found a reduction in externalized behaviors, such as aggression, as a result of improved social skills.

Although it has been shown that interventions and training can improve the social functioning of children with ASD, many children are not exposed to such opportunities. With or without training, research suggests that children with ASD demonstrate an improvement in social skills as they approach adulthood. With this developmental skill comes a decrease in externalized behaviors.

One of the struggles for children with ASD is that although they can sometimes control their impulsive and externalized behaviors, this ability is inconsistent. There are times when the child with ASD knows what he or she is supposed to do but is unable to act in a socially acceptable manner due to his or her developmental disorder. The uncontrollable nature of behavior can result in the onset or exacerbation of internalized behaviors, such as anxiety, depression, and somatization. It can be concluded, then, that improved social skills in children with ASD will often result in fewer externalized behaviors and more internalized behaviors.

Research Question and Hypotheses

The information presented in this paper has included explanations of and research support regarding ASD, internalized behaviors, externalized behaviors, IQ, age, and social skills. Among all children with autism, children with ASD constitute a higher functioning subset characterized by underdeveloped social skills, deficits in reciprocal communication, difficulty with abstract thinking, repetitive behavior or interests, and resistance to change. Research has found that children with ASD experience higher than normal rates of internalized behaviors – anxiety, depression, and somatization – and externalized behaviors – hyperactivity, aggression, and conduct problems. Among these behaviors, depression and hyperactivity appear to be the most significant comorbid conditions afflicting children with ASD. The general functionality of these children has been described by using three specific factors: IQ, age, and social skills. In the above discussion, links have been proposed between each of these factors of functionality and the expression of internalized or externalized behaviors.

Children with ASD function at a level that is higher than other children with autism and therefore are then able to engage in socially appropriate interactions with others and demonstrate fewer externalized behaviors, such as hyperactivity, aggression, and conduct problems. Although they are sometimes able to act in socially accepted ways, these children are also sometimes unable to control their inappropriate behavioral impulses. With their increased IQ (by definition), they are more aware of the uncontrollable nature of their behavior. It seems logical to ask (as others have done) whether "higher functioning" children with ASD who struggle with the unpredictability

of their social behaviors would develop greater internalized behaviors, such as anxiety, depression, and somatization. This anticipated idea as well as past research findings have led to the formation of the research question to be addressed in this study: How is level of functioning associated with the expression of internalized and externalized behaviors in children with ASD? This question can be addressed by formulating one main and several subordinate hypotheses. The *main hypothesis* being tested in the present study can be stated as follows: among children with ASD, the higher the level of functioning the lower the externalized behaviors and the higher the internalized behaviors. The following *sub-hypotheses* will be investigated individually to determine the validity of the previously stated main hypothesis: (1) Internalized behaviors correlate positively with IQ; (2) Internalized behaviors correlate positively with age; (3) Internalized behaviors correlate positively with social skills, (4) Depression correlates most strongly (among the three internalized behaviors) and positively with IQ; (5) Depression correlates most strongly (among the three internalized behaviors) and positively with age; (6) Depression correlates most strongly (among the three internalized behaviors) and positively with social skills; (7) Externalized behaviors correlate negatively with IQ; (8) Externalized behaviors correlate negatively with age; (9) Externalized behaviors correlate negatively with social skills; (10) Hyperactivity correlates most strongly (among the three externalized behaviors) and negatively with IQ; (11) Hyperactivity correlates most strongly (among the three externalized behaviors) and negatively with age; (12) Hyperactivity correlates most strongly (among the three externalized behaviors) and negatively with social skills.

CHAPTER III

METHOD

Participants

Participants in the Dallas Metroplex area were recruited for this research study through a variety of methods, including press releases in local publications, flyers handed out at professional conferences, and information provided on the study's website. Interested parties were asked to complete a brief questionnaire over the phone to determine if the child or adolescent was appropriate for the study. Questions addressed issues of communication, cognitive ability, and cooperation/compliance. Selection criteria included a general intellectual ability (IQ) within at least the average range (IQ $\geq$ 80) and a previous diagnosis of Asperger Disorder (AS), High Functioning Autism (HFA), or Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS). These three diagnoses will hereto be referred to as Autism Spectrum Disorders (ASD).

Participants for this study included 45 children (40 boys, 5 girls) between the ages of 8 and 18 years (mean age = 11.5 years). In this sample, 66.7% of the children had a diagnosis of AS, 20% had a diagnosis of HFA, and 13.3% had a diagnosis of PDD-NOS. This sample consisted of 93.3% Caucasian, 4.4% Hispanic, and 2.2% African-American participants (see Table 1). Participant IQ scores ranged from 80 to 146 with a mean of 102.

