DISSERTATION

THE UTILITY OF THE "BEHAVIORAL ASSESSMENT SYSTEM FOR CHILDREN" FOR ASSESSING ASPERGER'S SYNDROME

Submitted by:

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In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, CO

Summer 2005

COLORADO STATE UNIVERSITY

November 19, 2004

WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY JENNIFER L. LINDNER ENTITLED THE UTILITY OF THE "BEHAVIORAL ASSESSMENT SYSTEM FOR CHILDREN" FOR ASSESSING ASPERGER'S SYNDROME BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

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ABSTRACT OF DISSERTATION

THE UTILITY OF THE "BEHAVIORAL ASSESSMENT SYSTEM FOR CHILDREN" FOR ASSESSING ASPERGER'S SYNDROME

Asperger's Syndrome (AS) is a disorder that has become widely recognized in recent years. Early assessment and intervention is critical to providing necessary supports to help children with AS have more successful outcomes. Assessments designed specifically to evaluate for AS or other autism spectrum disorders often require in-depth training and expertise, and many of the behavioral checklists that have been developed for autism spectrum disorders have questionable psychometric properties. The Behavioral Assessment System for Children (BASC) is one of the most widely used assessment instruments in clinical, educational, and research settings and assesses a wide range of behavior in children. Unfortunately, little research has been conducted to determine whether or not the BASC may be useful as a screening tool for Asperger's Syndrome. This study was designed to assess whether the clinical and adaptive scales on the BASC could adequately differentiate among children diagnosed with Asperger's Syndrome (AS), Attention Deficit Hyperactivity Disorder (ADHD)-Combined Type, Attention Deficit Hyperactivity Disorder (ADHD)-Combined Type with comorbid Oppositional Defiant Disorder (ODD), and typically developing children. A discriminant analysis revealed that the scales on the BASC were able to accurately classify the vast majority of cases into the correct diagnostic groups based on the discriminant function coefficient weights obtained. Results showed that children with AS had a distinct profile on the BASC with high scores on Withdrawal and Atypicality, and low scores on Social Skills when compared to children with ADHD-Combined Type, ADHD-Combined Type with

comorbid ODD, and typically developing children. Results are discussed in terms of pragmatic implications for assessment of children with AS.

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ACKNOWLEDGEMENTS

First of all, I would like to acknowledge the families that participated in this study and extend my appreciation and respect. Some of the families came to the Psychological Services Center for assistance and agreed to let information about their child be used for research purposes, because they felt it was important to further understand their children and contribute knowledge to the scientific community. In addition, I would like to thank all of the parents of children attending childcare centers in the community that returned information to be used in this study.

I would also like to thank my committee members for their exceptional contributions to my dissertation, as well as my development into a professional psychologist. I have learned much from all of you and appreciate the integrity and knowledge that all of you possess. I hope to incorporate those virtues into my own identity as a professional. I am grateful to Dr. Gingerich and Dr. Barrett for being integral parts of both my thesis and dissertation projects.

I would also like to extend my deepest appreciation and gratitude to my advisor, Dr. Lee Rosén. It has been a privilege to work with Dr. Rosén and learn from him throughout my years in graduate school. I have always appreciated his forthright nature and willingness to extend support and assistance as requested. I also admire his exceptional professionalism and genuineness and hope to take that with me as I embark on my career. Thank you for everything, Lee.

The support of my husband, Patrick, has been quintessential to the successful completion of this project. His love, patience, and caring made it possible for me to stay

focused and motivated. His professional editorial skills were also extremely helpful to me when structuring text and putting punctuation marks in the correct places.

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CHAPTER 1

Introduction

Early diagnosis of child psychopathology is essential for successful treatment outcomes (Merydith, 2001; Safran, 2001). Accurate diagnosis of childhood disorders relies on a multitude of assessment methods, including direct observation, clinical interviews, behavioral checklists, cognitive testing, self-report measures, as well as the use of tools designed to assess for specific disorders. Behavioral checklists often provide a quick efficient method of screening for social, emotional, and behavioral problems in home and school settings. They are also relatively inexpensive and typically have comparison norms (Manning & Miller, 2001). Many behavioral checklists have been developed to specifically assess for Asperger's Syndrome and other Autism Spectrum Disorders (Kiker & Rosén, 2003). Nevertheless, these measures are not routinely used in psychological evaluations (Safran, 2001). Developing effective educational programming, addressing special needs, and implementing treatment interventions for children with Asperger's Syndrome (AS) has become an increasing area of concern (Safran, 2001). Without effective screening tools for AS, many children will not receive the services they need, will struggle in school, and will be at risk for developing other mental health problems (Safran, 2001; Tantam, 2000).

Some of the more widely used global behavioral checklists, such as the Behavioral Assessment System for Children (BASC) and the Child Behavioral Checklist,

have often been used to aid in the diagnosis of common childhood disorders, including Attention Deficit Hyperactivity Disorder (ADHD) and Oppositional Defiant Disorder (ODD) (Manning & Miller, 2001; Ostrander, Weinfurt, Yarnold, & August, 1998), but there has not been much research to suggest whether or not these general child behavioral checklists would be helpful in evaluating Autism Spectrum Disorders, such as Asperger's Syndrome.

Diagnosis of Asperger's Syndrome

The diagnosis of Asperger's Syndrome was first included in the American Psychiatric Association's *Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition* in 1994 after research studies confirmed its distinction from Autism (Szatmari, 2000). Subsequent research has also confirmed the reliability and validity of the diagnosis of Asperger's Syndrome as distinct from other Pervasive Developmental Disorders (Mahoney, et al., 1998). According to *DSM-IV-TR* criteria, a diagnosis of AS includes qualitative impairments in social interaction, and restricted, repetitive, and stereotyped patterns of behaviors, interests, and activities. Additionally, the person cannot have had delays in language or cognitive development or have met criteria for another Pervasive Developmental Disorder (APA, 2000).

The primary characteristic of a person with Asperger's Syndrome is impairment in social interaction. Individuals with AS have difficulty making friends and understanding social and emotional cues that are important in social interactions (Frith, 1991). Impairments in social interaction manifest themselves in numerous ways. An individual may lack nonverbal behaviors, such as eye-to-eye gaze or facial expression (Attwood, 2000). Some research has indicated that when individuals with AS experience distress,

the distress is not communicated by their facial expression or body posture. Thus, distress for a person with AS may be increased, since other people may be unaware of their discomfort due to lack of emotional expression (Myles & Simpson, 1998). Individuals with AS also have difficulty engaging in age-appropriate reciprocal social interactions. They often have one-sided conversations and fail to attend to the person they are talking to (APA, 2000; Bauer, 2000; Volkmar & Klin, 2000). Individuals with AS often want to make friends, but lack the skills to interact socially with others (Bauer, 2000; Volkmar & Klin, 2000).

