2012

Parent and Teacher Agreement on Widely Used Assessment Measures for ADHD: A Comparison of Hispanic and non-Hispanic Students

Lizette Marie Flammer-Rivera
Lehigh University

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by

Lizette Marie Flammer-Rivera

Dissertation Presented to the Graduate and Research Committee

of Lehigh University

in Candidacy for the Degree of

Doctor of Philosophy

in

School Psychology

Lehigh University

4/10/12

Certificate of Approval

Approved and recommended for acceptance as a dissertation in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Date

_____
George J. DuPaul, Ph.D.
Dissertation Director
Professor of School Psychology

_____
Accepted Date

Committee Members:

_____
Asha K. Jitendra, Ph.D.
Professor of Educational Psychology

_____
Patricia H. Manz, Ph.D.
Associate Professor of School Psychology

_____
Edward S. Shapiro, Ph.D.
Professor of School Psychology

Acknowledgements

I would like to thank all the individuals who have encouraged my desire to obtain this degree and without whose support, this aspiration would not have been possible. First, a very special thank you is in order to my advisor and mentor, George J. DuPaul. Throughout my graduate career, he has always been supportive and extremely patient, while providing the opportunities and feedback that have assisted in my professional development and establishment of my career goals. I would also like to thank the members of my dissertation committee, Asha K. Jitendra, Edward S. Shapiro, and Patricia H. Manz, for their valuable input throughout the development and completion of this project. Furthermore, I am most grateful to the student, parent and teacher participants and all of the graduate students involved with Project P.A.S.S.. Without their dedication to P.A.S.S., this study would not have been possible.

I am also extremely fortunate to be surrounded by family members who have provided the day to day encouragement and unwavering support to complete this process. A very special and heartfelt thank you is in order to my husband, Ramon E. Rivera. He has always believed that no challenge is insurmountable. With his dedication, love, support, and simply by having him by my side each and every day, I have proven this to be true. My children, Aidan and Isabella Rivera are inspirational and a constant reminder to be the best mother, wife, and professional I can be. Finally, I am eternally grateful to my parents, Rozanne and Ed Flammer, and my brothers, E.J. and Greg Flammer, for always believing in me and insisting I could accomplish anything I set my mind to.

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Abstract

The present investigation examined the level of agreement between parent and teacher ratings of Hispanic and non-Hispanic students on behavior rating scales. The current study utilized the internalizing scale, externalizing scale and Behavior Symptom Index (i.e. total score) from the Behavior Assessment System for Children (BASC) and the hyperactivity/impulsivity scale, inattention scale and total score from the Attention Deficit Hyperactivity Disorder Rating Scale IV (ADHD RS-IV) to investigate the level of agreement between parent and teacher responses, both with and without ethnicity considered. Participants included 242 parents and teachers of students in 1st through 5th grade, some of whom were experiencing academic difficulties related to ADHD symptomatology as reported by their classroom teachers, as well as their typical peers. Results indicated that no significant differences exist between mean ratings assigned by parents and teachers on the BASC or the ADHD RS-IV. Levels of agreement between parent and teachers for all groups and the non-Hispanic group on the three BASC scales closely replicated the levels reported by the scale developers, supporting the hypotheses. Ratings for Hispanic students on the total score and externalizing scales of the BASC closely replicated reported rates of agreement. This investigation determined the correlation between parent and teacher ratings on the internalizing scale of the BASC to be lower, indicating less agreement, for Hispanic students than was reported for the standardization sample for the instrument. There was a significantly higher level of agreement for parent and teacher ratings on the ADHD RS-IV for all participants as well as the Hispanic and non-Hispanic groups, when examined independently. Implications for application of these results and future directions for research are discussed.

Chapter I

Statement of the Problem

Attention Deficit Hyperactivity Disorder (ADHD) is a pervasive disorder characterized by children exhibiting symptoms of inappropriate inattention and excessive motor activity or impulsivity, as compared to same aged peers. Approximately 3-5% of the general child population is affected with ADHD and it occurs more frequently in males than females at approximately a 2:1 to 5:1 ratio (APA, 2000; Barkley, 2006). A recent report from the National Center for Health Statistics (NCHS) suggests that these classically cited rates have increased even further, with more recent information from 2007-2009 indicating as many as 9% of children and youth aged 5-17 years old having been diagnosed with ADHD (Akinbami, Liu, Pastor, & Reuben, 2011). Given this high prevalence rate, it is likely that nearly every classroom across the United States will contain at least one student with this disorder.

The *Diagnostic and Statistical Manual of Mental Disorders – IV Text Revision* (DSM – IV TR; American Psychiatric Association [APA], 2000), states that problems with attention and hyperactivity/impulsivity must cause impairment in everyday functioning in at least two settings and symptoms must be present before the age of seven to be diagnosed with ADHD. Given that symptoms need to cause impairment in day-to-day functioning, most often, these symptoms are recognized and become problematic during the early school years, and parents and teachers typically provide information for diagnostic as well as treatment purposes. Although the correlation between parent and teacher ratings on problem behavior scales is typically low to moderate (Achenbach, McConaughy, & Howell, 1987), a review of the extant literature revealed that

investigations specific to parent and teacher agreement on rating scales used for the assessment of ADHD have rarely been done. Furthermore, even less research has specifically addressed the agreement between parent and teacher ratings of problem behaviors among students from Hispanic background, which is the most rapidly growing ethnic minority group in the United States (U.S. Census, 2010).

According to the latest U.S. Census in 2010, individuals of Hispanic descent make up 16.3% of the U.S. population. These census results superseded even the most recent projections (U.S. Census Bureau, 2008). From 2000-2010, this increase in the Hispanic populations accounts for more than half the total growth of the U.S. population. The most recent projections indicate the Hispanic population in this country will continue to grow steadily, reaching nearly 20% by 2020 and over 30% by the year 2050 (U.S. Census Bureau, 2008). Given the projected demographic shift that is and will continue to take place over the next several years, it is clear that it is necessary to focus research efforts to inform best practice in working with this rapidly growing subset of the general population.

Parent and Teacher Agreement on Behavior Ratings

A critical factor in diagnosing ADHD is that symptoms must occur and cause impairment in two or more settings. Children spend the largest portion of their day divided between home and school, therefore, parents and teachers are the most common sources of information regarding a child's behavior. Given this, parents and teachers are most frequently asked to report about possible symptoms of ADHD. Typical assessment procedures call for exploration of both broad band as well as narrow band measures if evidence of possible pathology exists on the former scale (McConaughy, & Ritter , 2008;

Merrell, 2000). Broad band instruments, such as the Behavior Assessment System for Children (BASC; Reynolds, & Kamphaus, 1992) or Child Behavior Checklist (CBCL; Achenbach, 1991a), are utilized to detect any behavior problems that a child or adolescent may be experiencing. If, in fact, a pattern of pathology is established or suspected based on broad band ratings, then narrow band ratings specific to the elevated problem behavior areas should be administered. One such instrument to probe further into possible ADHD symptoms is the Attention Deficit Hyperactivity Disorder Rating Scale IV (ADHD RS-IV; DuPaul, Power, Anastopoulos, & Reid, 1998). Best practice (Barkley, 2006; DuPaul & Stoner, 2003) calls for ratings to be gathered on both broad band and narrow band measures to obtain a diagnosis and therefore it is necessary to consider parent and teacher agreement on both types of instruments.

Research has established that there is generally a low to moderate correlation between parent and teacher report of problem behaviors as indicated on a variety of rating scales, including: the Preschool Behavior Questionnaire, Diagnostic Interview Schedule for Children, Problem Behavior Checklist, Revised Problem Behavior Checklist, CBCL and Teacher Report Form (TRF), to name a few (Achenbach, McConaughy, & Howell, 1987; deNijs et al., 2004; Gagnon, Vitaro, & Tremblay, 1992; Kolko, & Kazdin, 1993; Lee, Elliott, & Barbour, 1994; Simpson, & Halpin, 1986; Stanger, & Lewis, 1993; Touliatos, & Lindholm, 1981; van der Ende, & Verhulst, 2005; Verhulst, & Akkerhuis, 1989; Youngstrom, Loeber, & Stouthamer-Loeber, 2000) . Although this trend of low level of agreement has been documented on the aforementioned instruments, a thorough search of the extant literature revealed that there is a paucity of research examining parent and teacher agreement on either the BASC or ADHD RS-IV.

The developers of both the BASC and the ADHD RS-IV have documented the level of agreement between parents and teachers in the instrument's manual, however there do not appear to be any independent investigations to verify these correlations. A literature review as well as an examination of the bibliography provided by the publishers of the BASC indicated that there has not been any research conducted relative to parent and teacher agreement on this instrument. The lack of information regarding the extent of parent and teacher agreement on this widely utilized instrument is a clear void in the literature and needs to be addressed.

Some aspects of the ADHD RS-IV have been considered as they relate to parent and teacher ratings, however, an independent investigation to determine the level of agreement between parent and teacher reports has not been conducted. DuPaul and colleagues (1998) established that both parents and teachers contributed unique information when providing ratings on the ADHD RS-IV. Similarly, it has been verified that reports from either the parent or teacher cannot replace information provided by the other (Power et al., 1998). Although these two investigations provide meaningful information relative to the importance of obtaining information from each reporter, neither addresses the extent of agreement between parent and teacher ratings on this instrument.

It is apparent that studies focusing on the level of parent and teacher agreement on either the BASC or ADHD RS-IV have not been conducted. Given that both parent and teacher ratings of behavior are critical in the assessment of problem behavior, it is important that the level of agreement between these two reporters is examined on the

BASC as well as the ADHD RS-IV. The proposed study intends to address this limitation in the current literature base.

Examining the External Validity of the BASC and ADHD RS-IV

Sue (1999) points out that "psychology's overemphasis of internal as opposed to external validity has differentially hindered the development of ethnic minority research" (p. 1070). There is an inherent inequity in the results of research when studies are primarily concerned with internal validity, rather than focusing on populations for whom these outcomes may or may not extend. The following provides a model example of this assertion.

It has been demonstrated that significant differences in scores on behavior rating scales exist between Caucasian and African American youth (DuPaul et al., 1997; Epstein, March, Conners, & Jackson, 1998; Reid et al., 1998, 2000), however, infrequently have these investigations included individuals from other minority populations. This noted trend validates the need for examinations to consider the performance of rating scales with students from varied ethnic and cultural backgrounds. Hispanics are the fastest growing ethnic minority in the U.S. and it is projected that by the year 2030, one out of every five children in U.S. classrooms will be of Hispanic descent (Acosta, Weist, Lopez, Shafer, Pizarro, 2004). As Sue (1999) has suggested, and given the aforementioned statistics, it is critical that psychological research directed toward this minority group, particularly examinations of problem behaviors that impact school functioning, such as ADHD, become a focal point.

Rescorla, Achenbach, Ivanova and several other colleagues (2007a, 2007b, 2007c, 2007d) have investigated how the Child Behavior Checklist (CBCL), Teacher Rating

Form (TRF) and Youth Self Report (YSR) are applicable across various cultures. This team of researchers has answered Sue's (1999) call to arms, conducting cross-cultural examinations of these scales across a multitude of societies. These ratings scales have been studied in up to 31 societies and results indicate that although differences exist across the various cultures in patterns of response, the CBCL, TRF and YSR are suitable for use in all the countries investigated. It is worth noting that when comparing the Hispanic subgroup in these studies to populations from other cultures, youth from the Puerto Rican sample were consistently rated as exhibiting the highest level of problematic behavior of any societies examined (Achenbach et al., 1990). This finding is interesting and warrants further attention. Although results from the current research project will not directly contribute to examining this possible trend of Hispanics being rated as demonstrating high levels of problem behavior, potential findings may lend further support to the notion that this area needs to be addressed in the empirical research.

In direct contrast to the aforementioned set of rating scales, a review of the extant literature revealed that there is a paucity of empirical research focused on the external validity of the BASC. It is problematic that a tool used extensively in the applied field of school psychology has not been scrutinized in cross-cultural comparisons. Given the diverse cultural composition of the United States alone, it is unreasonable to think that the BASC is not being utilized with persons from minority populations. This rating system was normed on a primarily Caucasian population and cultural subsets of the sample were not broken down and further examined. In addition, independent research has not been conducted to determine how the rating scale operates for minority populations (McColskey et al., 2003; Flanagan, 1995). The lack of investigations into the

performance of this set of rating scales with persons from varied ethnic, cultural and linguistic backgrounds is a clear weakness of the BASC and the proposed research project is intended to address this limitation.

Several studies have examined the external validity of the ADHD RS-IV as it applies to some minority populations. DuPaul and colleagues (1998) found that based on parent ratings on the ADHD RS-IV, African American students were rated as exhibiting the highest level of problem behavior as compared to their Caucasian and Hispanic peers. When considering teacher ratings on the ADHD RS-IV, a similar pattern emerged with one notable exception (DuPaul et al., 1997). African American children aged 8 to 13 were consistently rated as exhibiting more problematic behavior, however, when considering adolescents aged 14 to 18, Hispanic youth received the highest ratings. Although it is the intention of these two investigations to enhance the external validity of this rating scale by extending results to persons from minority backgrounds, a major limitation of this research must be considered. The Hispanic group in both of these examinations only consisted of 2% of the total group. This is an ethnic group that actually represents over 16% of the total population in the United States. The small number of Hispanic participants is a major drawback of this work and needs to be addressed in future investigations.

Reid and colleagues (1998; 2000) extended these initial studies by further examining possible differences of behavior ratings between African American and Caucasian populations. Youth from Hispanic backgrounds were not were not considered and therefore the lack of applicability of research findings to this minority group remains a weakness of the ADHD RS-IV. Although these studies are a positive step towards

addressing the concern of the results of research not extending to persons from minority backgrounds highlighted by Sue (1999), a major limitation still exists relative to the ADHD RS-IV. Empirical studies of this scale have not targeted the largest and fastest growing minority group in the United States, the Hispanic population. The proposed research study will address this identified weakness of the ADHD RS-IV.