Table 1

Demographic Information for Participant Sample

Demographic	N	%
Sex		
Male	40	88.9%
Female	5	11.1%
Age		
Child (8-11)	26	57.8%
Adolescent (12-18)	19	42.2%
Ethnicity		
Caucasian	42	93.3%
Hispanic	2	4.4%
African-American	1	2.2%
Diagnosis		
Asperger Disorder (AS)	30	66.7%
High Functioning Autism (HFA)	9	20.0%
Pervasive Developmental Disorder, Not Otherwise Specified (PDD-NOS)	6	13.3%

Materials

Behavior Assessment System for Children–Second Edition (BASC-2) Parent Rating Scale (PRS)

The BASC-2 is a "multimethod, multidimensional system used to evaluate the behavior and self-perceptions of children and young adults" (Reynolds & Kamphaus, 2004, p.1). The BASC-2, when compared to the original BASC, includes many changes, including improved reliability, additional scales, and an updated standardization sample. The Parent Rating Scales (PRS) form includes behavioral symptoms included in the *DSM-IV-TR*, as well as diagnostic information consistent with the Individuals With Disabilities Education Act (IDEA, 1997), the Americans With Disabilities Act (ADA, 1990), and Section 504 (Rehabilitation Act, 1973). The BASC-2 PRS is presented in a self-report format, allowing parents to rate the occurrence of each observable behavior exhibited by their child or adolescent. Parents determine whether a given behavior occurs *almost always*, *often*, *sometimes*, or *never*. There are two versions of the BASC-2 PRS, one for children aged 8-11 years (PRS-C) that consists of 160 items and one for adolescents aged 12-18 years (PRS-A) that consists of 150 items.

The BASC-2 PRS is widely accepted as a reliable assessment measure and is used frequently by professionals working with children and adolescents. In the BASC-2 manual, Reynolds and Kamphaus (2004) cite reliability coefficients ranging from 0.79 to 0.94 (median = 0.85) using the general norm sample on the BASC-2 PRS form for children aged 8-18 (Reynolds & Kamphaus, 2004, p. 164). For the scales used in the current study, test-retest reliabilities ranged from 0.65 to 0.91 (median = 0.83) (Reynolds

& Kamphaus, p. 168). "Overall, internal-consistency reliabilities of the BASC-2 PRS composites and scales are high and are quite consistent between females and males, between clinical and nonclinical groups, and at different age levels" (Reynolds & Kamphaus, p.166).

Responses on the BASC-2 PRS are organized into clinical scales, composite scales, and adaptive scales. The ten clinical scales are Aggression, Anxiety, Attention Problems, Atypicality, Conduct Problems, Depression, Hyperactivity, Learning Problems, Somatization, and Withdrawal. The five composite scales are Externalizing Problems, Internalizing Problems, School Problems, Behavioral Symptoms Index, and Adaptive Skills. The six adaptive scales are Activities of Daily Living, Adaptability, Functional Communication, Leadership, Social Skills, and Study Skills. The current study will focus on six clinical scales – Anxiety, Depression, Somatization, Hyperactivity, Aggression, and Conduct problems; two composite scales – Internalizing Problems and Externalizing Problems; and one adaptive scale – Social Skills.

What follows is an elaboration of each of the above mentioned scales to be used in the current study. The Internalizing Problems composite scale includes behaviors that are "over-controlled" (Reynolds & Kamphaus, 2004, p. 67), such as Anxiety, Depression, and Somatization. The Anxiety scale targets a child's level of engaging in behaviors, such as excessive worrying, fears, self-deprecation, and nervousness. The Depression scale consists mainly of statements and expressions of "dysphoric mood" (Reynolds & Kamphaus, p. 62), suicidal thoughts, withdrawal, and negativity. The Somatization scale includes statements about physical symptoms, such as headaches and stomach pain. The

Externalizing Problems composite scale includes behaviors that are "under-controlled" (Reynolds & Kamphaus, p. 66), such as Hyperactivity, Aggression, and Conduct Problems. The Hyperactivity scale addresses hyperactive and impulsive behaviors consistent with diagnostic criteria for ADHD listed in the *DSM-IV-TR*. The Aggression scale targets both physically and verbally aggressive behaviors, which typically cause "physical or emotional ham to others or their property" (Reynolds & Kamphaus, p. 61). The Conduct Problems scale includes misbehavior and noncompliant and/or disruptive behavior which is consistent with diagnostic criteria for Conduct Disorder in the *DSM-IV-TR*. The Social Skills scale targets a child's adaptive functioning in social situations and includes the frequency with which he or she engages in socially appropriate behaviors.

All scores on the BASC-2 are reported as *T* scores, which are standard scores where the mean is 50 and the standard deviation is 10. For the clinical and composite scales, *T* scores of 41-59 are average, 60-69 are at risk, and 70 and above are clinically significant. For the adaptive scales, *T* scores of 41-59 are average, 31-40 are at risk, and 30 and below are clinically significant. *T* scores of 60 and above on the Internalizing Problems, Anxiety, Depression, Somatization, Externalizing Problems, Hyperactivity, Aggression, and Conduct Problems scales indicate possible problem areas; whereas, *T* scores of 40 or below on the Social Skills scale indicate a possible problem.

Woodcock-Johnson Tests of Cognitive Ability – Third Edition (WJ III COG)

The WJ III COG consists of 20 verbally administered tests developed based on the "Cattell-Horn-Carroll (CHC) theory of cognitive abilities" (Woodcock, McGrew, &

Mather, 2001, p. 11). The standard battery of tests includes tests 1-7, and the extended battery includes tests 1-7 and 11-17. Scores on individual tests are grouped into clusters and also a single measure, called the General Intellectual Ability (GIA). This GIA score "will often be the best single-score predictor of various global criteria such as overall school achievement or other life outcomes that have some relationship to cognitive ability" (Mather & Woodcock, 2001, p. 16).