In terms of restricted, repetitive, and stereotyped behaviors, individuals with AS often have a preoccupation with a topic of interest that exceeds typical interest by either the intensity or frequency of focus (APA, 2000; Attwood, 2001; Oznoff, South, & Miller, 2000). Individuals with AS may also exhibit some self-stimulatory behavior and have difficulty adjusting to changes in routine (APA, 2000).

Individuals with AS tend to exhibit less symptoms and severity when compared with individuals who have Autism. Furthermore, individuals with AS tend to have average to above average intellectual abilities and normal language development, which is different from other Pervasive Developmental Disorders (Bauer, 2000).

Assessment of Asperger's Syndrome

Similar to diagnoses of other childhood disorders, Asperger's Syndrome requires appropriate identification through clinical assessment. Clinical assessment includes instruments that address social, communicative, and repetitive behaviors. Specific instruments such as the Autism Diagnostic Interview-Revised (ADI-R; Lord, Rutter, & LeCouteur, 1994) Autism Diagnostic Observation Schedule (ADOS; Lord, Rutter,

Goode, Heemsbergen, Jordan, & Mawhood, et al., 1989) and Childhood Autism Rating Scale (CARS; Schopler, Reichler, & Renner, 1986) target those particular domains. The ADI-R is a structured clinical interview with caregivers, the ADOS is a standardized observational assessment that creates a variety of social contexts for different communicative levels to assess symptomology, and the CARS is also a standardized observation assessment in which adults fill out a rating system based on their observations (Lord & Risi, 1998). Use of these instruments is dependent on the clinical skills of the professional, requires extensive training, and is not routinely used in clinical practice (Lord & Risi, 1998; Lord, et al., 1989; Safran, 2001).

There are some behavioral checklists that have been designed to specifically address symptoms of Autism Spectrum Disorders including: The Australian Scale (Garnett & Attwood, 1995), Asperger's Syndrome Diagnostic Scale (Myles & Simpson, 1998), Autism Spectrum Screening Questionnaire (Ehlers, Gillberg, & Wing, 1999), and the Autism Quotient (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001). Little research has been conducted to determine whether or not the above-mentioned scales are reliable, valid, and effective in assessing for symptoms of Asperger's Syndrome. In addition, the Australian Scale and the Autism Spectrum Screening Questionnaire do not currently have established scoring systems or normative data (Ehlers, et al., 1999; Garnett & Attwood, 1995). Kiker and Rosén (2003) examined the above-mentioned behavioral checklists for Asperger's Syndrome and found that the Australian Scale was most predictive of a diagnosis of Asperger's Syndrome, while the Autism Quotient scale did not accurately distinguish among children with Asperger's Syndrome, behavioral disorders, and typically developing children.

The Behavioral Assessment System for Children

The Behavioral Assessment System for Children was developed by Reynolds and Kamphaus (1992) to assess a wide range of behavior in children and adolescents. Results from the BASC typically have implications for a variety of settings, such as clinical practice, research, and schools, and help to guide treatment planning (Adams & Drabman, 1994; Gladman & Lancaster, 2003). The BASC was constructed theoretically by first reviewing other behavior checklists and reviewing definitions of constructs by several professionals (Doyle, Ostrander, Skare, Crosby, & August, 1997; Gladman & Lancaster, 2003). Next, items were empirically evaluated in two trial samples prior to the national standardization sample on a large non-clinical and clinical population of children ages 4-18 (Kamphaus, et al., 1999; Reynolds & Kamphaus, 1992). The BASC measures constructs that directly map onto diagnostic criteria for childhood disorders listed in the *Diagnostic and Statistical Manual for Mental Disorders,* as well as department of education criteria requirements to be eligible for special education services (Flanagan, 1995; Gladman & Lancaster, 2003; Reynolds & Kamphaus, 1992). The BASC consists of five components, including Parent and Teacher Rating Scales (PRS and TRS), Structural Developmental History (SDH), Self Report of Personality (SRP), and Student Observation System (SOS). The various components of the BASC are designed to compliment each other, but can also be used in isolation (Hoza, 1994; Reynolds & Kamphaus, 1992). The clinical scales of the Parent Rating Scale consist of Hyperactivity, Aggression, Anxiety, Depression, Somatization, Attention Problems, Atypicality, and Withdrawal for all age groups. The Adaptive Scales include Social Skills for all ages, Leadership for 6-11 and 12-18 year-olds, and Adaptability for 4-5 and 6-11 year-olds.

The Parent Rating Scale on the BASC for ages 6-11 and 12-18 also include Conduct Problems as a clinical scale. Each item only contributes to one scale to ensure distinction among the various constructs being measured (Reynolds & Kamphaus, 1992). The BASC scoring system not only generates T-scores for the clinical and adaptive scales, but also calculates composite scores for externalizing behaviors, internalizing behaviors, and adaptive skills. Research has not supported the use of the composite scores, because different variances seem to contribute to more than one composite score (Mccarty, 2001). In general, the composite scores lack precision in measuring specific diagnoses and are used more to summarize behavioral dimensions (Reynolds & Kamphaus, 1992).

A unique aspect of the BASC is its use of items to assess for adaptive behavior, which has been a factor that has been shown to distinguish among children with differential diagnoses (Gladman & Lancaster, 2003). Assessing adaptive behavior also helps distinguish between children with clinical diagnoses and typically developing children (Vaugh, Riccio, Hynd, Hall, 1997; Kamphaus, et al., 1999). The BASC has other advantages over the widely used Child Behavior Checklist, including different forms for three different developmental stages, separation of anxiety and depression, distinction between attention problems and hyperactivity, and three validity scales to check for artifacts or response sets.

In addition, the BASC is useful in assessing for comorbid mental health problems (Manning & Miller, 2001; Vaugh et al., 1997). Comorbidity is fairly common among childhood psychological disorders and adds different dimensions to the primary disorder by affecting symptom presentation and response to treatment (Caron & Rutter, 1991).

The BASC separates various theoretical constructs into different clinical scales and adaptive scales, which aids in evaluating comorbid disorders (Manning & Miller, 2001).