Purpose of the Proposed Study

Agreement between parent and teacher reports of problem behavior has historically been low to moderate, however, rarely have these examinations been conducted specific to the ADHD population, nor have they taken the Hispanic population into consideration (Reid et al., 2000). Given that best practice in the diagnosis of ADHD (Anastopoulos & Shelton, 2001; Barkley, 2006) calls for administration of a broad band instrument, followed by narrow band measures to address any areas of potential pathology reported on the broad band measure, it is necessary to investigate the level of agreement between parents and teachers on each of these types of behavior ratings. As has been demonstrated throughout this chapter, there is a lack of empirical research examining the extent of parent and teacher agreement on either the BASC or the ADHD RS-IV. A thorough review of the literature revealed that independent investigations relative to parent and teacher agreement have not been conducted on either of these behavior rating scales. This study addressed this limitation in the extant literature by assessing the agreement of ratings between parents and teachers on each of the aforementioned instruments. In addition, although individuals of Hispanic descent represent the largest and fastest growing ethnic minority population in the United States, there is a paucity of research demonstrating how behavior rating scales perform amongst

this group. Specifically, parent and teacher ratings on the BASC and ADHD RS-IV were examined to determine the extent of agreement between these raters for Hispanic and non-Hispanic students. The issue of parent and teacher agreement on the BASC and ADHD RS-IV, in general, as well as with individuals of Hispanic descent is a void in the extant literature and this investigation was intended to address this limitation.

It is critical to note that the goal of this research project was to identify potential differences between ratings of Hispanic and non-Hispanic students. This information will be meaningful, and will attend to a current weakness, but it will not be possible to attribute the differences that may be found to any specific factors. For instance, this researcher cannot say that the ratings between groups are due to actual behavioral differences between cultures, scale interpretation, or acculturation, to name a few examples. If in fact differences do exist, future research will need to identify, test and conclude why this trend is occurring, it is not the intention of the current research project. This study will address the following research questions:

Research Question 1

To what extent is there agreement between parent and teacher ratings for all participants on the Behavior Assessment System for Children (BASC)?

Hypothesis 1. Based on the low rates of parent and teacher agreement reported by the designers of the BASC and BASC-II for the total score (r= .45) and the previously mentioned findings, specific to the CBCL, that have been replicated extensively in the extant literature, it was hypothesized that similar levels of correlation for the total score (i.e. Behavioral Symptoms Index) would be found in this study. Further, the level of agreement reported between parent and teacher ratings on the externalizing (r=.51) and

internalizing (r=.23) scales of the BASC were also hypothesized to be replicated at similar levels.

Research Question 2

To what extent is there agreement between parent and teacher ratings for all participants on the ADHD RS – IV?

Hypothesis 2. It was hypothesized that the level of agreement on parent and teacher ratings on the ADHD RS-IV would closely replicate the pattern detected by DuPaul and colleagues (1998) for the total score (r=.41) the Inattention scale (r=.45) and the Hyperactivity/Impulsivity scale (r=.40). Based on the nature of the scale only assessing externalizing symptoms, this rate was anticipated to be higher than that generally reported in the literature (r=.27, Achenbach, McConaughy, & Howell, 1987).

Research Question 3a

Will there be differences in mean parent and teacher ratings on the BASC for Hispanic and non-Hispanic students?

Hypothesis 3a. Based on findings documented in the literature that youth from minority populations in the United States tend to be rated higher than Caucasian students, it was anticipated that there would be differences in the mean ratings reported for Hispanic youth versus their non-Hispanic peers (Achenbach et al., 1990; Bauermeister, Berrios, Jimenez, Acevedo, & Gordon, 1990; Crijnen, Achenbach, & Verhulst, 1997, 1999; Epstein, March, Conners, & Jackson, 1998; Reid et al., 1998, 2000; Reid, Casat, Norton, Anastopoulous, & Temple, 2001; Roberts, Hutton, & Plata, 1985). It was hypothesized based on the results of these previous studies, that students of Hispanic

descent would be rated higher by parents and teachers, indicating more problematic behavior.

Research Questions 3b

Will there be differences of mean parent and teacher ratings on the ADHD RS-IV for Hispanic and non-Hispanic students?

Hypothesis 3b. Based on the same rationale stated in hypothesis 3a, it was anticipated that there would be differences in mean ratings of parents and teachers for Hispanic and non-Hispanic youth on the ADHD RS-IV. Furthermore, it was hypothesized that students from a Hispanic background would be rated as exhibiting more symptoms of ADHD as determined by the rating scale.

Research Question 4a

To what extent is there agreement between parent and teacher ratings of Hispanic students on the BASC?

Hypothesis 4a. For parent and teacher ratings of Hispanic students on the BASC, it was hypothesized that there would be an even lower level of agreement than the level reported for this instrument (r=.45) for the Behavior Symptom Index. Similarly, lower correlations are anticipated for the externalizing problems (r=.51) and internalizing problems (r=.23) scales. Although results are mixed, there is some limited evidence to suggest that raters of Hispanic descent and individuals rating youth from Hispanic backgrounds tend to assign higher scores on behavior rating scales (Achenbach et al. 1990; Dominguez de Ramirez, & Shapiro, 2005; Zimmerman, Khoury, Vega, Gil, Warheit, 1995). The aforementioned results were anticipated based on these, albeit varied, findings.

Research Question 4b

To what extent is there agreement between parent and teacher ratings of non-Hispanic students on the BASC?

Hypothesis 4b. It was hypothesized that behavior ratings on the BASC for parents and teachers of non-Hispanic students would closely reflect those representing the median scores for this tool (i.e. r=.45 for the Behavioral Symptom Index and r=.51 for the externalizing and r=.23 for the internalizing problems scales). This result was anticipated based on the racial and ethnic background of the population (i.e. predominantly European-American) included in the original samples Reynolds and Kamphaus (1992) utilized to determine these correlations.

Research Question 5a

To what extent is there agreement between parent and teacher ratings of Hispanic students on the ADHD RS-IV?

Hypothesis 5a. Similar to the hypothesis for the BASC for parent and teacher ratings of Hispanic students' behavior (Achenbach et al. 1990), the level of agreement between these groups for ratings on the ADHD RS-IV was expected to be lower than the correlations reported for this scale (r=.41). This trend of lower levels of agreement was also anticipated to extend to the Inattention (r=.45) and Hyperactivity/Impulsivity (r=.40) scales as well.

Research Question 5b

To what extent is there agreement between parent and teacher ratings of non-Hispanic students on the ADHD RS-IV?

Hypothesis 5b. Among parent and teacher ratings on the ADHD RS-IV for non-Hispanic students, it was hypothesized that the level of agreement would closely reflect that demonstrated by DuPaul and colleagues (1998) for the total score as well as the two subscales.

Chapter II

Review of the Literature

ADHD is the most common disorder affecting children and adolescents in the United States (Barkley, 2006). This disorder describes children who exhibit high levels of inappropriate inattention and excessive motor activity or impulsivity (APA, 2000). These symptoms must be present in at least two settings and cause impairment in day to day functioning. Parents as well as teachers are the most common parties to report information about problem behaviors; therefore, it is necessary to consider the extent of agreement between these two groups. Although approximately 3-5% of the general population of children and adolescents has ADHD (American Psychiatric Association, 2000), it is unknown to what degree these rates apply to ethnic and linguistic minorities. Some research has found that these rates may be elevated when applied to African American and possibly even Hispanic populations (Achenbach et al., 1989; Achenbach et al., 1990; Akinbami Liu, Pastor, & Reuben, 2011; Bauermeister et al., 1990, 2007; Crijnen et al., 1997; Crijnen et al., 1999; Reid et al., 2000). This chapter will outline the literature base around the level of agreement between parents and teachers on behavior rating scales, the first purpose of this study, as well as how behavior rating scales apply to ethnic minority populations, especially for Hispanic individuals, the second purpose of the proposed examination.

Parent and Teacher Agreement

The agreement of parent and teacher ratings on behavior rating scales is notably low and this trend has been demonstrated for a variety of different instruments (Achenbach, McConaughy & Howell, 1987; Behar & Stringfield, 1974; Gresham, et al.,

2010; Kolko & Kazdin, 1993; Lee, Elliott & Barbour, 1994; Stanger & Lewis, 1993; Touliatos & Lindholm, 1981). The following section will outline a sample of the studies demonstrating this well documented finding.

In a sample of ratings of kindergarten children by both parents and teachers using the Preschool Behavior Questionnaire (Behar & Stringfield, 1974), there was low agreement between reporters for girls (r=.26) and only slightly more agreement for boys (r=.39). Similarly, deNijs and colleagues (2004) found agreement between parents and teachers was low as measured by the Diagnostic Interview Schedule for Children among a population of Dutch children. On the Problem Behavior Checklist, ratings of 1,008 children by parents and teachers indicated low (r=.06) to moderate (r=.45) correspondence for the various scales of the measure (Touliatos & Lindholm, 1981). These results indicate that there is higher parent-teacher agreement for externalizing behaviors (i.e. conduct problem scale on the Problem Behavior Checklist) than for internalizing problems. This finding makes intuitive sense because externalizing behaviors (e.g. excessive motor activity) are more observable to the rater than those behaviors representing internalizing problems (e.g. negative thought patterns) and therefore are more likely to be noted as problematic on rating scales. The lack of agreement between parents and teachers was true for ratings on the Revised Problem Behavior Checklist as well (Simpson & Halpin, 1986). The highest correlation (r=.36) between parents and teachers was reported for the attention scale and is only approaching the moderate range of agreement between the two parties.

Although there are multiple instruments available to evaluate children with problem behavior, the extant literature demonstrates that when investigating the construct

of agreement between reporters, the most frequently utilized rating scales have been the CBCL and TRF.

The classic and most often cited study in the extant literature states that the correlation between parent and teacher ratings on the CBCL and TRF respectively is .27 (Achenbach, McConaughy & Howell, 1987). In this examination, the authors conducted a meta-analysis of studies analyzing the consistency between parent, teacher, and other reporters (e.g. mental health workers, self ratings and peers) ratings of behavior from 1967 through 1985. One hundred nineteen studies were included in the meta-analysis on the basis of nine stringent criteria, one of which being Pearson correlations had to be reported for two or more groups of raters of a child's behavior. Results indicated that agreement between groups of informants with similar backgrounds was moderate, r=.60 and ranging from .54 for pairs of mental health workers and .64 for teacher pairs. The results for between group comparisons, however, were not as impressive. The mean correlation between groups of informants was .28, ranging from .24 between parents and mental health workers to .42 for teacher and observer pairs.

Lee, Elliott and Barbour (1994) found that within their sample of 171 boys referred for school based services for behavior problems, parents and teachers agreed upon the externalizing scale (r=.436) of the CBCL and TRF at a slightly higher rate than the total score and internalizing scales, similar to results from previous studies reported to this point.

The extent of parent and teacher agreement on the CBCL and TRF was examined among a general and clinical population to determine if the low levels of agreement applied across these groups of individuals. Kolko and Kazdin (1993) found that the

correspondence between parents and teachers on CBCL and TRF scores varied substantially based on the status of the child reported about. Ninety-eight children from a public school district in Pennsylvania were used as the non-patient participants and 64 children who were receiving services from a clinic for problems related to aggression, defiance, hyperactivity/impulsivity or depression/suicidality served as the patient population. Results indicated that parent and teacher reports for the non-patient group were low on the total score and internalizing behavior scale but moderate (r=.48) for externalizing behaviors on the CBCL and TRF. For the patient population, agreement was low on all three scales (i.e. total scale, internalizing and externalizing), although similar to the non-patient group, the externalizing behavior scale yielded the highest correlation between parent and teacher reports (r=.29). These findings indicate that although parent and teacher ratings of problem behavior are more likely to agree for typical school aged children, the correlation of these ratings remains in the moderate level and is not high. By definition, the non-patient group should not be exhibiting either internalizing or externalizing behavior problems, therefore it would be logical that parent and teacher ratings of a particular child would be similarly low (i.e. no behavior problems exhibited), however this does not appear to be the case. Kolko and Kazdin found that even when there is a seeming lack of behavior to report on, parent and teacher ratings were still not highly correlated. The outcome of this study lends substantial support to the concept that rating scales may operate differently for parents and teachers.

Hartman, Rhee, Willcutt, and Pennington (2007) found that in addition to actual behavioral differences being observed by parents and teachers, parents may actually be more biased than teachers, lending credence to the differential response patterns.

Waschbusch and Willoughby (2008) bring attention to the possibility that parents and teachers may use different criteria for what constitutes behaviors rated on these types of scales as well as the actual ratings themselves. In addition, age of rater as well as respondent may be influential in the lack of parent-teacher agreement commonly demonstrated throughout the literature. For example, how should "pretty much" fidgeting be defined for a 1st versus a 4th grade student? The rating of "pretty much" is subjective as well as the behavior of fidgeting itself. Furthermore, what is an acceptable level of fidgeting for a 1st grade as opposed to a 4th grade student? Finally, does the age of the rater impact the level of acceptability or tolerance of the behavior? Each of these factors could be contributing to the trending lack of agreement between raters. Item interpretation and acceptability of the behavior are also identified by Gresham and colleagues (2010) as potential reasons for the low level of agreement demonstrated between parents and teachers on behavior rating scales. The potential cultural as well as environmental factors that could be contributing to these differential rating patterns are vast (Serra-Pinheiro, Mattos, & Regalla, 2008). An examination of the myriad of hypotheses on why this phenomenon of differing responses between parents and teachers on behavior rating scales occurs is beyond the scope of this project, but as Cullinan and Kauffman (2005) point out, it is noted as a necessary future direction for research on cross-informant agreement, specifically as it pertains to students and teachers from varied ethnic backgrounds.