In the current study, the following tests will be administered: 1-7, 9, 11-17. Analysis of the individual scores for each of these tests will result in the calculation of a GIA score based on administering the extended battery of tests. The GIA score will be used as each participant's intelligence quotient (IQ) and included in hypothesis testing.

Procedure

After initially screening participants over the telephone to determine if their child or adolescent fit the criteria for this research (i.e., age, diagnosis, IQ), parents were invited to attend a one-day testing session with their child(ren). Testing was conducted at one of four locations in the Dallas-Fort Worth area. Parents and their children were asked to come to the testing site on a Friday or Saturday. Children completed approximately eight hours of testing with graduate students from the School Psychology program at Texas Woman's University. Parents and children were given a one-hour break for lunch and additional breaks as needed. Some children were unable to complete testing in one day and returned another day to finish testing. All children under 13 years old were administered the following tests in random order: Woodcock-Johnson Tests of Cognitive Abilities–Third Edition (WJ III COG), Universal Nonverbal Intelligence Test (UNIT),

NEPSY: A Developmental Neuropsychological Assessment, Wide Range Assessment of Visual Motor Abilities (WRAVMA), Murphy-Meisgeier Type Indicator for Children (MMTIC-R), Student Styles Questionnaire (SSQ), Social Skills Rating Scales (SSRS), Kinetic House-Tree-Person (KHTP) projective drawing, and clinical interview. Children 13 years and older were given all tests previously listed except for the NEPSY. Parents were given in random order the following assessment instruments: Behavior Assessment System for Children (BASC), Behavior Assessment System for Children–Second Edition (BASC-2), Krug Asperger's Disorder Index (KADI), Myers-Briggs Type Indicator (MBTI), Marital Stress Index (MSI), Parent Stress Index (PSI) or Stress Index for Parents of Adolescents (SIPA), Developmental History. Parents also participated in a structured clinical interview.

Data Analysis

First, averages and frequencies were run on data retrieved from the BASC-2 PRS to provide a global assessment of how parents rate their children with ASD on measures of internalized and externalized behaviors. Then, correlations were run between each of the "level of functioning" variables – Age, IQ, and Social Skills – and each of the composite and individual behavior scales from the BASC-PRS. A Fisher's z test was used to analyze the significance of correlations between Social Skills and each of the composite and behavior scales.

In order to ensure the robustness of statistical procedures, it was necessary to run all correlations multiple times. First, only data gathered from the BASC-2 PRS forms completed by mothers were analyzed. The data for children whose parents completed two

BASC-2 PRS forms were averaged and used in a second analysis. It was determined that statistically significant relationships held true in both situations, so it was concluded that average data would be used. This means that if a participant's mother rated him with a 60 on anxiety and his father rated him with a 64 on anxiety, the average *T*-score of 62 would be used in the final data analysis.

A subsequent set of procedures was completed using data from the original version of the BASC PRS. No significant differences were found between the BASC PRS and BASC-2 PRS data, so this investigation focused on the BASC-2 PRS data.

A final set of analyses was completed with regards to the sex of the participants. Correlations were computed on the entire sample of both boys and girls and then again on a subset containing just the boys. All significant correlations remained consistent in both analyses, so the complete sample (both boys and girls) was used for final analysis.

CHAPTER IV

RESULTS

Descriptive Statistics

Analysis of the collected data yielded a set of group means on each of the scales on the Behavior Rating System for Children–Second Edition (BASC-2) Parent Rating Scale (PRS).

Table 2

BASC-2 PRS Mean T scores

Scale	N	Mean	Standard deviation
Internalizing Problems	45	61.5*	13.4
Anxiety	45	57.5	13.5
Depression	45	65.3*	12.0
Somatization	45	55.2	16.6
Externalizing Problems	45	61.3*	12.1
Hyperactivity	45	66.3*	10.9
Aggression	45	59.0	12.9
Conduct Problems	45	55.0	13.8
Social Skills*	45	35.7*	7.6

* indicates a T score was within the 'at risk' range

Table 2 displays the mean and standard deviation for each of the BASC-2 PRS behavior scales for the complete participant sample. Five of the nine scales – Internalizing Problems, Depression, Externalizing Problems, Hyperactivity, and Social Skills – have a mean within the at risk range. Analysis revealed that many of these children fall in the at risk or clinically significant classifications on the BASC-2 PRS (see Table 3).

Table 3

Percentage of Participants by BASC-2 PRS Score Classification

	Score Classifications				
Scale	Very Low	Low	Average	At Risk	Clinically Significant
Internalizing Problems	0.0%	4.4%	46.7%	20.0%	28.9%
Anxiety	2.2%	6.7%	51.1%	13.3%	26.7%
Depression	0.0%	0.0%	35.6%	28.9%	35.6%
Somatization	0.0%	20.0%	51.1%	11.1%	17.8%
Externalizing Problems	0.0%	0.0%	51.1%	26.7%	22.2%
Hyperactivity	0.0%	0.0%	26.7%	35.6%	37.8%
Aggression	0.0%	0.0%	62.2%	24.4%	13.3%
Conduct Problems	0.0%	6.7%	64.4%	13.3%	15.6%
Scale	Very High	High	Average	At Risk	Clinically Significant
Social Skills	0.0%	0.0%	22.2%	57.8%	20.0%

Internalized Behaviors

Statistical correlations were conducted to examine the possibility of relationships between three variables describing a child's level of functioning (IQ, age, social skills) and eight internalized and externalized behaviors as measured by the BASC-2 PRS. All correlations can be found in Table 4.