The Utility of the BASC in Assessing ADHD

The BASC has been used to provide a general picture of behavior and emotional functioning, aid in the diagnosis of ADHD, and denote specific profiles of children with mental health issues (Gladman & Lancaster, 2003; Manning & Miller, 2001). The BASC was designed to comprehensively assess symptoms specific to ADHD (Matazow & Kamphaus, 2001). Research studies have found that the BASC PRS and TRS are better at distinguishing between subtypes of ADHD when compared with Achebach's Child Behavior Checklist (Gladman & Lancaster, 2003; Merydith, 2001; Ostrander et al., 1998). According to Reynolds and Kamphaus (1992), children with ADHD have high scores on Hyperactivity and Attention Problems, which is consistent with symptoms of ADHD. Parent ratings on the clinical scales of Hyperactivity, Conduct Problems, Attention Problems, and Adaptive Skills on the BASC were similar to teacher ratings indicating that both teacher and parent report are helpful in identifying symptoms of ADHD (Manning & Miller, 2001; Reynolds & Kamphaus, 1992). Other research studies examining the BASC's effectiveness in contributing to a diagnosis of ADHD have found that children with ADHD scored higher on all scales with the exception of the Somatization scale, but their T-scores did not fall within the "at risk" or "clinically significant" range when compared with typically developing peers (Manning & Miller, 2001).

The Utility of the BASC in assessing other Childhood Disorders

Children with various psychological diagnoses have different patterns of results on the clinical and adaptive scales of the BASC PRS (Reynolds & Kamphaus, 1992). Youth with disruptive behavior disorders including Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD) had the highest scores on the Conduct Problems clinical scale (Reynolds & Kamphaus, 1992). These groups also had elevated scores on Aggression and Hyperactivity, and low scores on Adaptability (Koonce, 2001; Reynolds & Kamphaus, 1992). Research studies have not consistently found significant differences in the pattern of results on the clinical scales of the BASC for children with ODD and CD; however, there were nine particular items that were found to be most predictive of CD (Koonce, 2001). Similar patterns of results were found for children with clinical diagnoses of depression. Children with depression had high scores on Conduct Problems, Depression, Aggression, and low scores on Adaptability. Parent ratings were found to be more helpful in identifying internalizing behaviors, such as depression and anxiety when compared with teacher report (Kamphaus, et al., 1999; Reynolds & Kamphaus, 1992). In addition, research has found that children who met department of education requirements for an emotional disturbance (ED) in Texas displayed different diagnostic profiles on the various components of the BASC including the PRS, TRS, and SRP when compared with the standardization sample (Neill, 2002).

Furthermore, research has been conducted to examine the utility of the BASC in assessing symptomology for youth experiencing other mental health issues that do not meet criteria for a psychological diagnosis, such as juvenile sex offenders and children suffering from abdominal pain (De La Torre, 1998; Robins, Schoff, Gluttting, &

Abelkop, 2003). Research findings have suggested that the BASC SRP was more useful for determining symptomology in less aggressive sex offenders. In addition, results from the BASC SRP also suggested that those offenders who had been sexually abused also experienced more problems in school and interpersonal difficulties than offenders who did not have a past history of abuse (De La Torre, 1998). A study by Robins et al. (2003) examined the utility of the BASC in a pediatric setting with children who had recurrent abdominal pain (RAP). The researchers found that some of the scales on the BASC distinguished children with RAP from typically developing peers on the Somatization, Depression, and Anxiety scales and helped professionals gauge the emotional functioning of children experiencing RAP.

The BASC and Autism Spectrum Disorders

When the BASC was constructed, children with Autism and Pervasive Developmental Disorder, Not Otherwise Specified (PDD-NOS) were included in the standardization sample. These children tended to score high on Atypicality, Hyperactivity, and Attention Problems. They also had low scores on Leadership, Social Skills, and Adaptability (Reynolds & Kamphaus, 1992). Children with Asperger's Syndrome were not included in the original standardization sample used to establish norms for the BASC, although a research study conducted by Lindner and Rosén (2003) found that children with AS had higher scores on Atypicality and Withdrawal and lower scores on the Adaptive subscales when compared to typically developing peers. In this study, the children with AS also scored high on Attention Problems and Hyperactivity. Reynolds and Kamphaus (1992) found similar results with an Autism sample for Attention Problems, but not for Hyperactivity.

Present Study

There has been little research regarding the utility of the BASC in assessing symptoms of Asperger's Syndrome. Furthermore, little research has been done to determine whether or not there appears to be a general BASC profile of children with AS that is distinct from other common childhood disorders, such as ADHD and ODD. Since the BASC assesses maladaptive and adaptive behavior, has sound psychometric properties, and maps directly onto DSM criteria for childhood disorders and special education classifications, it has become one of the most widely used assessment measures in clinical practice (Adams & Drabman, 1994).

The present study was designed to assess whether or not the BASC can effectively assess symptoms of Asperger's Syndrome and assist in screening for further clinical assessment. Profiles of common childhood disorders were examined, including ADHD, Combined Type, ADHD-Combined Type with comorbid ODD, and AS, to determine whether or not the clinical scales of Hyperactivity, Aggression, Anxiety, Depression, Atypicality, Withdrawal, and Attention Problems and the adaptive scale of Social Skills can distinguish among the different diagnoses and whether or not there appears to be a unique combination of scales that are predictive of these different childhood disorders. These scales of the BASC were chosen because they are consistent across all age forms of the BASC. Somatization was not included in the analyses, because prior research has not shown any differences among children with ADHD, AS, and typically developing children (Lindner & Rosen, 2003; Manning & Miller, 2001). In the present study, diagnostic profiles were also compared with profiles of typically developing children.

Based on previous research, it was hypothesized that individuals with AS will have higher levels of Atypicality and Withdrawal and lower scores on Social Skills when compared with children who have ADHD, ADHD with comorbid ODD, and typically developing children.

CHAPTER 2

Method

Participants

One hundred and eleven parents participated in this study. Participants had children who ranged in age from 4-17 years of age with a mean of 9.23 years and a standard deviation of 3.25 years for the sample. All participants had children who received services from 1993- 2004 through the Psychological Services Center (PSC) with the exception of parents with typically developing children. PSC is a sliding fee scale community mental health clinic that provides services to a community of approximately 130,000 in the western United States. PSC serves as a training clinic for doctoral students in the Counseling Psychology Program in the Department of Psychology at Colorado State University. The participants' children were categorized into the following groups: Asperger's Syndrome (AS), ADHD-Combined Type (ADHD-C), ADHD-Combined Type with comorbid ODD (ADHD-CO), and typically developing children (TDC). All of the diagnostic groups (AS, ADHD-C, and ADHD-CO) included parents whose children and adolescents were diagnosed by a professionally trained and supervised graduate student at PSC or by a community professional.

There were 28 parents who had children with Asperger's Syndrome (24 males and 4 females). Some of the children with AS had other comorbid diagnoses: three children had anxiety disorders, four children had ADHD-Combined Type, and one child

had ADHD-Inattentive Type and a depressive disorder. It should be noted that comorbid disorders are common in children with AS (Goldstein & Schwebach, 2002; Tantam, 2000). The mean age for the AS group was 10.36 years with a standard deviation of 3.01 years. The ethnicity of the AS group was European-American (26) and 2 of the participants did not indicate an ethnicity for their child.