Although agreement may be low, or moderate in some cases, between parents and teachers, it is critical to obtain information from each of these informants when making diagnostic and treatment decisions for youth. Stanger and Lewis (1993) demonstrated the

necessity of multiple informant reports utilizing the CBCL and TRF. In their sample of 98 Caucasian adolescents aged 13 years old, correlations indicated a negative, nearly non-existent relationship between parent and teacher reports on the internalizing scale but moderate correspondence (r=.45) for mothers and teachers and (r=.46) for fathers and teachers on the externalizing scale. These results continue to follow a pattern of higher parent-teacher agreement on externalizing as opposed to internalizing symptoms, and are some of the highest rates of agreement reported in the extant literature. Additionally, researchers found that no ratings from any one informant, that is mother, father, teacher or adolescent could substitute for evaluations from another party. Furthermore, teacher ratings of externalizing problems were the best predictor of future mental health service utilization. Generally speaking, it is well documented that there is low agreement between parent and teacher reports of behavior, however, it is critical to obtain information from each of these reporters when considering behavior problems because each informant may provide unique information.

This trend of low to moderate agreement between parent and teacher ratings on behavior scales is also evidenced in populations outside the United States. In a community sample of 2,836 Chinese students aged 6 to 11, Deng, Xianchen, and Roosa (2004) found generally low relationships (r=.13 to r=.36) between parent and teacher reports of various behaviors assessed on the CBCL and TRF. The highest agreement between parties was found on the attention subscale, with the next highest level for the externalizing scale (r=.24), and the internalizing scale having the lowest level of congruence of informant ratings. These results are consistent with works by other

authors and are logical based on the inability of an individual to access information regarding internalizing behaviors unless it is shared by the child being assessed.

In a Dutch sample of 2,076 children, agreement between parent and teacher ratings on the CBCL and TRF were considered for students both by age as well as gender. In general, correlations were low except for the externalizing scale for girls age four to five, which was moderate (r=.44). Although there were trends of variation, none of the differences, either in age or gender were significant. Generally, parents reported more problem behavior than did teachers. This study was unique because the authors calculated correlations between parent and teacher scores for each item on the Achenbach instruments. This is important because it allows for examination at the specific areas on which parents and teachers agree and therefore the items on which they disagree.

The studies reviewed in this section have demonstrated that the level of agreement between parent and teacher ratings of children's behavior is generally low and perhaps moderate in some instances, especially if considering a scale measuring externalizing behaviors. These findings are significant because in the field of school psychology the information provided by parents and teachers is relied upon for diagnostic and treatment purposes. Two widely utilized instruments that have not been discussed to this point are the BASC and the ADHD RS - IV. The BASC is highly similar to the Achenbach rating scales and the ADHD RS - IV corresponds with only the externalizing scales on the instruments previously discussed therefore patterns of response by reporters on these instruments would be expected to be similarly low to moderate in level of agreement. The literature regarding parent and teacher agreement on these scales will be reviewed in the following section.

Cross Informant Information on the BASC and ADHD RS - IV

BASC. Although the BASC is an instrument utilized widely in applied settings, there is a paucity of literature examining the agreement between parent and teacher reports obtained with this measure. In the development of this instrument, Reynolds and Kamphaus (1992) investigated parent and teacher agreement for combined general and clinical samples and report the median correlation between corresponding scales (r= .37) for children and (r= .35) for adolescents in their manual. Moreover, as has been demonstrated in the previous section, when considering only the externalizing scale, correlations are higher (r= .51) for both children and adolescents. This moderate level of agreement is one of the highest rates reported for parent and teacher agreement among all behavior rating scales examined in the extant literature and reported on to this point. It is important to point out that the sample for these analyses include a combination of both general and clinical standardization samples. This may, in fact, be contributing to the higher level of reported agreement, a concept which was supported by Kolko and Kazdin (1993), as previously discussed.

In the updated version of this behavior rating scale, the BASC-II, Reynolds and Kamphaus (2004) report the median correlation between corresponding scales for parent and teacher ratings (r= .38) for children and (r= .39) for adolescents. As with the original version of the BASC and most other behavior rating scales, the externalizing scale yielded higher levels of agreement between parents and teachers for children (r= .46) and for adolescents (r= .51). This sample of children and adolescents is also a combination of the general and clinical standardization samples.

The rates of parent and teacher agreement reported in the manuals for the BASC and the BASC-II are impressive, as they are amongst some of the highest correlation rates reported on behavior rating scales in the extant literature. As has already been stated, this may be an artifact of the sample itself and warrants further investigation. It is also critical to point out that this concept has not been independently verified in the extant literature. It is necessary to corroborate these findings and the proposed study will address this need. Given the similar characteristics of this broad band instrument to the Achenbach rating scales, it is reasonable that the correspondence between raters would follow similar patterns to those previously mentioned. Furthermore, the trend of low to moderate agreement between parent and teacher reports of behavior is not limited to the CBCL and TRF as has been demonstrated in the previous section, lending further support to the notion that patterns of agreement are not likely to be any higher on the BASC. Considering the lack of empirical support, however, this void in the literature will be addressed in the current investigation.

ADHD RS – IV. When comparing the Home and School versions of the ADHD RS – IV, DuPaul and colleagues (1998) stated that each rater contributed unique information to the diagnosis of ADHD, as indicated by the low amount of shared variance between parents and teachers. Specifically, ratings by teachers were more aligned with fidgeting, off-task behavior and work accuracy as measured by direct observation in the classroom as compared to parent ratings. Although novel information was supplied by each party, agreement between parents and teachers was moderate, (r=.41) for the total score on the ADHD RS-IV, (r=.45) for the inattention subscale and (r=.40) on the hyperactivity/impulsivity subscale.

In considering parent and teacher reports on the ADHD RS – IV for predicting ADHD, parent and teacher accounts were more accurate at diagnosing the disorder, while single informant information was more useful in ruling out the disorder (Power, Andrews et al., 1998). The authors utilized forward stepwise logistic regression analyses to arrive at their conclusions. Interestingly, both teachers and parents contributed unique but equal contributions to informing the inattention factor on the ADHD RS – IV. On the hyperactive/impulsive factor however, parent ratings were typically more accurate and informative than teacher ratings. Power and colleagues caution against using either parent or teacher ratings whether alone or in combination to diagnose, but rather using a battery of instruments, supported by interviews and direct observations to diagnose ADHD. Furthermore, teacher reports were more important to consider in predicting ADHD subtypes (i.e. primarily hyperactive/impulsive, primarily inattentive or combined type) for a child than parent ratings (Power, Doherty et al., 1998).

The BASC and ADHD IV-RS are widely utilized and therefore warrant further investigation as to the level of parent and teacher agreement of ratings. Although the ADHD IV-RS has more independent investigations of this concept, the extant literature will be enhanced with the examination of parents and teacher agreement on both instruments. In addition to the investigation of general cross informant agreement, given that the trend of low to moderate agreement among parents and teachers does not seem to be limited to only the American culture, it is reasonable to inquire if differences based on ethnicity within the U.S. exist as well.

External Validity

Limited evidence has been established in the extant literature regarding problem behavior and the potential for differential rates among ethnic minority populations. More specifically, ADHD is one of the most extensively researched disorders of childhood and adolescence yet there is a concerning paucity of studies that address non-white, non-middle class boys.

Sue (1999) recognized this limitation in the psychological literature, pointing out that there is too great a focus on internal validity rather than being concerned with external validity. If research is only concerned with high degrees of rigor and experimental control than an injustice is being done to those for whom the results of the research cannot extend. Minority groups, particularly Hispanics have been largely ignored as the central focus of research questions. Since Sue's call to arms there has been an increase in studies that focus on the African American population and problem behaviors, although there is still a limited number of studies compared to those examining Caucasian children. For example, in 1997, of the numerous articles that had been published concerning ADHD, only 16 of those addressed African American youth (Samuel et al., 1997). Six of these studies examined ADHD from an educational perspective relative to African American Youth, six focused on efficacy of treatment and the remaining four examined assessment issues among this population. A review of the literature indicates that there is not any examination similar to the aforementioned investigation as it relates to the Hispanic student population.

A more recent analysis of the literature uncovered that between 2000-2003, 16.9% of the 610 articles published in the five major school psychology journals, defined

by the authors as Journal of School Psychology (JSP), Psychology in the Schools (PIS), School Psychology Quarterly (SPQ), School Psychology Review (SPR), and Journal of Applied School Psychology (JASP), focused on diversity related themes (Brown, Shriberg, & Wang, 2007). These themes encompassed diversity pertaining to racial/ethnic, linguistic, socioeconomic, sexual orientation, and cultural groups. Of the total percentage of articles related to diversity, 4.3% focused on the Hispanic population and 20% centered on assessment. When reviewing only PIS, JSP and SPR from 1975-1979, 7.6% of the articles had diversity related themes (Wiese Rogers, 1992). These numbers indicate that when considering fewer journals, three as compared to five, and 20 years of elapsed time, there has only been an increase of a little more than double the number of published articles focused on diversity.

In the past 10 years, the Hispanic population has accounted for more than half of the total population growth in this country (U.S. Census, 2010). An issue tied closely to the Hispanic student population in the U.S. is the number of those students classified by the schools as being English language learners (ELL). The National Center for Education Statistics (NCES) reports that in 2009, 21% of school-aged children speak a language other than English in their homes (U.S. Department of Education, 2011). Of that group, 24% speak Spanish. This statistic elucidates the importance of investigating issues that pertain to cultural and linguistically diverse populations. Considering these rates, it is noteworthy that only 1% of the articles published in JSP, PITS, SPQ, SPR and School Psychology International from 1995-2005, focused on issues related to ELL students (Albers, Hoffman, & Lundahl, 2009). It is evident that the extant literature in school

psychology is not keeping pace with the demographic changes this country is experiencing.

This information brings to light that there is still a critical need for research to address minority populations. Other researchers have also noted that there is a lack of culturally sensitive research and indicate that future directions must include persons from more diverse backgrounds than the typical white, middle class research participant (Cullinan, & Kauffman, 2005; Dumas, Rollock, Prinz, Hops, & Blechman, 1999; Tyson, 2004). In particular, one must proceed with caution when using rating scales with minority populations when their use amongst a particular ethnic group has not been investigated and, in fact, scores may not be valid if norms for a specific minority population have not been established (Luk, & Leung, 1989; Reid & Maag, 1994). Moreover, the lack of consideration of ethnic diversity has been particularly apparent in ADHD research (Gingerich, Turnock, Litfin, & Rosen, 1998).

Rating Scales and Minority Populations

Since the issue of considering minority populations in research has emerged, one particular area that has been examined is the exploration of how psychological instruments may perform differently for various populations. The potential for this trend to occur is critical to investigate, however the possible reasons for why differences in scale performance may occur are still unknown. It is unclear if the racial/ethnic differences in reported problem behaviors are truly due to actual behavioral differences or if this trend can be accounted for by other factors such as rater bias, differing cultural norms related to acceptable behavior or some other possible reason yet unidentified.

In examining the Conners Teacher Rating Scale ([CTRS]; Conners, 1989), researchers found that regardless of teacher's gender, African American students were consistently rated as exhibiting more externalizing problem behaviors than their Caucasian peers (Epstein, March, Conners, & Jackson, 1998). Of the 1179 completed CTRSs, 609 children rated were Caucasian and 418 were African American. The large number of participants is a particular strength of this study. Separate factor analyses were conducted based on race and gender. Epstein and colleagues (1998) found that similar factors emerged for both Caucasian and African American males on the CTRS, however, and an Antisocial factor emerged for African American males that was not present for Caucasian males. Differences between African American and Caucasian females were more marked. For Caucasian females, factor analyses produced a separate hyperactivity factor, which loaded on the primary factor for African American females, and also an inattention problem factor emerged that was not present for African American females. These results indicate that the scale may perform differently for females of varied racial backgrounds but is not likely to be different for males.

In a non-clinical Brazilian sample, more than 10% of the boys and girls rated by parents and teachers utilizing the Swanson, Nolan, and Pelham (SNAP-IV) Questionnaires would qualify for a diagnosis of ADHD and/or Oppositional Defiant Disorder (ODD). This rate is elevated as compared to rates commonly cited in the extant literature (Serra-Pinheiro, Mattos, & Regalla, 2008). Serra-Pinheiro et al. found that parents rated youth significantly more hyperactive and oppositional-defiant than teachers' ratings of these same students. Teachers, on the other hand, tended to report greater inattentive symptoms than did parents. The conclusions reached in this study are of

interest to the current investigation both because of the elevated levels of ADHD and ODD symptoms in a Hispanic population as well as the discordant ratings between parents and teachers.

Edl and colleagues (2008) revealed that Hispanic students in bilingual classes were viewed differently by their teachers as compared to European American students in bilingual classrooms and other Hispanic students in regular classrooms. It has been suggested that learning a second language itself may be linked to aberrant behavior (Dowdy, Dever, DiStefano, & Chin, 2011; Rhodes, Ochoa, & Ortiz, 2005). The previous findings suggest that perhaps language proficiency rather than ethnicity alone may be influencing teacher ratings. Over the course of the school year, the significant differences in the teacher ratings of Hispanic students in bilingual classrooms in the fall disappeared by the spring. This finding suggests that perhaps these students are becoming more socially integrated in the classroom from the teacher's perspective or the teachers are changing their assumptions of these students as they get to know them better over the course of the school year. As these trends were found both in fourth and fifth grades for the same group of students, these results suggest that Hispanic students in bilingual classes may be at a disadvantage as they have to "start over" each fall as the positive ratings from the previous spring seem to be lost. This study elucidates potential ethnic differences in students but also draws attention to English proficiency being a possible factor, an investigation of which is beyond the scope of the current project.