Table 4

Correlations between BASC-2 PRS Scales and Level of Functioning

	Level of Functioning		
Scale	Age	IQ	Social Skills
Internalizing Problems	.219	-.069	.052
Anxiety	-.009	-.071	.244
Depression	.132	-.060	-.237
Somatization	.347*	-.032	.075
Externalizing Problems	.059	-.033	-.448**
Hyperactivity	.076	-.090	-.386**
Aggression	.188	-.017	-.420**
Conduct Problems	-.078	.025	-.357*

** indicates significance at 0.01 level (2-tailed)
* indicates significance at 0.05level (2-tailed)

Age

Age was not significantly correlated with scores on the Internalizing Problems scale, $r(43) = .219, p = ns$. In addition, age was not related to either Anxiety or Depression scores, $r(43) = -.009, p = ns$ and $r(43) = .132, p = ns$ respectively. However, age was significantly correlated with Somatization scores, $r(43) = .347, p = .019$. As children with ASD age, frequency of somatic complaints increases (see Figure 1).

I.Q.

I.Q. was not significantly correlated with scores on the Internalizing Problems scale, $r(43) = -.069, p = ns$. In addition, I.Q. was not related to Anxiety, Depression, or Somatization scores, $r(43) = -.071, p = ns$; $r(43) = -.060, p = ns$; and $r(43) = -.032, p = ns$; respectively.

Social Skill Scores

Scores on the Social Skills scale were not significantly correlated with scores on the Internalizing Problems scale, $r(43) = .052, p = ns$. In addition, Social Skills scores were not related to Anxiety, Depression, or Somatization scores, $r(43) = .244, p = ns$; $r(43) = -.237, p = ns$; and $r(43) = .075, p = ns$, respectively.

Correlation Strength

Since only one correlation – between age and Somatization – was found to be significant, no analysis could be conducted to determine the strength of any single correlation.

Externalized Behaviors

Age

Age was not significantly correlated with scores on the Externalizing Problems scale, $r(43) = .059$, $p = ns$. In addition, age was not related to Hyperactivity, Aggression, or Conduct Problems scores, $r(43) = .076$, $p = ns$; $r(43) = .188$, $p = ns$; and $r(43) = -.078$, $p = ns$, respectively.

I.Q.

I.Q. was not significantly correlated with scores on the Externalizing Problems scale, $r(43) = -.033$, $p = ns$. In addition, I.Q. was not related to Hyperactivity, Aggression, or Conduct Problems scores, $r(43) = -.090$, $p = ns$; $r(43) = -.017$, $p = ns$; and $r(43) = .025$, $p = ns$, respectively.

Social Skills Scores

Scores on the Social Skills scale were significantly correlated with scores on the Externalizing Problems scale, $r(43) = -.448$, $p = .002$. In addition, Social Skills scores were significantly related to Hyperactivity, Aggression, and Conduct Problems scores, $r(43) = -.386$, $p = .009$; $r(43) = -.420$, $p = .004$; and $r(43) = -.357$, $p = .016$, respectively. As children with ASD increased their social skills, their externalized behaviors (expressed as hyperactivity, aggression, and conduct problems) decrease (see Figures 2-5).

Correlation Strength

A Fisher z test was conducted among the three significant correlations – Social Skills and Hyperactivity, Social Skills and Aggression, and Social Skills and Conduct

Problems. Comparisons of Hyperactivity and Aggression revealed no significant difference, $z = -.263$, $p = ns$. Comparisons of Aggression and Conduct Problems also revealed no significant difference, $z = -.481$, $p = ns$. Finally, comparisons of Hyperactivity and Conduct Problems revealed no significant difference, $z = -.218$, $p = ns$.

Hypothesis Testing

Hypothesis 1. Age correlates positively with internalized behaviors and negatively with externalized behaviors.

Results partially supported this hypothesis. Age was found to be positively correlated with Somatization (see Figure 1). All other resulting correlations failed to support this hypothesis.

Hypothesis 2. I.Q. correlates positively with internalized behaviors and negatively with externalized behaviors.

Results failed to support this hypothesis.

Hypothesis 3. Social skills correlate positively with internalized behaviors and negatively with externalized behaviors.

Results partially supported this hypothesis by finding that social skills correlated negatively with externalized behaviors (see Figures 2-5). However, data failed to support the hypothesized relationship between social skills and internalized behaviors.

Hypothesis 4. The internalized behavior of depression correlates the most strongly and positively with each of the factors of functionality (age, IQ, and social skills).

Results failed to support this hypothesis since these analyses could not be conducted as only age was associated with an internalizing behavior, Somatization.

Hypothesis 5. The externalized behavior of hyperactivity correlates the most strongly and negatively with each of the factors of functionality (age, IQ, and social skills).