There were 27 parents of children with ADHD-Combined Type (21 males and 6 females). The mean age for children in the ADHD-C group was 8.81years with a standard deviation of 3.21 years. The ADHD-C group was also primarily European-American (20). There was also 1 Hispanic child, 2 African-American children, 2 participants who identified their children as biracial, and 2 participants who did not indicate an ethnicity for their child.

The ADHD-CO group was composed of parents who had children with ADHD-Combined Type and Oppositional Defiant Disorder. There were 28 participants in the ADHD-CO group (22 male and 6 females). The mean age for this group was 8.29 years with a standard deviation of 3.72 years. Twenty-one of the participants' children were European-American, 3 were Hispanic, 1 was African- American, and 3 participants did not indicate an ethnicity for their child.

With respect to the parents of typically developing children, there were 28 participants (19 males and 9 females). The mean age for the TDC group was 9.14 years, with a standard deviation of 2.80 years. There were 24 parents who indicated their children were European-American, 2 were Hispanic, and 2 did not indicate the ethnicity of their child.

There were no significant differences for gender, F= .94, p> .05 or age, F= 2.10, p> .05 among the four groups. See Table 1 for a complete listing of ages by group. The current study was reviewed and approved by the Institutional Review Board (IRB) of Colorado State University (see Appendix A).

Table 1

Breakdown of Gender and Age by Group

Age in Years	AS		ADHD-C		ADHD-CO		TDC	
	M	F	M	F	M	F	M	F
4	0	0	2	0	3	0	0	0
5	1	0	1	0	6	1	1	0
6	2	0	3	2	2	1	2	1
7	1	0	3	0	1	1	2	3
8	4	0	3	0	1	0	1	2
9	2	1	2	0	2	0	4	2
10	4	1	2	0	0	0	4	1
11	4	0	2	3	1	0	0	0
12	0	2	0	0	2	0	2	0
13	1	0	1	1	1	1	0	0
14	2	0	1	0	2	1	1	0
15	1	0	0	0	1	0	0	0
16	1	0	0	0	0	0	2	0
17	1	0	1	0	0	0	0	0

Instruments

The Behavioral Assessment System for Children (Reynolds & Kamphaus, 1992). The BASC is a behavioral checklist designed to document behavioral observations made by parents (PRS) and teachers (TRS) in the home and school environments, respectively. There are three other components of the BASC, including a Structural Developmental History (SDH), Self Report of Personality (SRP), and Student Observation System (SOS). These forms were designed to be used in conjunction with each other or separately (Hoza, 1994; Reynolds & Kamphaus, 1992). The PRS form of the BASC was used in this study. Parents responded to questions regarding a wide range of behavior on a four point Likert-type scale, with responses ranging from "never" to "always." Scores are reported in a T-score format, which has a mean of 50 and a standard deviation of 10. Scores are considered clinically significant at two standard deviations above or below the mean. The clinical scales on the BASC include Attention Problems, Hyperactivity, Conduct Problems, Depression, Anxiety, Somatization, Atypicality, Withdrawal, and Aggression. The BASC also has 2 to 3 Adaptive Scales depending on the age of the child, including Adaptability, Social Skills, and Leadership. The BASC PRS was designed for use with boys and girls, ages 2.5 to 18 years and has been shown to be reliable and valid with many samples. Internal consistencies of the scales are high, averaging above .80, and test-retest reliability is generally found to be around .80 (Reynolds & Kamphaus, 1992). See Appendix B for sample items from the different scales on the parent form of the BASC.

Demographic Form. The parents of typically developing children were given this form. Parents indicated gender, age, ethnicity, psychological diagnoses, special education

services received, and any previous psychological treatment history. The standard demographic form for the Psychological Services Center was used to gather the same data from the groups of clinical participants (see Appendix B).

Procedure

As a part of the intake process for children to receive services from PSC, parents fill out demographic and background information. Parents also typically fill out the Behavioral Assessment System for Children (BASC) to provide the therapist with general information about clinical problems. Additionally, therapists assess and document diagnostic information during the course of treatment at PSC. Client files containing completed BASC Parent Rating Scales were used for this study. Diagnostic and treatment information were obtained from the following sources contained within the client files: psychological evaluation report, termination report, and demographic form to determine age, ethnicity, and psychological diagnoses of the participants' children.

Recruitment of Typically Developing Children

Parents with typically developing children were recruited from local child-care centers. Research packets were given to the directors of the child-care centers to distribute to parents of school age children that were enrolled at their facility. The research packets included a cover letter describing the research (see Appendix C), a demographic from, a BASC form, and a stamped addressed envelope for parents to mail the information to the researchers. All of the packets were marked with a subject number to ensure anonymity if the parents decided to participate in the research study. Participants in the typically developing group were parents of children who had not

received psychological services nor did they have children with a psychological diagnosis, as indicated by their parents or guardians on the demographic form.

CHAPTER 3

Results

Internal Reliability

Internal reliability analyses were conducted for the three different age group forms of the BASC by calculating Cronbach's coefficient alpha. The BASC form for children ages 2.5-5 years old contained 131 questions. There were 15 participants in that age group; however, two of the items were dropped from the analyses since there was no variance among the participants (items 95: "Complains of shortness of breath" and 130: " Offers help to other children"). This scale was highly reliable for this sample with a Cronbach alpha of .94. The BASC form for children ages 6-11 contained 138 items, and there were 71 participants in this age group. Item 6: "Runs away from home" had no variance among participants and was excluded from the analysis. This scale was reliable for this sample with a Cronbach alpha of .82. In terms of the BASC form for children ages 12-18, there were 126 items and 25 participants in this age group. One item was dropped from the analysis due to zero variance (item 27: "Runs away from home overnight"). The scale was reliable for this sample with a Cronbach alpha of .87. There were no differences in age, $F(3, 107) = 2.10, p > .05$ or gender, $\chi^2 = 2.59, p > .05$ across the four groups.