The ADHD RS – IV has also been examined relative to possible performance differences based on the race of the child/adolescent being rated. Specific results of these investigations will be discussed in greater detail elsewhere in this chapter.

It is apparent that some differences in scores on behavior rating scales exist for Caucasian and African American students. Therefore, it is necessary to question if there are possible differences for other ethnic minority groups as well. One such group that is critical to examine is the Hispanic population. Given the cultural and linguistic differences that distinctly separate this group from Caucasians and African Americans, and the fact that Hispanics represent the fastest growing ethnic minority in the Unites States (U.S. Census, 2010), it is necessary to investigate how behavior rating scales may perform similarly or differently for this population.

Problem Behavior Assessed in the Hispanic Population

As evidenced throughout this document, there is a paucity of literature regarding studies that examine the assessment of problem behaviors among the Hispanic population. Those few studies conducted with this population are described, below.

Ethnicity of the student considered. According to teacher ratings on the Teacher Checklist of School Behavior (Hutton & Roberts, 1982), behavior of European American and African American students was viewed more favorably by the teachers (i.e. less negative behavior exhibited) than the behavior of Hispanic students (Roberts, Hutton, & Plata, 1985). The areas rated by teachers included: avoidance of peer interaction, aggressive interaction, avoidance of teacher interaction, inappropriate behavior, depressive reaction, physical reaction, and anxiety reaction. It is worth noting that these dimensions expand beyond those areas considered on the typical broad band measures of behavior problems (e.g. BASC and CBCL). These areas delve more into interpersonal issues a student may experience rather than externalizing behaviors, which are the primary focus of the proposed study. Moreover, of the aforementioned dimensions,

Hispanic students were rated significantly different from African American or European American students on avoidance of peer interaction, avoidance of teacher interaction and physical reaction. No other significant differences were detected between the ethnic groups. This is an interesting finding in that all of the areas in which differences were found could be considered to be highly influenced by culture, specifically differential modeling and expectations of interactions for Hispanics. It is most noteworthy that no differences were detected between groups on inappropriate behavior or aggressive interaction which could be considered to be most similarly aligned with externalizing behaviors.

Dominguez de Ramirez and Shapiro (1998) found a similar pattern on ratings for Hispanic and non-Hispanic students. Teacher ratings, as measured by the TRF, CTRS-T and ADHD RS – IV, indicated that Hispanic children scored similarly to their non-Hispanic, white peers. These findings are divergent to those which are more frequently reported, discussed in the following section, that Hispanic children tend to be rated higher on problem behavior scales.

These studies evidence the need for more attention to be given to this matter. It is apparent that these findings conclude that Hispanic students do not in fact differ from their peers from varied ethnic backgrounds. However, as will be evident in the following section, when considering the ethnicity of the rater as well as, in some cases, the ethnicity of the student, differences do emerge between ethnic groups.

Ethnicity of the rater considered. Seven hundred seventy seven students living in Puerto Rico were compared to 1,442 children of similar age and SES residing in the mainland U.S. on both parent and teacher measures to examine potential differences in

problem behavior between the two groups (Achenbach et al., 1990). Analyses of covariance (ANCOVA) results of scores on the CBCL and TRF, covaried by socioeconomic status based on the Hollingshead scales, indicated that both parents and teachers of the Puerto Rican group rated these children significantly higher, indicating more severe levels of problem behavior, than the U.S. mainland children. The question still exists however, are these true differences in behavior or simply perceived differences of the rater? These authors were also able to examine the degree of teacher and parent agreement as measured by the CBCL and TRF for the Puerto Rican sample. A Pearson correlation revealed that there was a low correlation (r=.35) between these two parties. Due to the manner in which their data were collected for the mainland sample, (i.e. subjects were different for the CBCL and TRF) correlations were not able to be computed. Although the extent of agreement between parent and teachers for the Hispanic sample replicates that which has been found among other samples, the results of the ANCOVA analysis brings additional considerations. Achenbach and colleagues suggest that a differential diagnostic cutoff may be necessary to establish and consider when administering these instruments to children of Puerto Rican descent. A limitation of this study is that these results cannot be generalized to persons of Hispanic descent other than Puerto Rican (e.g., those from Mexican, Dominican, or other Latin American backgrounds).

Other researchers have also expanded upon only considering the ethnicity of the child being rated and have also accounted for the ethnicity of the rater as well (Dominguez de Ramirez, & Shapiro, 2005; Zimmerman, Khoury, Vega, Gil, & Warheit, 1995). Dominguez de Ramirez and Shapiro (2005) used four groups to evaluate their

question regarding ethnicity of the rater influencing scores on behavior rating scales, specifically the ADHD RS - IV. The groups were as follows: Hispanic teacher/Hispanic student, Hispanic teacher/White student, White teacher/Hispanic student and White teacher/White student. Results of teacher's behavior ratings of a videotaped student indicated that Hispanic teachers rated children higher (i.e. indicating greater ADHD symptomatology) than White teachers regardless of the child's ethnicity. In reviewing these findings further, this effect was only true on the Hyperactive/Impulsive subscale of the ADHD RS – IV, not the Inattention Subscale or Total Score and only for Hispanic students. Furthermore, when acculturation of the teacher was considered as a covariate, there were no differences in teacher's ratings of the student. Although the results of this investigation are of value to consider in assessment, a major limitation is that this was analog research and was not conducted in an actual classroom with students who teachers have presumably developed some sort of relationship with. The dynamics of in vivo interactions may have impacted the results of this investigation.

Zimmerman and colleagues (1995) also considered the relationship between the teacher and student in regard to ethnicity. It is noteworthy that contrary to the investigation of Dominguez de Ramirez and Shapiro (2005), acculturation level of the teacher was not taken into consideration. On TRF ratings, African American students with Hispanic teachers yielded the highest mean total problem score. The next highest total problem scores were assigned to a group of African American students by their non-Hispanic, white teachers. Hispanic teachers assigned the lowest ratings to non-Hispanic, white students out of all groups. This study also examined the agreement between parent and teacher ratings across ethnicities. Results indicated that there was no

difference for Hispanic students between parent and teacher ratings for all three teacher ethnic groups. For African American students on the other hand, non-Hispanic, white and Hispanic teachers noted significantly more disruptive behavior than parents and African American teachers, who rated even fewer behavior problems than the parents. The lowest levels of agreement however occurred for non-Hispanic, white students' parent's ratings and teacher ratings, across all three teacher ethnic groups. Overall, it appears that these authors found that African American students exhibited the highest amount of problem behavior. In addition, behavior ratings from parents on the CBCL and teachers on the TRF for the African American students were more than twice as likely to be discordant.

To this point, the findings of the extant literature are mixed. Some research supports the idea that problem behavior does occur at higher rates within the Hispanic population and other findings indicate that problem behaviors occur at similar rates to those exhibited by non-Hispanic individuals. A recent NCHS data brief (Akinbami, et al., 2011) indicates that Mexican children from 1998-2007 consistently had fewer diagnoses of ADHD, approximately between 2-4%, relative to other racial or ethnic groups. Alternatively, 6% of children from Puerto Rican descent had been diagnosed with ADHD from 1998-2000, the rate of which steadily increased, peaking higher than any other ethnic group, around 10%, during the 2001-2003 time frame and began to decline to a prevalence rate, around 8% similar to white and black children by 2009. These disparate rates support the varied results demonstrated in the literature and evidence a need for a greater focus of research on the specific country of origin of Hispanic children rather than grouping these individuals into one large category. The

country of origin of the rater may also influence the outcome on behavior rating scales, but again, there is not a large literature base surrounding this concept at this point in time.

Not yet addressed in the review of the literature is the utilization of the BASC and ADHD RS – IV with ethnic minority populations. The following section will outline the existing literature documenting the performance of ethnic minorities on these two behavior rating scales.

External Validity of the BASC and ADHD RS – IV

BASC. Although several unpublished doctoral dissertations have focused on the external validity of the BASC and the BASC-II, more specifically, its use with individuals from varied ethnic backgrounds, a thorough review of the literature utilizing the search engine Psychinfo as well as a bibliography of research related to the BASC and BASC-II provided by the publishers of the instrument, revealed a paucity of empirical research pertaining to the use of this rating scale with non-Caucasian populations.

In a review of the BASC, Flanagan (1995) deems it to be an exemplary instrument, albeit with some relatively minor concerns. One issue that the author notes is the lack of minority norms established in development of the rating scale. When developing the BASC, Reynolds and Kamphaus (1992) included Hispanic children in their standardization sample at a weighted rate, making it proportionate to the 1985 census results (McCloskey, Hess, & D'Amato, 2003). However, no ethnic group was examined independently from the larger standardization sample to determine how the instrument might perform differently for each group. The BASC Manual (Reynolds, & Kamphaus, 1992) provides internal consistency, test-retest and interrater reliability

coefficients for the standardization sample, differentiated by age, and gender, but does not report the estimates by ethnic background or socioeconomic status of the youth (Wilder, & Sudweeks, 2003).

McCloskey and colleagues (2003) point out that questions about the validity of the BASC for the individuals of Hispanic descent remain due to the underrepresentation of the Hispanic population (i.e. 96 children) in the original general standardization sample as well as the rapidly changing demographic of the United States. An even smaller number of Hispanic participants were included in the clinical norm sample (i.e. 17 total individuals across age groups for the Teacher Rating Scale and 19 total participants across age groups for the Parent Rating Scale) which is even more concerning when utilizing this rating scale with persons who may be exhibiting problem behavior . Furthermore, while a proportionate representation of Hispanics would be a positive step, potential linguistic differences, particularly in comprehension and interpretation remain a plausible concern when utilizing the BASC with this population.

The BASC-II (Reynolds and Kamphauas, 2004), is the updated version of the BASC and although the representation of Hispanic and African American groups in both the general and clinical norm sample is a vast improvement (i.e. representing 2000 U.S. census data) over the previous version, and a Spanish version of the instrument has been developed, some limitations still exist. Perhaps the most concerning detail is that investigation into how these scales may operate differently for various ethnic groups was not conducted. Further, differences in response patterns and potential group differences were not examined for the Spanish version of the BASC-II.

Dowdy and colleagues (2011) examined the BASC-II for differential item functioning (DIF) amongst limited English proficient (LEP) and proficient students. Results indicated that the teacher rating scale for the BASC-II was largely invariant across the aforementioned groups. Dowdy et al. note, however, that LEP students did, in fact, receive higher ratings from teachers on the School Problems Scales, pointing to more attention and learning problems. It is important to note that although items appeared to function similarly for these groups, 98.6% of the LEP group was Hispanic and 72.7% of the English proficient group was also Hispanic. Because over 85% of this total sample is made up of Hispanic students, this study does not provide a comparison of Hispanics to any other racial or ethnic group. Although this investigation contributes some important information relative to language proficiency, the utilization of the BASC-II amongst the Hispanic population has still not been addressed. The lack of empirical support of the use of the BASC or BASC-II with individuals from varied ethnic backgrounds is a clear void in the extant literature and supports a need for the current investigation.

ADHD RS – IV. Contrary to the BASC, a variety of studies have been conducted investigating the external validity of the ADHD RS-IV. In examining the home version of this measure, DuPaul and colleagues (1998) found that exploratory factor analysis followed by confirmatory factor analysis, supported the originally proposed two factor structure (i.e. Hyperactivity/ Impulsivity and Inattention). These results were true for parent ratings based on sex, age as well as race of the student. The limited number of Asian-American and Native American participants did not allow for independent analyses for these two ethnic groups however, Caucasian, African American and

Hispanic students were considered independently. Results of ANOVAs indicated that significant main effects existed for ethnic group and Tukey HSD post hoc comparisons demonstrated that African American students were rated significantly higher than Caucasian or Hispanic students, for whom no statistically significant differences were found. Results also indicated that boys were rated higher than girls and younger students received higher ratings than participants in the older age group. Overall, results of this investigation indicate the necessity for varied norms across age and gender on the home version of the ADHD RS–IV. Furthermore, there is evidence to suggest that further examination between African American students and those from other ethnic backgrounds, specifically Caucasian and Hispanic children on this instrument is necessary. Although this is a thorough study, Hispanic students only represented 2.3% of the sample, therefore, generalization of these results to a group that actually represents over 12% of the general population, according to most recent census reports, must be considered cautiously. Further investigation is necessary, specifically within this subgroup.

Similar to the investigation of the home version of this scale, an examination of the school version was conducted utilizing identical statistical procedures as those in the previous study (DuPaul et al., 1997). As with the home version, the school version also yielded two factors (i.e. Hyperactive/Impulsive and Inattention). Results of these analyses indicated that African American students at all age ranges were rated higher by teachers than their Caucasian peers and than Hispanics from 8-10 and 11-13 years old. In the adolescent age group (i.e. 14-18 year old), however, African American and Hispanic

students received higher teacher ratings than Caucasian students, with Hispanic adolescents receiving the highest of all groups.

Reid and colleagues (1998) explored how the ADHD RS – IV performed for African American and Caucasian children based on teacher ratings. A sample of 1740 children, 381 of which were African American and 1,359 Caucasian, aged 5-18 were the focus of the investigation. Results indicated that mean scores for the African American group were significantly higher on both factors than mean scores for Caucasian children. The significant differences in group variance as well as the distinctly different distributions across racial groups across both factors support the concept of developing unique norms for each racial group. Reid and colleagues point out that if the norms for the Caucasian population were used to screen African American children, nearly twice as many children would appear positive for ADHD symptoms. Furthermore, structural equation modeling (SEM) analysis indicated that while the Hyperactive/Impulsive and Inattention factors are appropriate for both racial groups, the actual constructs are not identical across groups. This is a thorough investigation and serves as model for future studies to investigate all psychological instruments in this manner. Moreover, although there are many strengths of this study, the Hispanic population was not considered. Given that this group is growing rapidly in the U.S., it is necessary to take this group into account and how such a scale might perform for them.