Results failed to support this hypothesis. Analyses were only conducted on social skills as it was the only variable found to be significantly correlated with the four externalized behaviors. No single externalized behavior emerged as being more strongly correlated with social skills.

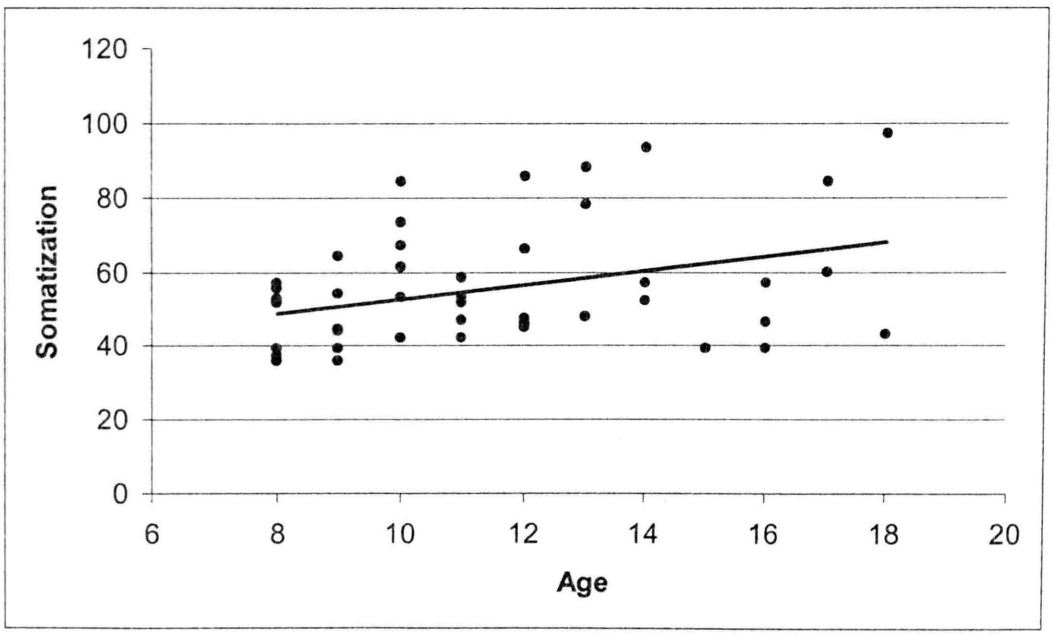

Figure 1. Correlation of age and BASC-2 PRS scores on the Somatization scale.

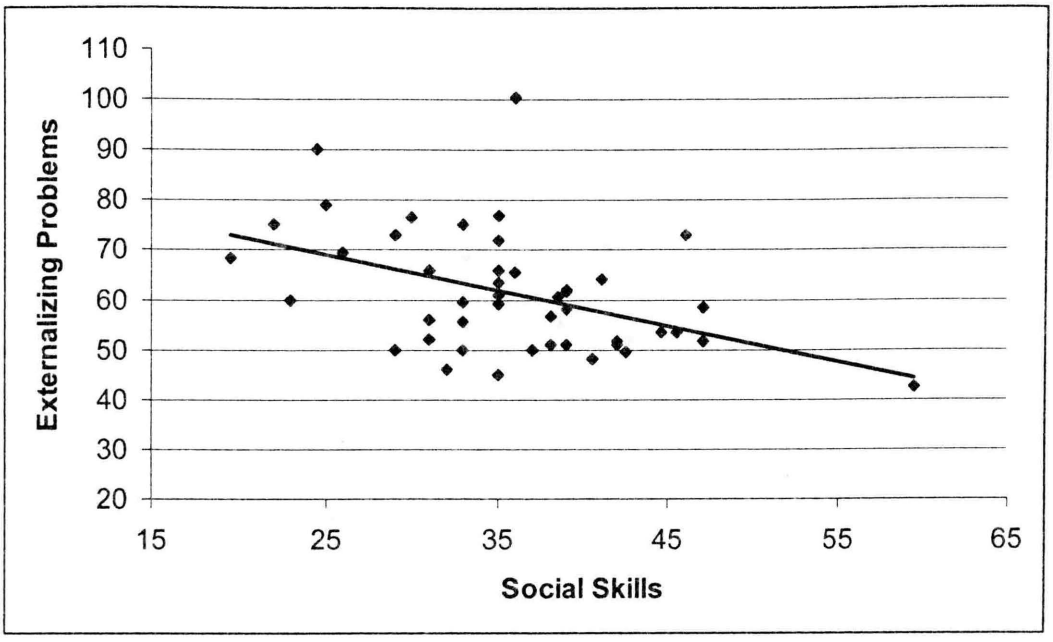

Figure 2. Correlation of BASC-2 PRS scores on the Social Skills and Externalizing Problems scales.