These reliability analyses were also conducted within each of the scales examined in the present study for the three age group forms of the BASC. The Aggression subscale was highly reliable for all age groups. The 2.5-5 form contained 13 items with a Cronbach alpha of .87 The 6-11 form had 13 items and a Cronbach alpha of .90, while the 12-18 form contained 11 items and had a Cronbach alpha of .78. In terms of the Anxiety subscale, the various developmental forms of the BASC were also reliable with the exception of the 12-18 form, which had 11 items and a Cronbach alpha of .47. The 2.5-5 form had 12 items with a Cronbach alpha of .81, and the 6-11 form contained 11 items with a Cronbach alpha of .80. The Attention Problems subscale was not reliable for the different age forms of the BASC, with the exception of the 2.5-5 form had 7 items and a Cronbach alpha of .82. The 6-11 form had 7 items and a Cronbach alpha of .12, while the 12-18 form had 7 items and a Cronbach alpha of .13. With respect to Atypicality, the different developmental forms appeared to be highly reliable. On the 2.5-5 form, there were 13 items with a Cronbach alpha of .76. The 6-11 form had 12 items with a Cronbach alpha of .80, while the 12-18 form had 11 items and a Cronbach alpha of .62. The Depression scale of the BASC was also fairly reliable for the different age forms of the BASC. The 2.5-5 form had 13 items with a Cronbach alpha of .79. The 6-11 form contained 12 items with a Cronbach alpha of .75, while the 12-18 form had 11 items and a Cronbach alpha of .82. The Hyperactivity subscale was also highly reliable. The 2.5-5 form had 16 items with a Cronbach alpha of .94. The 6-11 form had 10 items with a Cronbach alpha of .85, and the 12-18 form had 10 items with a Cronbach alpha of .85. With respect to Social Skills, the various forms of the BASC were also highly reliable. The 2.5-5 form of the BASC had 13 items with a Cronbach alpha of .83, while the 6-11

for had 10 items with a Cronbach alpha of .88. The 12-18 form of the BASC contained 12 items and had a Cronbach alpha of .89. The Withdrawal scale was not too reliable across the forms of the BASC. The 2.5-5 form had 11 items with a Cronbach alpha of .59. The 6-11 form had 8 items with a Cronbach alpha of .45, while the 12-18 form had 6 items and a Cronbach alpha of .78. Overall, all of the scales were highly reliable for all forms of the BASC with the exceptions of Anxiety, Attention Problems, and Withdrawal. See Table 2 for subscale reliabilities.

Table 2

Reliabilities for the Subscales on the Behavioral Assessment for Children (BASC) by Developmental Form

	Developmental Form		
Clinical Scales	2.5-5	6-11	12-18
Aggression	.87	.90	.78
Anxiety	.81	.80	.47
Attention Problems	.82	.12	.13
Atypicality	.76	.80	.62
Depression	.79	.75	.82
Hyperactivity	.94	.85	.85
Social Skills	.83	.88	.89
Withdrawal	.59	.45	.78

Discriminant Analysis

Prior to conducting a discriminant function analysis, a MANOVA was performed in order to examine the differences of mean scores across groups. A MANOVA analysis revealed a significant omnibus F (F (3,107) = 6.94, $p < .001$, partial $\eta^2 = .36$). The follow up univariate analyses indicated that the differences in mean scores for the BASC scales across each group were all significant, $p < .001$, except Anxiety, which was significant at $p < .05$. The effect size values (partial η^2 values) obtained for the groups: AS, ADHD-C, ADHD-CO, and TDC were between .10 and .44. See Table 3.

Table 3
Scales of the Behavior Assessment System for Children (BASC) by Group

BASC Scales	Group AS *M*	AS *SD*	ADHD-C *M*	ADHD-C *SD*	ADHD-CO M	ADHD-CO SD	TDC M	TDC SD	Group Effect $F(1, 29)$	Effect Size η^2
Hyperactivity	61.82	15.32	64.85	10.49	75.29	17.28	48.89	11.94	16.76**	.32
Aggression	55.68	10.75	59.07	14.42	71.00	13.41	49.07	9.65	15.90**	.31
Anxiety	55.57	12.26	52.74	10.29	56.32	12.71	47.36	8.51	3.77*	.10
Depression	63.29	14.31	61.22	14.41	67.32	14.26	46.14	9.38	13.65**	.28
Atypicality	68.00	17.57	64.48	18.24	66.71	17.12	48.36	9.39	9.17**	.20
Withdrawal	65.12	15.97	51.07	10.68	54.71	11.36	48.39	8.77	10.41**	.23
Attn Probs	64.21	8.12	67.11	10.67	74.86	14.07	48.25	11.05	27.85**	.44
Social Skills	35.79	8.31	44.19	10.52	34.21	7.73	54.29	10.47	27.30**	.43

* $p < .05$, ** $p < .001$
Note: AS= Asperger's Syndrome; ADHD-C= Attention Deficit Hyperactivity Disorder, Combined Type; ADHD-CO= Attention Deficit Hyperactivity Disorder, Combined Type with comorbid Oppositional Defiant Disorder; TDC= typically developing children

Post hoc analyses were conducted for each BASC scale in order to determine among which groups the significant differences in mean scores existed. Tukey's post hoc analyses showed that for Hyperactivity, Aggression, and Attention Problems, the AS and ADHD-C groups were significantly different from ADHD-CO and TDC, but not

significantly different from each other. The ADHD-CO group had the highest score for Hyperactivity, Aggression, and Attention Problems, which was significantly different from all of the groups. The AS group had significantly higher scores on Withdrawal than the ADHD-C, ADHD-CO, and TDC groups. The ADHD-C, ADHD-CO, and TDC groups were not significantly different from each other on Withdrawal. For Anxiety, Depression, and Atypicality, the clinical groups were not significantly different from each other, but the TDC group had significantly lower levels of Anxiety when compared to the AS and ADHD-CO groups. The TDC groups also had significantly lower levels of Depression and Atypicality compared to all the other groups. The AS and ADHD-CO group had the lowest scores on Social Skills and the scores were significantly lower than the ADHD-C and TDC groups, but were not significantly different from each other. The TDC group also had significantly higher scores on Social Skills than the three clinical groups. Only the ADHD-CO had scores in the clinically significant range for Hyperactivity, Aggression, and Attention Problems, while the other clinical groups had some scores in the "at risk" range.

The discriminant function analysis used eight BASC scales (Hyperactivity, Aggression, Anxiety, Depression, Atypicality, Withdrawal, Attentions Problems and Social Skills) to predict membership into 4 groups (Asperger's Syndrome, ADHD-Combined Type, ADHD-Combined Type with comorbid Oppositional Defiant Disorder, and Typically Developing Children). Of the discriminant functions produced by the analyses, the canonical correlations associated with the first and second discriminant functions were statistically significant (canonical r values of .72 and .61, $p < .001$ for both functions). The remaining discriminant function had a canonical correlation of .32,

which was not significant ($p > .05$). Therefore, both the first and second discriminant functions were interpreted.