An additional investigation by Reid and colleagues (2000) also did not explore the Hispanic population but it did consider differences between African American and Caucasian children as well as males versus females. Using a Caucasian sample of 2,636 students and 686 African American children, scores on the ADHD RS – IV School

Version indicate the scale is highly consistent across all groups. Differences between males and females were more notable among the Caucasian group than African American group. For instance, for the Caucasian students, a consistent group of variables continually emerged that distinguished males from females however there was no such effect apparent for African American students. African American males were rated as exhibiting the most ADHD symptoms, followed by Caucasian males and African American females, who were indistinguishable from each other. Caucasian females received the lowest ratings of all groups considered. A point of great interest resulting from this investigation is that when considered simultaneously in MANOVA analyses, gender accounted for more variance than ethnicity. These findings indicate that there truly are behavioral differences between African American and Caucasian students and even more so when taking gender into account, however, one cannot eliminate the possibility that the ADHD RS – IV is performing differently for these two ethnic groups.

Direct observational data supported the elevated ratings on the Hyperactivity/Impulsivity scale of the ADHD RS-IV teachers assigned to ethnic minority students (Hosterman, DuPaul, & Jitendra, 2008). The CTRS and ADHD RS-IV were compared to direct objective behavioral observations utilizing the Behavioral Observation of Students in Schools coding system ([BOSS]; Shapiro, 2003). The 60 ethnic minority students were observed exhibiting more off-task verbal behavior in both reading and math classes compared to their 112 Caucasian peers. This same group was rated significantly higher on the Hyperactivity/Impulsivity scale on the ADHD RS-IV in both reading and math classes. The results of this investigation indicate that teacher bias is not causing inflated ratings of ethnic minority students on the ADHD RS-IV but these

differences appear to be due to actual behavior differences between the minority and Caucasian groups.

Although the results of these studies bring to light some fascinating findings, consistent and extensive information regarding the question of whether differences in behavior ratings are the result of actual behavioral differences or possible perceptual bias by the rater or some other plausible factor contributing to the performance differences is still necessary.

Summary and Conclusions

The extant literature supports a relatively low rate of agreement between parent and teacher ratings of youth behavior on behavior rating scales. However, independent investigations have not been conducted on the BASC to confirm the reported results in the manual for this instrument. Due to the paucity of empirical support, the extent of parent and teacher agreement on the BASC and ADHD RS – IV alike will be examined in the proposed study. In addition, it is apparent from the studies reviewed in this chapter, that there are no clear and consistent findings regarding problem behaviors among Hispanic children. Some research concludes that problem behavior occurs at higher rates among the Hispanic population while others find the opposite to be true. Overall, this is a broad area that needs further investigation given the ever changing cultural make up of the United States. Based on the evidence outlined thus far of the possibility of different performance rates on behavior rating scales amongst minority populations within the U.S., the proposed study will not only examine the extent of agreement between parent and teacher ratings on the BASC and ADHD RS – IV, but will

also investigate the potential differences in response patterns on these extensively utilized psychological tools, based on the ethnicity of the child being rated.

Chapter III

Methodology

Participants and Settings

Parents and teachers of students attending 1st through 5th grades in public elementary schools in northeastern Pennsylvania were participants in the proposed study. This sample was taken from a larger research study evaluating the effectiveness of an assessment based, academic intervention package in improving the academic achievement of 1st through 5th grade students with ADHD (DuPaul et al., 2006; Jitendra et al., 2007). Possible participants (n = 242) were selected for the current study based on parent reported ethnicity of the student for whom the rating scales are being completed (Appendix A). This participant group consisted of 26.9% Hispanic students, 2.5% black and Hispanic, 60.3% white, non-Hispanic, 9.1% black of non-Hispanic origin, .8% American Indian or Alaskan Native and .4% other. The gender composition of this sample was 76% male and 24% female. At time of referral, 21.9% students were in 1st grade, 22.7% in 2nd grade, 33.5% in 3rd grade, and 21.9% in 4th grade. The average age of participants was 8.6 years, ranging from 6 to 12 years of age. While this portrait describes the largest population available to address the posed research questions, the sample for each specific question consisted of different participants. An accurate depiction of the participants utilized to answer each research question can be found in Table 1.

A power analysis utilizing power tables from Cohen (1988) was conducted to determine the minimum number of completed rating scales necessary to detect moderate to high correlations. A power analysis for power =.80 (α=.05) assuming a large effect

size (r=.5) revealed the need for 23 participant pairs. In addition, for power =.80 (α=.05) assuming a moderate effect size (r=.3) 65 participant pairs will be necessary. The final sample size for analysis of these instruments included, the number determined by this power analysis, when possible and any additional rating scales as available.

Procedure

Recruitment and Screening. The process of recruitment of the ADHD sample for the larger study began with personnel at local schools (e.g. guidance counselors) in Northeastern Pennsylvania, who had received a letter detailing the nature and purpose of the larger research study. If they were able to identify students who were having academic difficulty in reading or mathematics as well as experiencing some symptoms of ADHD, (i.e. inattention, hyperactivity, or impulsive behavior) a letter explaining the study and why their child had been identified as a possible participant was sent to the students' parent(s). Parents were then asked if they would give their permission to have individuals associated with the study contact them with further information. If parents agreed, they were contacted by telephone, additional information was provided and written consent was obtained to continue with the first stage of the study. The screening process began with completion of the Attention Deficit Hyperactivity Disorder Rating Scale IV (ADHD RS-IV; DuPaul et al., 1998) by both the parent and the teacher. If scores on this instrument from both raters exceeded the 90th percentile on either the Inattention or Hyperactivity-Impulsivity subscales using appropriate age and gender norms, the student was able to continue with the screening process. Following administration of the ADHD RS-IV, the Computerized National Institute of Mental Health Diagnostic Interview Schedule for Children –IV Parent Version (CDISC 4.0;

Shaffer, Fisher, & Lucas, 1998) was given, in most instances, via the telephone and occasionally in person. Children who met the criteria for one the three subtypes of ADHD (i.e. Predominantly Inattentive Type, Predominantly Hyperactive-Impulsive Type, or Combined Type) based on the *Diagnostic and Statistical Manual of Mental Disorders – IV Text Revision* (DSM-IV TR; American Psychiatric Association [APA], 2000) guidelines, according to results of this interview, were eligible for participation in the larger research study.

The process was similar for recruiting control students except that the contact person at each school was asked to identify children who were not experiencing any academic difficulty nor exhibiting behaviors that appeared to be symptoms of ADHD. Identical procedures to the proband group, regarding parental contact and solicitation of information were followed for the control students. Those recruited for the control condition who did not meet criteria for ADHD on both the ADHD RS-IV as well as CDISC 4.0 were eligible for participation.

If the aforementioned inclusion and exclusion criteria were met, written consent, depicting the purpose, nature and potential risks of participation, was obtained from the child's parent(s). At this time, demographic information regarding the ethnicity of child was also obtained.

During the initial meeting between the child's teacher and the consultant assigned to the case, a description of the purpose, nature of the research study was provided and written agreement for participation was obtained from the teacher.

Data Collection

As previously mentioned, parents and teachers participating in a larger study, examining the effectiveness of an academic intervention package in improving academic performance of students with ADHD were the participants in this study. Parents and teachers completed the *BASC* and *ADHD RS-IV* during the baseline phase of assessment. A packet including the *BASC, ADHD RS-IV* and several other rating scales was mailed to parents and they were asked to complete the forms and return them to investigators via mail in the enclosed envelope. Telephone calls reminding parents to please return the completed packet were made if information was not returned to the investigators in a timely fashion. Teachers on the other hand, received the packet containing the *BASC, ADHD RS-IV* and an additional battery of instruments from a data collector (i.e. graduate student collecting assessment data) during the first day of in school assessment. Teachers were expected to return the rating scales via mail in the enclosed envelope and were provided a $50 stipend upon receipt of a completed packet. To increase the power for research questions involving the *ADHD RS-IV,* ratings collected from parents and teachers during the initial screening phase, previously described, were utilized to address the questions relative to this rating scale.

All parent and teacher scores were included in the initial analyses to address the questions of the level of parent and teacher agreement as it relates to the *BASC* and *ADHD RS-IV*. However, when considering potential ethnic differences in the agreement of scores, the parents and teachers were divided into Hispanic and non-Hispanic groups based upon the ethnicity of the student for whom the rating scale is being completed. Demographic information collected at the outset of the study was utilized to make these

determinations. Parents completing the rating scales during the screening phase of the larger research study were asked to identify their child as the one of the following ethnicities: European-American; Hispanic, not black; African American; American Indian; Asian; or other. Participants included in this study have completed rating scales on students that parents identified as either European-American or Hispanic.

Screening Measures

The *ADHD RS – IV* is a behavior rating scale available in both a home and school version to assess symptoms of ADHD, based on age and gender norms. This scale consists of 18 items (i.e. 9 items from the inattention and 9 items from the hyperactivity/impulsivity categories) which are adapted directly from the DSM-IV criteria for ADHD diagnosis. Each item is rated on a 0 (never or rarely) to 3 (very often) scale. The psychometric properties of this scale are well established and will be discussed in the next section of this chapter.

The *CDISC 4.0* is a computerized, structured diagnostic interview that contains a variety of different modules pertaining to both internalizing and externalizing disorders. For purposes of the larger research study, only the Disruptive Behavior Disorders Module was administered. This decision was made based on time constraints in administration (i.e. administering the Disruptive Behavior Disorders Module alone took approximately 1 hour) as well as pertinence of information gathered for purposes of the research study (i.e. focus on externalizing behavior). Information is collected via this interview regarding the child or adolescents current symptoms as well as those that may have been present throughout the past year. Decisions regarding diagnosis according to the *DSM-*

IV-TR for children and adolescents utilizing this instrument have been found to be highly reliable (Shaffer et al., 1998).

Dependent Measures

The *Behavior Assessment System for Children* (BASC; Reynolds, & Kamphaus, 1992) is a broad band measure assessing various aspects of emotional and behavioral difficulties a child may be experiencing. This measure includes a Parent Rating Scale, Teacher Rating Scale and Self Report of Personality. For purposes of this study, only the parent and teacher ratings were utilized. Depending on the child's age, this measure may contain over 100 items, which are responded to using a 4 point Likert Scale, ranging from Never (0) to Almost Always (3). Exploratory factor analysis of the teacher version of this instrument yielded four factors on this instrument: externalizing problems, internalizing problems, school problems and other problems. The Externalizing Problems composite score includes the Hyperactivity, Aggression and Conduct Problems Scales on the BASC. The Internalizing Problems composite score consists of Anxiety, Depression, and Somatization Scales. The School Problems composite score includes the Attention Problems and Learning Problems Scales. Atypicality and Withdrawal Scales make up the Other Problems Index. The parent version of this scale includes the same subscales with the exception of the School Problems Scale. Parents are questioned about attention problems, but the learning problems subscale is not included, making a composite score for School Problems unfeasible. For purposes of this study, the T scores generated from the raw scores for the Behavioral Symptoms Index (i.e. total score), Externalizing Problems Composite Score and the Internalizing Problems Composite Score were utilized. The technical manual for the *BASC-TRS* indicates the median

internal consistency for all three age levels (i.e. preschool, child, adolescent) ranges from .82 to .89. and test-retest reliability ranged from .82 to .91. Inter-rater reliability amongst teachers was also high, with a median value of .83. High levels of criterion related validity were found when comparing this instrument with 5 other well established measures. The *BASC-PRS* also has sound psychometric properties. Median internal consistency ranged from the middle .80s to the low .91s and test-retest reliability ranged from .70 to .88. Inter-rater reliability amongst parents was moderate, with alphas from .46 to .67. Finally, the criterion related validity was moderate to high with four other well-established instruments.

Although an updated version of this instrument now exists, the *BASC-II* (Reynolds, & Kamphaus, 2004), at the time the larger research study began, it was not available. Rather than changing methodology during the ongoing study, the *BASC* was utilized and therefore data for this study are based on parent and teacher ratings on the *BASC*. Furthermore, although some changes were made in the newer version on this instrument regarding the item content, correlations reveal that the two versions of the scale are still highly related. For the Internalizing Composite Scale, a total of 10 out of the 27 that make up the teacher version of the scale changed and the correlation coefficient reveals that the *BASC* and *BASC II* are highly related (r=.95). Similarly, for the parent version of the Internalizing Composite Scale, a total of 15 items out of 40 changed and the two versions of the instrument are still highly related (r=.96). The Externalizing Composite Scale changed more dramatically for both the teacher and parent from the original *BASC* to the *BASC-II*. However, although 16 of the 30 items changed on the teacher version and 17 of the 30 items changed for parents, the older and

newer versions of the instrument are still highly correlated (r= .96) and (r= .94) respectively. Finally, the new Behavior Symptom Index also remained highly related to the previous version of the instrument (r=.94) for teachers and (r= .90) for parents. There was a considerable shift on the new parent version of the measure in that two new scales have been added (i.e. Functional Communication and Activities of Daily Living) resulting in an addition of 22 items to the new scale but this does not seem to alter the overall similarity of the instrument to its predecessor. The difference for the teacher version was less substantial, with nine total items being eliminated. Overall, as has been stated above, although some modifications have been made the *BASC II* to make it a generally stronger psychometric instrument, these changes do not seem to impact the overall functioning from the previous version of the instrument, the *BASC*.