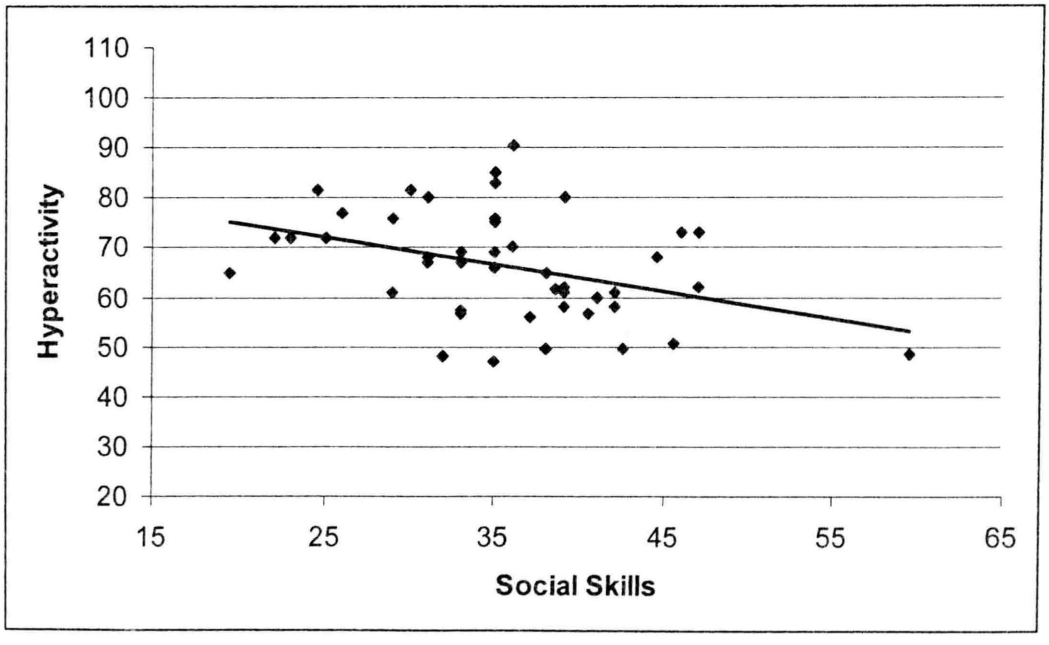

Figure 3. Correlation of BASC-2 PRS scores on the Social Skills and Hyperactivity scales.

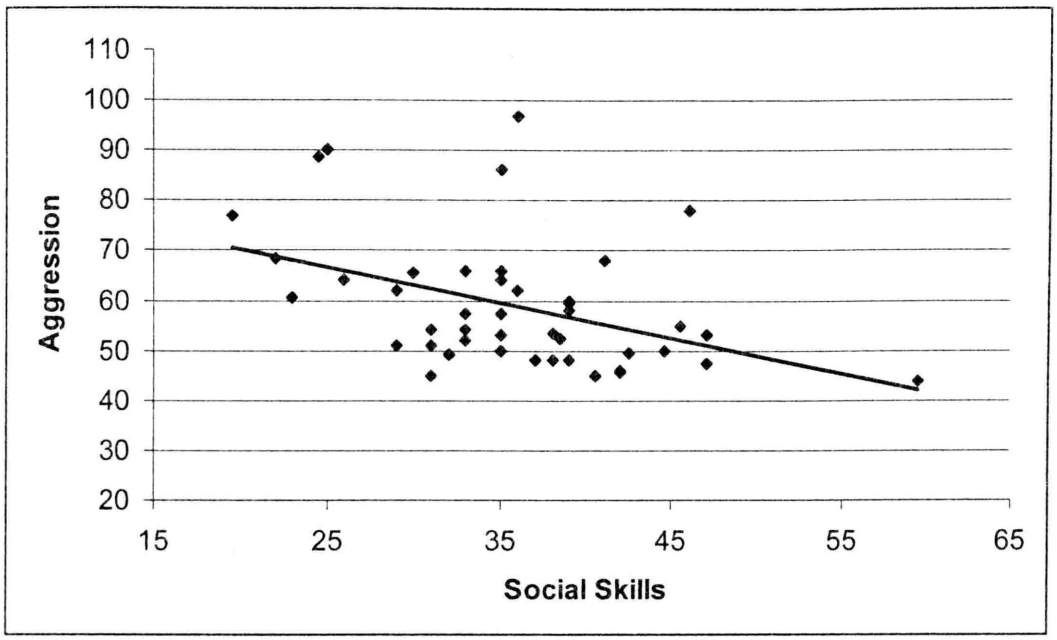

Figure 4. Correlation of BASC-2 PRS scores on the Social Skills and Aggression scales.