Standardized discriminant function coefficients for the total sample were obtained from the analyses. The relative importance of each scale was determined by examining the weights of each coefficient in the discriminant function. Scales with the largest absolute coefficients are relatively more important in differentiating cases into the correct groups (Poulsen & French, 2004; Green & Salkind, 2003). The correlation coefficients and standardized coefficients for the BASC scales of Hyperactivity, Aggression, Anxiety, Depression, Atypicality, Withdrawal, Attention Problems, and Social Skills in terms of the first and second discriminant functions are listed in Table 4.

Table 4

Standardized Coefficients and Correlations of BASC Scales with the Two Discriminant Functions

BASC Scales	Correlation Coefficients in the structure matrix		Standardized coefficients for discriminant functions	
	Function 1	Function 2	Function 1	Function 2
Attention Problems	.84	.02	.57	.20
Social Skills	-.77	.42	-.55	.51
Hyperactivity	.65	.11	.16	.21
Aggression	.61	.27	.18	.95
Depression	.58	-.18	-.10	-.30
Atypicality	.43	-.27	-.19	-.59
Anxiety	.29	-.15	.25	.16
Withdrawal	.22	-.62	- 19	-.51

In addition, the group centroids mean values on the discriminant function for the 4 groups indicated that the ADHD-CO group had the highest mean score for both discriminant functions. See Table 5 for group centroid means.

Table 5
Group Centroid Mean Values for Groups by Discriminant Function

Groups	Discriminant Function 1	2
AS	.12	-1.36
ADHD-C	.13	.22
ADHDCO	1.3	.66
TDC	-1.5	.46

Note: AS= Asperger's Syndrome; ADHD-C= Attention Deficit Hyperactivity Disorder, Combined Type; ADHD-CO= Attention Deficit Hyperactivity Disorder, Combined Type with comorbid Oppositional Defiant Disorder; TDC= typically developing children

Thus, the scales that were weighted most heavily in the first discriminant function to predict group membership were Attention Problems and Social Skills. ADHD-CO had the highest level of Attention Problems and the lowest score on Social Skills. The AS group had low Social Skills compared to ADHD-C and TDC. Atypicality, Withdrawal, and Depression had the next strongest relationships with the first discriminant function. The AS group has the highest scores of Atypicality and Withdrawal and ADHD-CO had the highest scores on Depression. Anxiety, Aggression, and Hyperactivity had weaker relationships with the first discriminant function. In terms of the second discriminant function, the scale that weighted most heavily to predict group membership was Aggression with the ADHD-CO group having the highest scores for Aggression. Atypicality, Social Skills, and Withdrawal had the next strongest relationships in the

second discriminant function. The AS group has the highest scores on Atypicality, but was only significantly different from the typically developing children. The AS group also had the highest scores on Withdrawal, while the AS and ADHD-CO group had the lowest scores on Social Skills. Hyperactivity, Anxiety, Attention Problems had a weaker relationship to the discriminant function.

A discriminant analysis also examines what percentage of the total sample can be correctly classified into groups based on the discriminant function obtained and the percent of cases that were correctly classified within each group. Classification analyses were conducted based on group size in the current sample. The results revealed that 69.4% of cases in the total sample could be correctly classified in terms of group membership (Asperger's Syndrome, ADHD-Combined Type, ADHD-Combined Type with comorbid Oppositional Defiant Disorder and Typically Developing Children). In the AS group, 82% of the cases were correctly classified. In the ADHD-C group, 52% of the cases were correctly classified. The ADHD-CO group had 68% of the cases classified correctly, while the TDC group classified 75% of the cases correctly. The results revealed that the group most difficult to classify based on the discriminant function was the ADHD-C group. The overall results, however, demonstrate that the discriminant function was able to classify the majority of the cases accurately. The effect size (η^2) of the discriminant function analysis was large (.70) and indicates the strength of the relationship between the discriminant function obtained and group membership. Lastly, in order to assess for chance agreement in predicting group membership, a kappa coefficient was computed. A kappa coefficient of .59 was obtained, indicating that there was a better than chance level of prediction.

CHAPTER IV

Discussion

The BASC is a measure that is routinely used in clinical practice, schools, and research; however, a lack of research exists regarding the BASC's usefulness in screening for Asperger's Syndrome in children. The current study was designed to assess whether or not the Behavioral Assessment System for Children (BASC) can effectively assess symptoms of Asperger's Syndrome and assist in screening for further clinical assessment. Additionally, the study was designed to determine whether or not there appears to be a general BASC profile of children with AS that is distinct from other common childhood disorders, such as Attention Deficit Hyperactivity Disorder and Oppositional Defiant Disorder.

The BASC as a Screening Instrument for Children with Asperger's Syndrome

Impairment in social interaction is the hallmark of Asperger's Syndrome (AS). Children with AS often have problems understanding social and emotional cues, have difficulty establishing friendships, and lack reciprocity when interacting with others (Frith, 1991). Some of the scales on the BASC reflect symptomology characteristic of AS, such as Social Skills, Withdrawal, and Atypicality. The Social Skills scale was designed to assess positive interpersonal skills and social adaptation, while Withdrawal measures the child's tendency to avoid social interaction and rejection by peers. Atypicality can be used to assess symptoms of psychotic disorders, but also may be indicative of immaturity or developmental delays (Reynolds & Kamphaus, 1992). Some

of the items on the Atypicality scale may reflect behaviors that meet the stereotyped, restricted, and repetitive behaviors criterion in the diagnosis of AS, such as "picks at things like own hair, nails, or clothing," "repeats one activity over and over again," and "repeats one thought over and over again." In this study, the AS group had significantly higher scores on Withdrawal when compared with ADHD-C, ADHD-CO, and TDC groups. The AS group also had significantly lower scores on Social Skills when compared with ADHD-C and TDC groups. In addition, all of the clinical groups had higher levels of Atypicality when compared to the TDC group; however, all of the scores were in the "at risk" range. These findings were consistent with previous research (Lindner & Rosén, 2003; Reynolds & Kamphaus, 1992). While there is some overlap in the pattern of scores on the scales of the BASC when comparing AS to other common childhood disorders, there does seem to be a distinct pattern of results that are more indicative of AS as opposed to ADHD-Combined Type or ADHD-Combined Type with comorbid ODD. Thus, a combination of high scores on Withdrawal and Atypicality and low scores on the Social Skills scales on the BASC would be a good indicator of a need for further assessment for Asperger's Syndrome.

Discriminant Functions and General BASC profiles

A discriminant analysis was chosen for this study because it reduced Type I error, took into account correlations among the dependent variables, and allowed for joint comparisons among variables. All of the clinical scales on the BASC that are consistent across the three age forms of the BASC were examined with the exception of Somatization. Several research studies indicated that children with AS, ADHD, ODD, as well as typically developing children frequently have low scores on Somatization

(Lindner & Rosén, 2003; Manning & Miller, 2001). Thus, Somatization was not included in these analyses.