The *ADHD Rating Scale - IV* (ADHD RS – IV*;* DuPaul, et al., 1998) was used to compare parent and teacher narrow band ratings of student behavior. Items on this scale were developed based on the diagnostic symptoms according to the *DSM-IV*. This scale includes 18 items, nine of which directly relate to inattentive symptoms and nine of which target hyperactive/impulsive symptoms. This instrument has two factors, inattention and hyperactive/impulsive and a full scale score, each of which will be examined in this study. The raw scores generated based on parent and teachers' ratings for all three scales (i.e. total score, hyperactivity/impulsivity and inattention scores) were utilized in the current investigation. Items are rated on a four point Likert Scale, ranging from 0 (not at all) to 3 (very often). Both the home and school versions of the *ADHD RS - IV* were completed and were used for analysis in this study. The technical manual for the *ADHD RS – IV* (DuPaul et al., 1998) indicates that the internal consistency for the

School Version is .94 and the test-retest reliability is .90. Internal consistency for the Home Version is also high, .92 and test-retest reliability is .85. Three established measures were used to determine the degree of criterion validity, where correlation coefficients ranged from .28 to .88, with 28 of the 30 validity coefficients being statistically significant. The parent measure was validated against one other well-established measure, where correlation coefficients ranged from .10 to .81 with 15 out of 18 of the validity coefficients examined being statistically significant.

Research Design and Data Analyses.

Multitrait – multimethod matrices (MTMM; Campbell, & Fiske, 1959) were used to answer the 1st, 2nd, 4th and 5th research questions posed in this study. Understanding that technically, these analyses would more accurately be named multitrait – multisource given what was analyzed in this study, for clarity purposes and in keeping with the extant literature they will be referred to as multitrait-multimethod matrices (MTMM) where traits are subscale and full scale scores and methods are parent or teacher ratings. More detail for each matrix will be provided in the next section. A *t*-test was used to compare the mean ratings for parent and teacher ratings between the Hispanic and non-Hispanic groups, answering the third research questions.

The matrix to address the first research question, pertaining to agreement between parent and teacher ratings on the *BASC* was set up such that the two methods (sources) are parent and teacher ratings and the three traits are the Behavioral Symptoms Index (i.e. total score), Externalizing Problems Composite Score, and the Internalizing Composite Score. The validity diagonal (i.e. the correlation between measures of the same trait assessed utilizing different methods) was of primary interest to the investigator. Stated

differently, the correlation between parent ratings on the Behavioral Symptoms Index, Externalizing Problems Composite Score and Internalizing Composite Score and teacher ratings on these same scales provided evidence to address the first research question.

A second MTMM matrix was established to address the second research question, regarding agreement between parent and teacher ratings on the *ADHD RS-IV*. Similar to the first matrix, the methods (sources) were parent and teacher ratings. The traits for this matrix were the Total Score on the *ADHD RS-IV*, the score on the Inattention Subscale and the score on the Hyperactivity/Impulsivity Subscale. The items reflected on the Inattention subscale are the nine items directly related to the Inattention category in the *DSM-IV-TR* criteria for ADHD diagnosis. Similarly, the nine items on the Hyperactivity/Impulsivity subscale are relative to its own category for diagnosis of ADHD according to *DSM-IV-TR* criteria. The validity diagonal of this matrix informed conclusions regarding the second research question in this study.

The fourth research question pertains to parent and teacher ratings on the *BASC* divided into groups based on the ethnicity (i.e. Hispanic or non-Hispanic) of the student being rated. The MTMM Matrix established to address this research question was composed of three traits and four methods. The traits consisted of the Behavioral Symptom Index on the *BASC*, the Externalizing Problems Scale and the Internalizing Problems Scale. The methods (sources) in this matrix were parents of Hispanic students, parents of non-Hispanic children, teachers of Hispanic youth and teachers of non-Hispanic youngsters. The validity diagonal provided correlations to answer the third research question.

Finally, another MTMM Matrix addressed the fifth research question regarding parent and teacher ratings of Hispanic and non-Hispanic students on the *ADHD RS-IV*. Just as the previous three matrices have been set up, the scales on the *ADHD RS-IV* were traits and the methods (sources) were parent or teacher ratings on these scales. Specifically, the Total Score, Inattention subscale and the Hyperactivity/Impulsivity subscale were utilized as traits. Parents and teachers were placed in one of four groups based on the ethnicity of the student being rated and these served as the methods for this MTMM Matrix.

When interpreting the various correlations produced in the matrices, coefficients of .10 or less were considered small, .50 were moderate, and .80 and higher were large in accordance with guidelines typically adhered to in the social sciences (Cohen, 1988, p. 79). Cohen's *d* effect sizes (ES) were calculated for the third research questions, pertaining to the mean differences in ratings between Hispanic and non-Hispanic groups on the three scales of the BASC and ADHD RS-IV. The formula utilized to calculate Cohen's *d* was: ES = (mean of the Hispanic group minus the mean of the non-Hispanic group) divided by the standard deviation of either group (since they are assumed equal; Cohen, 1988, p.20). The operational definitions defined by Cohen were utilized for interpretation of the ES (Cohen, 1988, pp.24-27). These guidelines state: $d = .2$ indicates a small effect, $d = .5$ suggests moderate effects, and $d = .8$ is a large effect.

Chapter IV

Results

Hypothesis 1

A MTMM was established to evaluate the extent of agreement between parent and teacher ratings for all participants on the BASC. As stated previously, the validity diagonal of the matrix was of primary interest and therefore will be discussed, however, a complete representation of the matrix can be found in Table 2. It was hypothesized that the level of agreement between parents and teachers for the Behavior Symptom Index (r = .45), externalizing scale (r = .51) and internalizing scale (r = .23), as reported by Reynolds and Kamphaus (1992) would be replicated. This hypothesis was supported. When examining the Behavior Symptom Index, or total score, and externalizing scale on the BASC, there was a moderate correlation (r = .56 and r = .54, respectively) between parent and teacher ratings. These correlations were statistically significant, $p < .01$. As hypothesized, the correlation between parent and teacher ratings for the internalizing scale was low (r = .21), which was statistically significant, $p < .05$.

Hypothesis 2

To examine the level of agreement between parent and teacher ratings on the ADHD RS-IV, a MTMM was established. It was hypothesized that correlations would be similar to those reported by DuPaul and colleagues (1998) for the combined or total score (r = .41), Inattention scale (r = .45) and Hyperactivity/Impulsivity scale (r = .40). The Pearson product moment correlations that emerged from this matrix were larger than those reported by the authors of the scale and therefore this hypothesis was not supported. The correlations between parent and teacher ratings were large for the combined score (r

= .85), Inattention scale (r = .84) and moderate for the Hyperactivity/Impulsivity scale (r = .74). All correlations were statistically significant, $p < .01$. The entire MTMM is represented in Table 3.

Hypothesis 3a

Differences in mean parent and teacher ratings on the BASC for Hispanic and non-Hispanic students was examined utilizing independent samples *t*-tests. It was hypothesized that there would be differences in scores on the BASC between Hispanic and non-Hispanic students. This hypothesis was not supported. The *t*-tests indicated no significant differences in mean ratings or variance between these two groups from either parents on the Behavior Symptom Index (F (2, 90) = 1.11; p = .44), Internalizing scale (F (2, 90) = .06; p = .28) or Externalizing scale (F (2, 90) = .13; p = .45) or teachers on the Behavior Symptom Index (F (2, 90) = .01; p = .75) , Internalizing scale (F (2, 90) = .1.24, p = .9) or Externalizing scale (F (2, 90) = .14; p = .13) on the BASC. Effect sizes for group differences were all in the small range. Group means, standard deviations and effect sizes are presented in Table 4.

Hypothesis 3b

Independent samples *t*-tests were used to evaluate differences of mean parent and teacher ratings on the ADHD RS-IV for Hispanic and non-Hispanic students. It was hypothesized that there would differences in mean scores from the variety of raters for these groups of students. No significant differences in mean ratings from parents on the Inattention (F (2, 152) = .77; p = .9), Hyperactive/Impulsive (F (2, 152) = 4.5; p = .2) or Combined (F (2, 152) = .02; p = .49) or teachers were detected on the Inattention (F (2, 152) = 2.65; p = .65), Hyperactive/Impulsive (F (2, 152) = .54; p = .19) or Combined (F

(2, 152) = 2.16; p = .17) of the ADHD RS-IV for Hispanic and non-Hispanic students. Effect sizes for group differences were all in the small range. Thus, this hypothesis was not supported. Group means, standard deviations and effect sizes are presented in Table 5.

Hypothesis 4a

A MTMM was established to explore the level of agreement between parent and teacher ratings for Hispanic youth on the BASC. It was hypothesized that the level of agreement would be lower than the rates reported by Reynolds and Kamphaus (1992) for the general population (r = .45, r = .51, r = .23) on the Behavior Symptom Index, externalizing problems and internalizing problems scales, respectively. This hypothesis was partially supported. Results demonstrated that correlations on the Behavior Symptom Index and externalizing problems scales were slightly higher than those reported by the authors (r = .59, r = .63) respectively. These correlations were statistically significant p< .01. The correlation between parent and teacher ratings on the internalizing problems scale was slightly lower (r = .19) than the authors' reported rate, supporting the hypothesis for the internalizing scale. This correlation was not statistically significant. Table 6 represents the complete MTMM.

Hypothesis 4b

The level of agreement between parent and teacher ratings for individuals of non-Hispanic decent on the BASC was examined in this analysis. It was hypothesized that there would be a close reflection of reported ratings of agreement on the Behavior Symptom Index (r = .45), externalizing problems scale (r = .51) and the internalizing problems scale (r = .23). Results indicated that this hypothesis was supported.

Correlations between parent and teacher ratings for non-Hispanic students were nearly identical to those reported on the externalizing problems scale (r = .58) and the internalizing problems scale (r =.25), both of which are statistically significant *p.<01*. The level of agreement on the Behavior Symptom Index between parent and teachers was similar but higher for this group of participants (r = .60) which is also statistically significant $p<.01$. The complete MTMM can be seen in Table 7.

Hypothesis 5a

A MTMM was utilized to examine the level of agreement between parent and teacher ratings for Hispanic students on the ADHD RS-IV. Lower levels of agreement were hypothesized for this population than the rates reported by DuPaul et al. (1998) for this instrument for the total (r = .41), Inattention (r = .45) and Hyperactive/Impulsivity Scales (r = .40). Results of this analysis did not support this hypothesis and, in fact, the opposite seems to apply. All correlations were high (r= .86, r = .84, r = .78) for parent and teacher agreement on the total score, Inattention scale and Hyperactive/Impulsivity scales, respectively. The complete matrix is presented in Table 8. All results of this analysis were statistically significant $p<.01$.

Hypothesis 5b

The level of agreement between and teacher ratings on the ADHD RS-IV for non-Hispanic students was explored by establishing a MTMM. The hypothesis stated that results of the analysis would replicate the reported rates of agreement provided by the authors of the instrument on the total score (r = .41), Inattention scale (r = .45) and Hyperactive/Impulsivity scale (r = .40). The level of agreement determined for this population yielded high correlations which did not support the hypothesis of replication

of moderate correlations. The total score (r = .86), Inattention scale (r = .85) and Hyperactive/Impulsivity scale (r = .76) correlation coefficients for parent and teacher agreement were all large in magnitude and statistically significant $p<.01$. The complete MTMM is displayed in Table 9.

Chapter V

Discussion

The current investigation sought to examine the extent of agreement between parent and teacher ratings amongst different populations on both the BASC and ADHD RS-IV. When considering the BASC, results typically replicated those reported by Reynolds and Kamphaus (1992). This study explored the Behavior Symptom Index, externalizing scale and internalizing scale of the BASC for all participants, regardless of ethnicity or ADHD diagnosis, revealing moderate correlations on the former scales and a low correlation of scores between raters on the internalizing scale. This pattern was also evident when investigating parent and teacher ratings of Hispanic and non-Hispanic students in isolation.

On the contrary, across all groups investigated, results never reproduced those reported by DuPaul and colleagues (1998) on the ADHD RS-IV. Whether examining the total score, Inattention scale or Hyperactivity/Impulsivity scale for all participants or investigating groups based on ethnicity, the level of agreement between parent and teacher ratings was consistently higher than those reported for the standardization sample on this instrument.

Further, no differences in mean scores reported by parents and teachers of Hispanic and non-Hispanic students with ADHD symptomatology were detected on either the BASC or the ADHD RS-IV.

All Participants

BASC. The results of the present study revealed that on all scales examined within the BASC, the level of agreement between parent and teacher ratings of student

behavior, for all participants in the larger research study, closely replicated those reported by Reynolds and Kamphaus (1992) in their BASC manual. Moreover, the moderate correlations provided by these authors were nearly duplicated on the Behavior Symptom Index, externalizing and internalizing scales of this measure when considering all participants. Although these findings support conclusions reported by the authors of the instrument, the correlations revealed for agreement amongst parents and teachers are slightly higher than those typically reported for behavior rating scales in the extant literature (Achenbach, McConaughy & Howell, 1987). It is possible that the BASC is designed such that a higher level of response amongst raters is solicited, although this has not been explored thus far in the extant literature. This is difficult to conceptualize considering the extensive findings that support low to moderate correlations between parent and teacher ratings reported for a multitude of behavior scales. One could speculate that perhaps the wording of the items utilized is more specific than other rating scales and therefore results in higher levels of agreement between respondents. The BASC has 148 total items for the teacher scale and 138 items for the parents. The greater number of items on these scales as compared to the CBCL and TRF, for example, which has 112 items for both versions could allow for greater item specificity. For instance, the BASC asks parents if a child "fiddles with things while at meals" which is very specific, versus a more general "can't sit still, restless or hyperactive" prompt on the CBCL. Similarly for teachers, the BASC queries "bothers other children when they are working" as compared to the TRF probe "disturbs others". These are only two examples of many demonstrating the point of the BASC having greater language specificity using the CBCL and TRF as a comparison. This is only one possible explanation for the moderate level of

agreement between raters on the BASC. Ultimately, the reason for moderate levels of agreement between raters on the BASC is unknown and could be a possible direction for further inquiry.