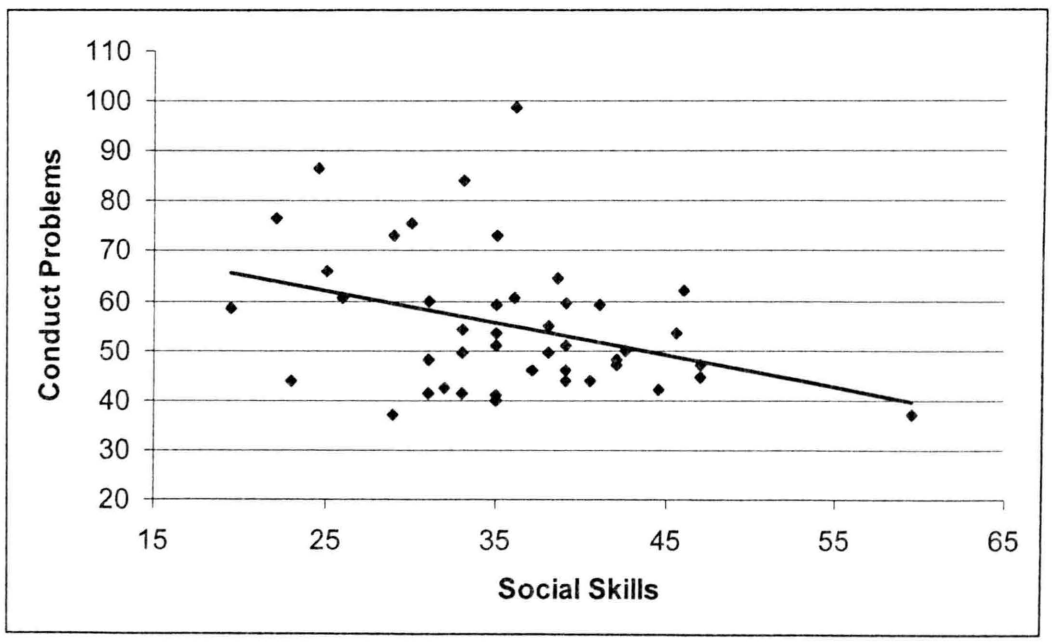

Figure 5. Correlation of BASC-2 PRS scores on the Social Skills and Conduct Problems scales.

CHAPTER V

DISCUSSION

Purpose of Research

The main purpose of conducting this study was to examine how higher functioning children with Autism Spectrum Disorders (ASD) of Asperger Disorder (AS), High Functioning Autism (HFA), and Pervasive Developmental Disorder, Not Otherwise Specified (PDD-NOS) demonstrate internalized and externalized behaviors as reported on the Behavior Assessment System for Children–Second Edition (BASC-2) Parent Rating Scale (PRS). These children's level of functioning was also investigated to determine if correlations existed between each of the functionality variables – age, IQ, and social skills – and the behavior variables from the BASC-2 PRS. Based on a thorough analysis of current research findings, it was posited that the higher a child's level of functioning the higher the internalized behaviors and the lower the externalized behaviors. The overall reason for examining these phenomena was to improve the current understanding of children with ASD so that parents and professionals will be better able to work effectively with these children.

Research Findings

The most significant finding of this study was the strong relationship between increased social skills and fewer expressions of three specific externalized behaviors – hyperactivity, aggression, and conduct problems. This finding signifies that as a child

with ASD develops better adaptive skills in social situations, he or she is likely to become less hyperactive and aggressive and exhibit fewer conduct problems. Indeed, this child is likely to conduct himself or herself in socially appropriate ways, act calmly, and be compliant. It is important to note here that correlation does not necessarily indicate causation. In this case, it is not known whether better social skills cause fewer externalized behaviors or whether fewer externalized behaviors causes better social skills. The relationship may not be unidirectional at all and instead be a cyclical or multidirectional relationship, where each variable affects the other in multiple ways. However they are related, it is clear that for children with ASD, better social skills go hand in hand with fewer externalized behaviors. It is a logical step, then, to explore social skills training as a viable intervention strategy for children with ASD in an effort to improve their overall functioning.

Another discovery that came as a result of this study was the strong relationship between age and somatization. Data indicated that older children display more somatic complaints, such as stomachaches and headaches. Somatization arises as a physiological response to psychological distress, and it may be that as children approach adolescence their stress levels increase. This phenomenon may be explained by the fact that children with ASD often have difficulty engaging in socially appropriate behaviors on a consistent basis. As children age, it may be that their social environment becomes less accepting of their sometimes uncontrollable nature of their behavior. Also, these children with ASD may become more demanding of themselves, thinking that they should be able to control

their behaviors and act "normally" when it is sometimes impossible. This frustration can exhibit itself as somatic complaints, as seen in these research results.

An examination of the data obtained from the BASC-2 PRS yielded some intriguing results which shed light on some internalized and externalized behaviors experienced by this population of children with ASD. When calculating mean *T* scores for each of the nine behavior scales on the BASC-2 PRS, it was discovered that the means for Internalizing Problems and Externalizing Problems both fell within the at risk range. Refer to Table 1. Depression was found to be the most prominent internal behavior, and Hyperactivity was found to be the most prominent external behavior. These results parallel past studies and support the notion that children with ASD have specific behavior problems which can be addressed on an individual basis. The Social Skills scale mean also fell within the at risk range, which is consistent with the understanding that children with ASD have significant social skills deficits. Overall, the mean scores on these behavior scales on the BASC-2 PRS provide important information about how these children experience and behave in the world. With the knowledge that most children with ASD have these issues, parents and professionals will be better equipped to create successful interventions and behavior strategies.

The final analysis conducted on the BASC-2 PRS data consisted of calculating the percentage of the participants who obtained behavior scale scores in each of the five score classifications. The two classifications of most interest are the at risk and the clinically significant categories. The data revealed that the majority of the children in this study experienced above average (at risk and clinically significant combined) levels of

depression (64.5%) and hyperactivity (73.4%). Although fewer children experienced the other behaviors – anxiety (40%), somatization (28.9%), aggression (37.7%) and conduct problems (28.9%) – they can be helpful in painting a more accurate picture of children with ASD and how they function in the world.