Overall, the results of the discriminant function analysis indicated that the majority of cases could be accurately classified into the correct group (69.4%) based on the discriminant function coefficients obtained. Based upon the relative size of the first discriminant function coefficients, the data suggest that the BASC clinical scale of Attention Problems was most useful in classifying cases into correct groups, followed by a negative relationship with Social Skills. The ADHD-CO group had the highest scores on Attention Problems, followed by ADHD-C and AS, which were not significantly from each other. Additionally, the AS and ADHD-CO group had the lowest scores on Social Skills. In terms of the second discriminant function, the relative size of the coefficients indicated that Aggression was most helpful in distinguishing among the groups, followed by Atypicality, Withdrawal, and Social Skills.

The findings from the study partially support the hypothesis that individuals with AS will have higher levels of Atypicality and Withdrawal and lower scores on Social Skills when compared with children who have ADHD, ADHD with comorbid ODD, and typically-developing children. Children with AS had significantly higher scores on Withdrawal when compared to children with ADHD-Combined Type, ADHD-Combined Type with comorbid ODD, and typically developing children. Children with AS also had lower Social Skills than children with ADHD, Combined Type and typically developing children, but not children with ADHD-Combined Type and comorbid ODD. With respect to Atypicality, all of the clinical groups had scores significantly higher than typically developing children but not significantly different from each other.

Limitations of the Present Study

One of the limitations of the present study was the difference of scales included on the age forms of the BASC. Conduct Problems, Adaptability and Leadership were not included in the analyses, because those scales are not included on all three age forms of the BASC filled out by participants. Previous research has indicated that children with AS tend to have significantly lower scores on all of the Adaptive scales, including Adaptability and Leadership when compared with typically developing children (Lindner & Rosén, 2003). The current study found that adaptive behavior as measured by the Social Skills scale was a distinction between the clinical and typically developing groups of children, as well as differentiating among the clinical groups. Prior research has also shown adaptive behavior to be an important factor in discriminating among different childhood diagnoses, as well as typically developing children (Vaugh et al., 1997; Kamphaus et al., 1999; Gladman & Lancaster, 2003). Research has also found that children with ODD have elevated scores on Conduct Problems and low scores on Adaptability. Thus, future research may want to examine each age form of the BASC separately in order to assess which scale distinguish among different clinical groups of children at the developmental levels (2.5-5 years, 6-11 years, and 12-18 years). Additionally, an estimate of cognitive ability was unavailable for the study, which may have impacted some of the scales.

Another limitation of the present study is related to the release of the BASC-2 in December 2004. There are two new scales that will be included on the BASC-2 Parent Rating Scale: Activities of Daily Living and Functional Communication. When the BASC-2 is released, it may be important to assess whether or not these scales are helpful

in screening for certain childhood disorders depending on the construct being measured by the items contained within each of the new scales (AGS Publishing, 2004).

Comorbidity was an issue with the AS group. However, it should be noted that additional analyses were conducted without the 4 participants who have AS with comorbid ADHD-Combined Type and the pattern and significance of results were the same. Research has demonstrated that children with AS typically have comorbid mental health disorders (Goldstein & Schwebach, 2002; Tantam, 2000). The study was originally designed to include a group of children with only ODD, but there were not enough participants in the group to warrant inclusion in the discriminant analysis. Given that there were some significant differences between the ADHD-C and ADHD-CO group in terms of Aggression, Hyperactivity, Attention Problems, and Social Skills, further research could examine whether or not these differences are attributable to ODD or if the combination of ADHD and ODD lead to higher scores on the BASC scales listed above. If the differences between ADHD-Combined Type group and the ADHD-Combined Type with comorbid ODD group cannot be attributable to ODD, it may suggest that disorders that are comorbid with each other create a new hybrid disorder rather than just a combination of 2 distinct disorders, which could have major implications for treatment.

Implications and Conclusions

The results from the present study indicated that scales on the BASC PRS are helpful in distinguishing among children with AS, ADHD-Combined Type, ADHD-Combined Type with comorbid ODD, and typically developing children. Since the BASC is a widely used instrument in a variety of settings, the results from the study can be helpful in understanding different patterns of results on the BASC PRS to screen children

for a variety of mental health issues and flag children for further assessment of specific disorders, if warranted. The present study focused on using the BASC PRS in assessing for symptoms characteristic of a possible diagnosis of AS as opposed to ADHD-Combined Type, ADHD-Combined Type with comorbid ODD, or typically developing children. Children with AS were found to have significantly higher scores of Withdrawal and Atypicality combined with low scores on social skills, while the other groups of children had different patterns of results. Children with AS had a unique combination of results when compared with other common childhood disorders and typically developing children, indicating that the BASC can be used to screen for AS and identify the need for further assessment.

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APPENDICES

Appendix A.

PROJECT APPROVAL FROM THE COLORADO STATE UNIVERSITY HUMAN RESEARCH COMMITTEE

COPY

Colorado State University

Office of Regulatory Compliance
Office of Vice President for Research
and Information Technology
Fort Collins, CO 80523-2011
(970) 491-1553
FAX: (970) 491-2293

MEMORANDUM

TO: Lee Rosén, Psychology, 1876
FROM: Janell A. Meldrem, Administrator for the Human Research Committee
SUBJECT: **PROJECT APPROVAL**
Title: The Utility of the Behavioral Assessment for Children (BASC) for Assessing Asperger's Syndrome
Protocol No.: 04-113H
Funding Agency: N/A
DATE: May 14, 2004

I am pleased to inform you that the above-referenced project was approved by the Human Research Committee on May 11, 2004 for the period May 11, 2004 to April 14, 2005. Because of the nature of this research, it will not be necessary to obtain a signed consent form. However, all subjects must receive a copy of the approved cover letter printed on department letterhead. The requirement of documentation of a consent form is waived under § __.117 (c) (2). **Approval is for 200 archival records and to recruit 100 parents. As a condition of approval, the letter of cooperation from the Poudre School District must be received as soon as it becomes available and prior to recruitment.**

A status report of this project will be required within a 12-month period from the date of approval. Renewal is the Principal Investigator's responsibility, but as a courtesy you will be sent a reminder approximately two months before the protocol expires. The Principal Investigator will report on the number of subjects who have participated this year and project-to-date, about problems encountered, and provide a verifying copy of the consent form or cover letter used. The necessary form (H-101) is available from the Regulatory Compliance web page (see below). Should the protocol not be renewed before expiration, all activities must cease until the protocol has been re-reviewed.