ADHD RS-IV. When examining all participants, regardless of ethnic background, findings demonstrated that the levels of agreement between parent and teacher ratings on this behavior rating scale were higher than those reported in the manual for the ADHD RS-IV. This result is an interesting one and worthy of further investigation. The levels of agreement stated by DuPaul and colleagues (1998) are generally consistent with those typically cited in the literature. It is typical that the level of agreement for ratings of solely externalizing behaviors, such as those included on the ADHD RS-IV, yield higher levels of agreement, in the moderate range, amongst raters (Deng, Xianchen, & Roosa, 2004; Lee, Elliott & Barbour, 1994; Kolko & Kazdin, 1993; Stanger & Lewis, 1993; Touliatos & Lindholm, 1981). Although this level of agreement may be reported as moderate in nature, those revealed in the current investigation would be deemed as high. Uncovering these high levels of agreement between parent and teacher ratings was not an anticipated result of this study. It is possible that the characteristics of the sample used for this investigation and that for the standardization of the scale could be contributing to the differing levels of agreement detected. The nature of the current study itself necessitates that at least half of the participants display ADHD symptomatology, therefore it is likely that there are true behavioral differences for this group as compared to the non-clinical sample used for norm development. Perhaps the higher levels of agreement indicated in these analyses are simply a result of a high proportion of the students displaying more hyperactive and impulsive behavior.

Other factors to consider potentially in isolation or in conjunction with each other are the ethnic, geographical distribution, age and gender differences between the two samples. Five percent of the youth in the norm sample were of Hispanic descent, as opposed to nearly 27% of students in the current examination being Hispanic. During the development of this rating scale, a nationally representative group of students was used to generate the norms for this instrument. The geographical location of the current sample is more restricted in that all participants reside in northeastern Pennsylvania. It is unclear if the ethnic diversity or the similarity in geographic location of this group could contribute the differences detected, but it is a point worth noting nonetheless. Perhaps individuals living in this region of the state share similar beliefs and expectations with regard to children's behavior factoring into the higher level of agreement between parent and teacher ratings. Students from 1st through 5th grade constitute the current sample while youth from kindergarten through 12th grade made up the standardization sample. Also, the standardization sample was split nearly evenly along gender lines, 47% boys and 53% girls. Alternatively, males were 76% of the total sample for this investigation. Perhaps these differences in age and gender between the two samples are contributing to the higher rates of agreement in the current study. The larger number of male students in 1st through 5th grade could very well be a factor in the higher level of agreement demonstrated in this analysis. This information is in line with the findings of DuPaul and colleagues (1997; 1998), indicating boys tend to receive higher ratings than girls and younger students (i.e. 5-10 years old) were rated higher than those in the older age category (i.e. 14-18 years old) by both parents and teachers on the ADHD RS-IV. A plausible explanation for these findings is that the homogeneity of this sample with

regard to ADHD symptomatology, geographic location, age and gender, and, to some degree, ethnicity could be contributing the higher levels of agreement between parents and teachers on this measure.

Hispanic Students

BASC. Based on the outcomes of the current research, it appears that there are no differences in mean parent and teacher ratings on the BASC between Hispanic and non-Hispanic students. It was anticipated, based on previous reports (Achenbach et al., 1990; Bauermeister, Berrios, Jimenez, Acevedo, & Gordon, 1990; Crijnen, Achenbach, & Verhulst, 1997, 1999; Epstein, March, Conners, & Jackson, 1998; Reid et al., 1998, 2000; Reid, Casat, Norton, Anastopoulous, & Temple, 2001; Roberts, Hutton, & Plata, 1985), that differences in the mean scores would be detected. It was predicted that students from Hispanic backgrounds would be rated as higher (i.e. displaying more problematic behaviors) by both parents and teachers. Hispanic youth were rated slightly higher than their non-Hispanic peers by a few points, but these small differences were not statistically significant. It is plausible that differences were not detected due the limited power of this analysis. A power analysis, previously discussed, indicated 65 participant pairs would be necessary to detect moderate effects and 23 pairs for large effects. Only 20 Hispanic participants were included in this sample due to incomplete rating scales from respondents. This limited sample indicates a power issue. The effect sizes for all analyses were very small (see Table 4) supporting this limitation pertaining to this research question.

The analysis pertaining to the level of agreement between parent and teacher ratings of individuals of Hispanic descent on the BASC demonstrated that levels were

similar to those reported for the general population. It was hypothesized that the level of agreement of these ratings would be lower when, in fact, results indicated that the level of agreement was actually higher, although still in the moderate range, for the Behavior Symptom Index and externalizing scales and only slightly lower for the internalizing scale, partially supporting the hypothesis. These findings support that not only do parent and teachers tend to have a pattern of slightly inflated levels of agreement on the BASC in general, as compared to other behavior rating scales, but even higher levels of agreement were detected amongst ratings of Hispanic students for the total score and externalizing scale. Schmitz and Velez (2003) summarize a series of tendencies among Hispanic, specifically Puerto Rican, raters of behavior that could help explain these findings. For example, children who tend to be outspoken and display behavior considered disrespectful are categorized as hyperactive because culturally these behaviors don't represent the norm of acceptable behavior. Among non-Hispanic populations, these same outspoken and disrespectful behaviors that are considered deviant by Hispanic parents, may simply be viewed as spirited or independent in nature. This is a difference in perception that is based on cultural background. As compared to European American mothers, Gidwani and colleagues (2006) found Hispanic mothers to consider more behavior aberrant. Perhaps some of these findings relative to the Hispanic culture help explain why slightly higher levels of agreement are being uncovered between teachers and parents of Hispanic students. Examining the specific scores assigned to each item on these rating scales was beyond the scope of the current investigation, but perhaps teachers and parents are both rating Hispanic students higher, indicating more problematic behavior. Although not significantly different, it appears that parents of Hispanic

students assigned slightly higher mean ratings on all three BASC scales than parents of non-Hispanic students or teachers of either group. Perhaps this slight difference accounts for the lower level of agreement between parent and teacher ratings found for the Hispanic group on the internalizing subscale of the BASC. Hispanic parents may view behaviors on the internalizing scale as more deviant from their perceived standard of behavior and therefore rate accordingly, resulting in higher scores. It is evident that more investigations into these and other plausible cultural and ethnic differences would be a fruitful area for future focus.

ADHD RS-IV. Similar to the BASC, analyses demonstrated that there were no significant differences in mean parent and teacher ratings between Hispanic and non-Hispanic youth on the ADHD RS-IV. Once again, the magnitude of group differences was relatively small. A possible power issue is again possible, with only 53 Hispanic participants in this sample. Equally likely is the homogeneity of this group, previously discussed. A myriad of research has been conducted examining the ADHD RS-IV amongst minority populations (DuPaul et al., 1997; 1998; Reid et al., 1998; 2000). Each of these studies indicates that ratings for African American individuals tend to be higher, indicating more problematic behavior. These findings, coupled with research indicating similar patterns for Hispanic youth in the extant literature were the foundation for the hypothesis, anticipating differences between the two groups. Although differences were, anticipated, it is plausible that the power issues and homogeneity of the sample contribute to the lack of support of the hypothesis.

Results of the present examination indicated that levels of parent and teacher agreement on the three scales of the ADHD RS-IV for students of Hispanic descent were

higher, indicating more agreement amongst raters, than those reported in the manual of this instrument. Although the level of agreement reported by DuPaul and colleagues (1998) was in the moderate range, findings from the current study revealed substantially higher levels of agreement for the total score, Inattention scale, and Hyperactivity/Impulsivity scale alike. In light of this body of evidence, conclusions based on the current study should be examined more closely. The level of agreement between parent and teacher raters of Hispanic students is a specific void in the literature base related to the ADHD RS-IV. This instrument has not been independently investigated relative to the Hispanic population, at rates that replicate the general population of the United States (i.e. 16% of). Conducting research to address the performance of this measure relative to a representative sample of the Hispanic population would address a gap in the literature.

Non-Hispanic Students

BASC. As was found for individuals of Hispanic descent, results from this analysis indicate that the levels of agreement between parents and teachers for non-Hispanic youth closely reflect those reported by Reynolds and Kamphaus (1992). Findings for the externalizing and internalizing scales nearly replicate those reported in the manual. It is of some interest that on the Behavior Symptom Index however, results were similar but more elevated for this group of students as compared to the general population described by Reynolds and Kamphaus (1992). As stated previously, the level of agreement between raters on the BASC is amongst the highest reported for a behavior rating scale in the extant literature. The fact that results of the current study found an

even higher rate of agreement, even though it is not a substantial finding, is worthy of comment nonetheless.

ADHD RS-IV. Some unanticipated results arose when the level of agreement of parent and teacher ratings on the ADHD RS-IV were compared for non-Hispanic students. Not only did the current findings not replicate those rates reported DuPaul et al. (1998), nearly identical level of agreement on the total score, Inattention scale, and Hyperactivity/Impulsivity scale emerged for non-Hispanic students as those revealed for individuals of Hispanic descent, as well as the general participant sample without accounting for ethnicity. This interesting result warrants further investigation. It was hypothesized that the level of agreement on the three scales of the ADHD RS-IV would be similar as those previously reported. The anticipated trend was not found and in fact a much higher level of agreement amongst parents and teachers was demonstrated. Although ideas have been speculated on in the previous sections, the emergence of high levels of agreement between parent and teacher ratings on this instrument should be the focus of further investigation. These results for both the Hispanic and non-Hispanic populations contradict nearly all evidence in the extant literature that agreement amongst raters on behavior rating scales is low, and possibly moderate in some instances. The idea that the correlations ranged from (r=.74 - .86) is intriguing. Although plausible explanations can be offered, such as a somewhat restricted sample, this is a unique finding, demonstrated consistently in the current study, and should be scrutinized more closely.

Limitations

As with any research study, the current investigation is not without limitations. First, results were not interpreted to examine potential gender differences. Females only accounted for approximately 25% of participants. The prevalence rate of ADHD of males to females is approximately 3:1 in the community (DuPaul & Stoner, 2003). Given this gender ratio, the sample for the current investigation is adequately representative; however, it is impossible to state with any certainty that the results of this investigation extend to girls, because possible gender differences were not examined as part of this study.

A second limitation relates to the ethnicity of parent and teacher raters. Ideally, the current study would have identified the ethnicity of the rater to ascertain potential trends of responses related to the level of agreement when taking this factor into consideration. Based on the general make-up of the Northeastern Pennsylvania community this sample was derived from, it seems likely that the country of origin for the majority of Hispanic participants was Puerto Rico, Dominican Republic or Cuba. Specific data were not collected to confirm this assertion, which is a limitation of the current work. Additionally, one can assume that parent raters of Hispanic children are Hispanic themselves but in the changing cultural dynamic of the United States, that is certainly not guaranteed. This study also did not document the ethnicity of the teacher respondents. In addition, it would be erroneous to assume that all or even the majority of individuals in an ethnic group hold the same views and would respond in a similar manner (Schmitz, & Velez, 2003). Hispanic ethnicity includes a myriad of cultures and regions including: Dominican, Mexican, Puerto Rican, Cuban, Central American (e.g.

Salvadorian, Honduran) and South American (e.g. Colombian, Brazilian). The vast differences in these cultures and possible basis for ratings cannot adequately be represented by grouping all individuals from these various regions into one category (i.e., Hispanic). Such differences have already been demonstrated to some degree (Akinbami, Liu, Pastor, & Reuben, 2011; Schmitz, & Velez, 2003). Understanding how ethnicity (i.e., country of origin) of the rater could potentially impact the level of agreement between raters is an important area to investigate and although it was beyond the scope of the present study, it should be of focus of future examinations.

To a similar end, the third limitation is that the acculturation level of Hispanic parents or teachers was not part of this research. It is logical that the level of acculturation of an individual would critically influence their interpretation of questions and their responses on a behavior rating scale. It cannot be assumed that all participants read, interpreted and responded similarly, especially when potential cultural influences could be a factor. Acculturation is a feature that should be taken into consideration and controlled for in future studies.

Although ethnicity and level of acculturation are important factors to consider, it is also necessary to point out that one should avoid overemphasis on cultural norms. It appears through the current work as well as others that have come before (e.g. Carberry, 2006), that although differences that are small in magnitude, but not statistically significant, are being detected between Hispanic and non-Hispanic ratings, one should be cautious not to over interpret these differences. To date, there has not been an examination that clearly points to the necessity of developing separate norms for Hispanic students and perhaps such extreme measures are not necessary. It is critical to

ensure that external validity extends to this subset of the population and caution is exercised when using such instruments with individuals from minority groups; however, to date, those few available studies seem to indicate that behavior rating scales are performing similarly for Hispanic and non-Hispanic youth.

Fourth, the majority of participants in this examination were students exhibiting clinically significant ADHD symptomatology. Although precautions were taken against limiting the sample to only students with ADHD by including typical peers, this could be a factor as to why parents and teachers were more apt to agree on ratings, especially on the ADHD RS-IV as well as why there were not any mean differences in ratings between Hispanic students and their non-Hispanic peers. As an artifact of this group selection, it was necessary for parents and teachers to agree to some extent that students either were or were not exhibiting externalizing behaviors.

Fifth, although the sample size for the majority of analyses was more than adequate according to a power analysis, there was one analysis that had a very limited number of participants. For this research question, 4a, related to the level of agreement on the BASC for Hispanic students, results should be interpreted with caution. The small sample size resulted in decreased power for this analysis which increases the possibility of Type II error.