In summary, the results of this study revealed that older children with ASD exhibit more somatization and those with better developed social skills exhibit fewer overall externalized behaviors. Further data analysis demonstrated that children with ASD often exhibit above average levels of some internalized and externalized behaviors, particularly depression and hyperactivity. These conclusions may be useful in assisting parents and professionals in better understanding children with ASD and working with them more effectively.

Implications for School Psychology

A school psychologist has many duties within the educational environment, working with children, parents, teachers, and other professionals to create environments where children can be academically successful. It is common in most schools in the United States today for there to be a number of children with ASD. Although many of these children function well enough to be in regular education classrooms, the challenges of working with them can be significant for teachers, parents, and even other students. This study revealed some significant issues with which these children are faced on a daily basis, and understanding these phenomena can improve life for both children and adults involved.

As mental health professionals, school psychologists are trained to look not only for outward expressions of problem behavior but also for underlying psychological distress. This study demonstrated that children with ASD often experience above average levels of anxiety, depression, and somatization. It may be necessary to conduct specific assessment procedures to determine if any of these issues are present for the referred child with ASD. If one or more of these internalized behaviors is found to be a problem for the child, the school psychologist must then play the role of consultant with parents and teachers, providing them with a clear explanation of what the child is experiencing and how the adult can assist with these behaviors. It may be necessary to offer psychoeducation, bibliotherapy, or a support group so that the adults in the child's life can become more familiar with the relevant issues and successful coping strategies.

Another area of focus for school psychologists who work with children with ASD is the idea that change will occur. Once a parent or teacher determines how to work with a child with ASD, that adult may believe that his or her strategies will always work. This study found that children with ASD do change over time, and it would be best if the adults in that child's life also change their strategies to accommodate the child. Older children with ASD, for example, tend to exhibit more somatic complaints. School psychologists may wish to reveal this information to parents and teachers and prepare them for possible changes in the child.

A specific area where change can occur and also where benefits may be generated for the child with ASD is social skills. Many social skills training programs have been developed and resulted in positive change. In general, a social skills program is best when

it includes the following elements: social interaction strategies, understanding feelings, socially appropriate ways to dealing with emotions, empathy training, and self-regulation techniques. This study, as well as others, has found anxiety, depression, and somatization to be internalized behaviors which are a significant part of the daily lives of many children with ASD. It would be key, then, to include in any social skills training program information about identifying, expressing, and coping with these behaviors/emotions.

In conclusion, the more information we can gather, learn, and impart about higher functioning children with ASD the better life will be for children and adults. This study has contributed to the overall body of knowledge of autism in an effort to make assessment, diagnostic, intervention, and counseling strategies more effective and successful.

Future Research

Two main limitations to the current study warrant mention. First, the participant sample of children with ASD and their parents was collected based on convenience, or those who were reached by announcement methods and chose to contact the research team. Because of this sampling method, our participants were mainly of Caucasian decent (93%), which is not consistent with national ratios. Future research studies may wish to include more girls with ASD and participants with more diverse ethnic backgrounds. The second limitation which should be noted is the issue of diagnosis. This study included children who had been previously diagnosed with AS, HFA, and PDD-NOS by professionals unknown to the researchers. There was no possibility, then, of verifying the accuracy of these diagnoses, which may have impacted outcome data. Also, because of

the restricted range of scores on the BASC-2 PRS, a ceiling effect may have affected the correlation outcomes derived during statistical analysis. Below are listed several avenues that may be explored by researchers who wish to conduct future studies regarding children with ASD.

The finding of this study that there is a positive correlation between age and somatization could be further explored using a larger participant sample. With more data, one would be better able to determine the specific nature of the trend for somatization to increase with age. A particular pattern at different age levels may emerge to shed more light on this relationship. Also, further analysis may be conducted to determine the specific types of complaints these children exhibit most frequently. Children with ASD could be asked to keep a journal of somatic symptoms, feelings, and daily events to determine with which emotions and events somatization is linked.

It has become clear that for children with ASD, managing internalized and externalized behaviors can be quite a challenge. Their struggles often impact their ability to make and keep friends, their academic success, and their general stress levels. It would be a great contribution to the mental health and educational fields if researchers used the strong connection between social skills and externalized behaviors and the high incidence of anxiety, depression, and somatization to develop programs to assist children with ASD function in the world. Also, the above mentioned information could be used to teach parents, teachers, professionals, and other children to work effectively with children with ASD in multiple settings.

Anxiety and depression have emerged as clearly significant issues for children with ASD, and future research could focus on these two emotions more closely. Perhaps children with ASD could be given specific anxiety and/or depression inventories to complete to gain more knowledge about the specific elements that are central to these children. Intervention strategies, such as support groups, art expression, or journaling, could be implemented to examine ways for children with ASD to effectively manage their anxiety and/or depression.

As parents are key elements in the lives of children with ASD, further studies may target parents by offering education and support strategies designed specifically to address relevant issues. Investigating the impact of parental interventions on children's expression of internalized and externalized behaviors is yet another avenue of research that could be pursued.

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