It is the responsibility of the investigator to immediately inform the Committee of any serious complications, unexpected risks, or injuries resulting from this research. It is also the investigator's responsibility to notify the Committee of any changes in experimental design, participant population, or consent procedures or documents. This can be done with a memo which completely describes the changes and their consequences (new consent form or cover letter, or altered survey instrument, for example). Students serving as Co-Principal Investigators may not alter projects without first obtaining PI approval. The PI is ultimately responsible for the conduct of the project. Upon completion of the project, an H-101 form should be submitted as a close-out report.

This approval is issued under Colorado State University's OHRP Federal Wide Assurance 00000647 issued July 1, 2001. If approval did not accompany a proposal when it was submitted to a sponsor, it is the researcher's responsibility to provide the sponsor with the approval notice.

Please direct any questions about the Committee's action on this project to me for routing to the Committee.

Attachment

xc: Jennifer L. Lindner w/attachment

Appendix B.
INSTRUMENTS

SAMPLE ITEMS FROM
THE PARENT FORM OF THE BASC

Clinical and Adaptive Scales

Aggression:
Threatens to Hurt Others.
Argues when denied own way.
Calls other children names.
Complains about rules.

Anxiety:
Worries.
Tries too hard to please others.
Says, "I'm afraid I will make a mistake."
Says, "I'm not very good at this."

Attention Problems:
Is easily distracted.
Gives up easily when learning something new.
Listens attentively.
Forgets things.

Atypicality:
Repeats one activity over and over again.
Rocks back and forth for long periods of time.
Complains about being unable to block out unwanted thoughts.
Seems out of touch with reality.

Depression:
Cries easily.
Is easily frustrated.
Is sad.
Says, "Nobody likes me."

Hyperactivity:
Needs too much supervision.
Is overly active.
Cannot wait to take turns.
Interrupts others when they are speaking.

Withdrawal:
Avoids competing with other children
Refuses to join group activities.
Avoids other children.
Will change direction to avoid having to greet someone.

Social Skills:
Compliments others.
Offers help to other children.
Encourages others to do their best.
Begins conversations appropriately

DEMOGRAPHIC INFORMATION

Please fill out the following questions with regard to your child.

Subject Number:_____ Circle: Male Female

Ethnicity:_____

_____

Age:_____

Psychological Diagnoses: (please circle all that apply)

None Attention Deficit Hyperactivity Disorder

Asperger's Syndrome Oppositional Defiant Disorder

Other:_____

_____

Does your child have an Individual Education Plan (IEP) or been referred for Special Education Services?

Circle: yes no

If yes, please explain:

_____

_____

Has you child ever received psychological services?

Circle: yes no

If yes, please explain:_____

PSYCHOLOGICAL SERVICES CENTER
Department of Psychology
C-43 Clark Bldg.
Colorado State University

BACKGROUND INFORMATION

Please provide the following information about yourself. This information will be kept strictly confidential. The purpose of this form is to obtain a comprehensive picture of your background. By completing these questions as fully and accurately as possible, you will facilitate a therapeutic program.

1. Name:_____ Today's Date: _____

2. Social Security Number: _____

3. Parent(s) or Guardian(s)- for clients under 18:
_____

4. Age: _____ Date of Birth: _____ Gender: _____

5. Address:
_____

6. Phone (home): _____Work: _____ Other: _____

7. Please indicate your ethnicity (check ALL that apply):

_____ White, non Hispanic	_____ Asian American
_____ African American	_____ Native American
_____ Hispanic/Latina (o)	_____ Other (Specify:_____)

8. Please indicate your marital status:

_____ Married	_____ Never Married
_____ Separated	_____ Living Together
_____Divorced	_____ Other (Specify:_____)

9. Education: What is the last grade you completed? _____

10.Occupation(s):_____

11. Please indicate your family's gross annual income._____

12. Please indicate the number of dependents (i.e., the number of people living off the income listed above)

13. With whom are you now living? (List people and their relationship to you.)
_____
_____

14. By whom were you referred to the Psychological Services Center?
_____

15. What concerns bring you to the Psychological Services Center?

_____

_____

16. On the scale below, please indicate the severity of your concern(s):

_____	_____	_____	_____	_____
Mildly Upsetting	Moderately Upsetting	Very Severe	Extremely Severe	Totally Incapacitating

17. When did you problems/concerns begin? _____

18. Please describe events occurring at that time, or since then, which may relate to your problems or concerns?_____

_____

19. Have you been in therapy before or received any prior professional assistance for your problems? If so, please give name(s), professional title(s), dates of treatment and results:_____

_____

20. Describe how much and how often you use alcohol or drugs:

_____

_____

21. Have you had any serious illness or injuries? Yes _____ No_____
If yes, please explain:

_____

_____

_____

22. Are you presently taking any medications? Yes _____ No_____
If yes, please explain:

_____

_____

23. Have you felt like or tired to harm yourself _____ and/or others_____ (past_____ present_____).
If yes, please explain:

_____

_____

24. Have you ever been hospitalized for psychological problems? Yes _____ No_____
If yes, please explain:

_____

_____

_____

25. Does any member of your family suffer from alcoholism, depression, suicidal behavior, or anything which can be considered a "mental disorder?" Yes _____ No_____
If yes, please explain:

_____

_____

_____

Therapist _____

Appendix C.
COVER LETTER

Dear Parent/Guardian:

My name is Jennifer Lindner, and I am a graduate student at Colorado State University in the Counseling Psychology Program working on my Ph.D. Dr. Lee Rosén and I are currently conducting a research study entitled, *The Utility of the Behavioral Assessment System for Children (BASC) for Assessing Asperger's Syndrome*. In this study, we are examining the pattern of results on the BASC for many childhood psychological disorders including: Asperger's Syndrome, Attention Deficit Hyperactivity Disorder (ADHD), and Oppositional Defiant Disorder. It is also important for us to compare these groups of children with typically developing peers to determine whether or not these children have a distinct profile from typically developing peers.

Participation in this study is completely voluntary. If you choose to participate in the research, please fill out the included forms. Along with this letter, a demographic form, a parent rating form of the BASC, and a stamped addressed envelope has been included. Filling out the forms takes approximately 15-20 minutes. There are no known risks to you by filling out these forms. All information that you fill out about your child will be kept confidential. As you will notice, there is a number on all of the forms, so that you do not have to disclose any identifying information about you or your child. After you have filled out the forms, please enclose them in the envelope and mail it back to us.

Your participation is greatly appreciated and contributes to our understanding of children and the differences among them. If you have any questions or concerns regarding this research study, please contact the researchers at the numbers listed below. Questions about participant's rights may be directed to Celia S. Walker at (970) 491-1563.

Sincerely,

Jennifer Lindner, M.S.
Co-Investigator
(970) 491-7226

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