The utilization of the BASC when a more current version, BASC II, is now available is another limitation. The updated version of this instrument was not available when the larger research study (DuPaul et al., 2006; Jitendra et al., 2007) commenced. Although this is a limitation, as previously discussed, the modifications made to the

original instrument would not be anticipated to change the results of the current investigation.

Finally, conclusions of the current investigation cannot be extended to age groups that were not participants in this investigation. The sample was limited to elementary aged students. Therefore it is impractical to believe that any results would be applicable for pre-school, middle or high school students. In fact, ratings for adolescents may actually indicate more problematic behavior for adolescent-aged youth as previous research suggests (DuPaul et al., 1997).

Implications for Practice

Conclusions from the current study offer some valuable implications for school- and/or clinic-based assessment of ADHD. Best practice guidelines continue to call for the administration of broad as well as narrow band behavior rating scales in addition to other modes of obtaining information such as interviews and direct observations (Barkley, 2006; DuPaul & Stoner, 2003). Given that a diagnosis of ADHD requires the presence of symptoms in two or more settings and that parents and teachers are typically the individuals providing information on home and school behavior on rating scales, it is critical to examine the level of agreement of their responses. Moreover, the Hispanic population is the largest growing ethnic minority group in the United States (U.S. Census, 2010). Taken together, these factors provide the basis and importance for the current investigation. Results indicate that neither the BASC nor the ADHD RS-IV appears to yield any lower levels of agreement between raters than those that have been previously reported when examining students of Hispanic descent. This factor is of critical importance for practice because it lends credence to the idea that in general, behavior

rating scales may perform as intended and psychometrically investigated by the authors of these instruments amongst the Hispanic population. Based on the limitations of the current investigation, especially the homogeneity of the sample, these results should be taken with caution. One should not assume that these rating scales can be used with the Hispanic population without heeding caution. Although the present study helps to provide a foundation for investigations into potential issues and performance of tools related to problem behavior displayed by Hispanic children, there needs to be a continued focus on this area of research. It is essential that future studies continue to consider the dramatic cultural shift this country is experiencing and what impact that may have on the most effective educational mechanisms for all students.

Future Research

The results of the present study suggest that the level of agreement between parent and teacher ratings on behavior rating scales are similar if not better than those previously reported by the authors of the instruments. However, there are several important questions left unanswered and areas for future research that have been identified. First, it would be important to understand why the correlations for all three scales of the ADHD RS-IV for all groups of participants were so high. When the literature base generally supports a lower rate of agreement amongst respondents, it is odd that results from this study yielded such different trends. It is possible that these results are evident based on characteristics of the sample itself but this is a detail that warrants further investigation particularly as measures are developed to assess forthcoming DSM-V symptoms of ADHD.

Another important direction for future research is providing more independent verifications of data reported by the authors of the BASC. Thorough reviews of the literature and of the bibliography provided by the publishers of this instrument do not yield prior external validity studies for this behavior rating scale. The current investigation begins to address external validity, but many more aspects need to be addressed before a complete, independent confirmation can be asserted. Some of these areas include: level of acculturation, attention to behavior problems, cultural behavioral values, English language proficiency, social integration, age and possible bias of the rater (Cullinan, &Kauffman, 2005; Dowdy, DiStefano, Dever, & Chin, 2011; Hosterman, DuPaul, & Jitendra, 2008; Schmitz, & Velez, 2003; Serra-Pinheiro, Mattos, & Regalla, 2008; Waschbusch, & Willoughby, 2007). Further, it is of great interest to better understand why rates of agreement reported by the authors of the BASC as well as results from this study indicate that the level of agreement between respondents on this rating scale may, in fact, be a unique factor of the scale itself. Is it possible that the field could glean some useful information as to the way this scale is constructed? Is it possible that the questions on this rating scale are presented in a manner that inherently yields higher levels of agreement? As previously suggested, could it be the language used on the scale or some other yet unconsidered detail is responsible for increased agreement? A more thorough investigation of the BASC, including item level analysis (e.g. Rasch modeling), would be useful it helping to better understand why this pattern of higher agreement tends to emerge from this scale when its closest counterpart, the Achenbach System for Empirically Based Assessment (ASEBA; Achenbach & Rescorla, 2001) does not seem to generate similar results.

As highlighted previously, it is critical that future research focus on and is sensitive to potential emerging ethnic differences in the changing face of the Unites States. The findings of the current study replicate results reported for the BASC and contradict, albeit in a positive way, those of the ADHD RS-IV. The precise explanation for why this trend may be occurring was beyond the scope of the current investigation. Future research needs to more closely examine both the BASC and the ADHD RS-IV as well as other behavior rating scales relative to possible ethnic differences. This study provided a foundation for a yet unexplored area (i.e. the Hispanic population and the relative level of agreement between raters on the BASC and ADHD RS-IV). As previously stated, best practice continues to call for ratings obtained from multiple sources when examining ADHD symptomatology. Knowledge of how these two widely utilized behavior rating scales perform for this rapidly growing ethnic minority group is crucial.

Conclusion

Conclusions from this investigation of the level of agreement between parent and teacher ratings on the BASC and ADHD RS-IV indicate that for this population, the level of agreement is at least as good as the authors have reported in their manuals for the respective behavior rating scales. In fact, parents and teachers appear to agree at higher levels, indicating more agreement for students from this study on the ADHD RS-IV. These instruments appear to perform at least as well for elementary aged students of Hispanic descent relative to the rate or agreement between parents and teachers. Moreover, in addition to positive findings related to the level of rater agreement on these scales, mean scores appeared to be similar between youth of Hispanic and non-Hispanic

descent, although the sample size was too small to detect small differences between groups. Finally, this study has provided an independent investigation of the parent and teacher levels of agreement for ratings on three scales of the BASC, something that was completely lacking in the extant literature.

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Appendix A

Student Ethnicity Survey

Name of Child: _____

Informant's Name: _____ Relation to Child:_____

Interviewer's Name: _____

Date of Interview: _____

What is the ethnicity of the child?

____	**Asian**	**____**	**Indian**
____	**Hispanic**	**____**	**White**
____	**Black**	**____**	**Other:**

Table 1

Participant Demographic Information

	n		Gender		Ethnicity						Grade at Referral				Age	
	ADHD	control	Male	Female	Hisp.	B&H	BnH	WnH	AI/AN	Other	1st	2nd	3rd	4th	Range	Mean
RQ 1	106	43	77.2%	22.8%	17.4%	2.0%	8.7%	70.5%	1.3%	_	24.8%	27.5%	28.2%	19.5%	6-10	8.4
RQ 2	176	66	75.6%	24.4%	26.9%	2.5%	9.1%	60.3%	.8%	.4%	21.9%	22.7%	33.5%	21.9%	6-12	8.6
RQ 3a	92	-	77.2%	22.8%	21.7%	-	-	78.3%	-	-	22.8%	29.3%	29.3%	18.5%	6-10	8.4
RQ 3b	153	-	75.3%	24.7%	34.4%	-	-	65.6%	-	-	21.4%	22.7%	32.5%	23.4%	6-12	8.6
RQ 4a	20	9	86.2%	13.8%	89.7%	10.3%	-	-	-	-	31%	20.7%	27.6%	20.7%	6-10	8.5
RQ 4b	72	33	73.3%	26.7%	-	-	-	100%	-	-	23.8%	27.6%	28.6%	20%	6-10	8.4
RQ 5a	53	18	84.5%	15.5%	91.5%	8.5%	-	-	-	-	23.9%	16.9%	35.2%	23.9%	6-12	8.6
RQ 5b	101	45	71.9%	28.1%	-	-	-	100%	-	-	22.6%	24.7%	29.5%	23.3%	6-11	8.6

Note. Hisp = Hispanic; B&H = black and Hispanic; BnH – black non-Hispanic; WnH = White non-Hispanic; AI/AN = American Indian/Alaskan Native

Table 2

MTMM for all Participants on BASC

	Parent: Externalizing Scale	Parent: Internalizing Scale	Parent: Behavior Symptom Index
Parent: Externalizing Scale	1	.62**	.92**
Parent: Internalizing Scale	.62**	1	.79**
Parent: Behavior Symptom Index	.92**	.79**	1
Teacher: Externalizing Scale	**.56****	.25**	.49**
Teacher: Internalizing Scale	.33**	**.21***	.31**
Teacher: Behavior Symptom Index	.57**	.29**	**.54****

Note. *Significant at the $p<0.05$ level. **Significant at the $p<0.001$ level.
Correlation coefficients appearing in bold print were of primary interest for this analysis.

Table 3
MTMM for all Participants on ADHD RS-IV

	Teacher: Hyperactivity/ Impulsivity Scale	Teacher: Inattention Scale	Teacher: Total Score
Teacher: Hyperactivity/ Impulsivity Scale	1	.71**	.93**
Teacher: Inattention Scale	.71**	1	.93**
Teacher: Total Score	.92**	.93**	1
Parent: Hyperactivity/ Impulsivity Scale	**.77****	.75**	.82**
Parent: Inattention Scale	.66**	**.66****	.81**
Parent: Total Score	.75**	.84**	**.86****

Note. *Significant at the $p<0.05$ level. **Significant at the $p<0.001$ level.
Correlation coefficients appearing in bold print were of primary interest for this analysis.

Table 4

Means, Standard Deviations, and Effect Sizes on BASC for Hispanic vs. Non-Hispanic Groups

Dependent Variables	Means (SD)		Effect Size	*p*
	Hispanic	Non-Hispanic		
<u>BASC - Parent</u>				
Externalizing Problems	65.15 (14.49)	62.39 (14.53)	0.19	.45
Internalizing Problems	57.20 (12.70)	53.75 (12.56)	0.27	.28
Behavior Symptom Index	67.00 (14.35)	64.40 (12.93)	0.18	.44
<u>BASC - Teacher</u>				
Externalizing Problems	61.65 (10.18)	57.88 (9.79)	0.38	.13
Internalizing Problems	53.30 (12.87)	53.63 (8.96)	0.00	.90
Behavior Symptom Index	61.25 (8.16)	60.60 (8.06)	0.08	.75

Note. BASC = Behavior Assessment Scale for Children.

Table 5

Means, Standard Deviations, and Effect Sizes on ADHD RS-IV for Hispanic vs. Non-Hispanic Groups

Dependent Variables	Means (SD)		Effect Size	*p*
	Hispanic	Non-Hispanic		
ADHD RS-IV - Home				
Hyperactivity/Impulsivity	17.94 (4.68)	16.69 (6.23)	0.26	.20
Inattention	19.11 (5.26)	19.00 (4.96)	0.02	.90
Total Score	37.06 (8.57)	36.00 (9.11)	0.12	.49
ADHD RS-IV - School				
Hyperactivity/Impulsivity	18.70 (7.14)	17.04 (7.63)	0.24	.19
Inattention	22.72 (3.74)	22.40 (4.35)	0.09	.65
Total Score	41.40 (7.99)	39.34 (9.09)	0.27	.17

Note. ADHD RS-IV = Attention Deficit Hyperactivity Disorder Rating Scale-IV.

Table 6
MTMM for Hispanic Students on BASC

	Parent: Externalizing Scale	Parent: Internalizing Scale	Parent: Behavior Symptom Index
Parent: Externalizing Scale	1	.73**	.95**
Parent: Internalizing Scale	.73**	1	.83**
Parent: Behavior Symptom Index	.95**	.83**	1
Teacher: Externalizing Scale	**.63****	.45*	.64**
Teacher: Internalizing Scale	.27	**.19**	.25
Teacher: Behavior Symptom Index	.59**	.43*	**.59****

Note. *Significant at the $p<0.05$ level. **Significant at the $p<0.001$ level.
Correlation coefficients appearing in bold print were of primary interest for this analysis.

Table 7
MTMM for non-Hispanic students on BASC

	Parent: Externalizing Scale	Parent: Internalizing Scale	Parent: Behavior Symptom Index
Parent: Externalizing Scale	1	.55**	.90**
Parent: Internalizing Scale	.55**	1	.76**
Parent: Behavior Symptom Index	.90**	.76**	1
Teacher: Externalizing Scale	**.58****	.20*	.48**
Teacher: Internalizing Scale	.42**	**.25****	.40**
Teacher: Behavior Symptom Index	.64**	.29**	**.60****

Note. *Significant at the $p<0.05$ level. **Significant at the $p<0.001$ level.
Correlation coefficients appearing in bold print were of primary interest for this analysis.

Table 8
MTMM for Hispanic Students on ADHD RS-IV

	Teacher: Hyperactivity/ Impulsivity Scale	Teacher: Inattention Scale	Teacher: Total Score
Teacher: Hyperactivity/ Impulsivity Scale	1	.73**	.93**
Teacher: Inattention Scale	.73**	1	.93**
Teacher: Total Score	.93**	.93**	1
Parent: Hyperactivity/ Impulsivity Scale	**.78****	.82**	.86**
Parent: Inattention Scale	.65**	**.84****	.80**
Parent: Total Score	.74**	.86**	**.86****

Note. *Significant at the $p<0.05$ level. **Significant at the $p<0.001$ level.
Correlation coefficients appearing in bold print were of primary interest for this analysis.

Table 9
MTMM for non-Hispanic Students on ADHD RS-IV

	Teacher: Hyperactivity/ Impulsivity Scale	Teacher: Inattention Scale	Teacher: Total Score
Teacher: Hyperactivity/ Impulsivity Scale	1	.73**	.92**
Teacher: Inattention Scale	.73**	1	.93**
Teacher: Total Score	.92**	.93**	1
Parent: Hyperactivity/ Impulsivity Scale	**.76****	.72**	.80**
Parent: Inattention Scale	.67**	**.85****	.82**
Parent: Total Score	.75**	.84**	**.86****

Note. *Significant at the $p<0.05$ level. **Significant at the $p<0.001$ level.
Correlation coefficients appearing in bold print were of primary interest for this analysis.