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Social / Emotional Functioning, Social Competence, and Ethnicity
in High-Functioning Autism

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Social/Emotional Functioning, Social Competence, and Ethnicity in
High-Functioning Autism

Krystal Marie Lago

A thesis submitted to the faculty of Barry University
in partial fulfillment of the requirements
for the completion of the Honors Program

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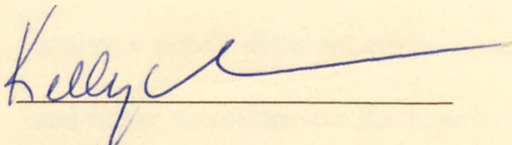
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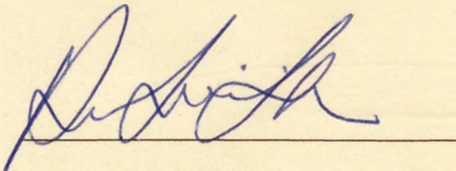
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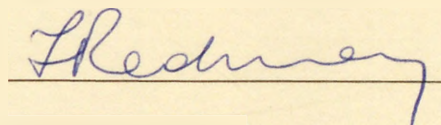
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Social/Emotional Functioning, Social Competence,

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and Ethnicity in High-Functioning Autism

Abstract of a senior honors thesis at Barry University
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Most adolescents with High Functioning Autism display deficits in social functioning that can affect their peer interactions and relationships. This study examined the associations between social competence, self- and parent-reports of social/emotional comorbidities, and ethnicity. Participants were 30 adolescents with high-functioning autism and 29 age-, gender-, and IQ-matched typically developing adolescents. As part of a larger study, participants and their parents filled out a series of questionnaires. Each adolescent participated in a peer interaction session in the laboratory consisting of 5 tasks. When diagnostic groups were examined separately, measures of internalizing problems, behavioral symptoms, adaptive skills, and social anxiety were significantly correlated with measures of social competence. When social/emotional functioning was analyzed across different ethnic groups, there were no significant findings. Interpretations and future directions are discussed.

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Introduction

Children diagnosed with autism tend to possess significant deficits in social/emotional functioning, such as deficits in communication and reciprocal social behavior, which may be a great burden on their social skills (Constantino et al., 2003). According to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*, American Psychiatric Association, 2000), a diagnosis of autistic disorder is made when all of the following criteria are met: 1) qualitative impairments in social interaction (e.g., deficits in eye-to-eye gaze, facial expression, sharing of enjoyment, or social/emotional reciprocity); 2) qualitative impairments in communication (e.g., delay in or lack of language, stereotyped and repetitive use of language or idiosyncrasies, or lack of make-believe play); 3) restricted, repetitive, and stereotyped patterns of behavior, interest, and activities (e.g., repetitive motor mannerisms, preoccupation with parts of objects, or inflexible adherence to specific, nonfunctional routines); 4) delays or abnormal functioning in social interaction, language as used in social communication, or imaginative play; and 5) the disturbance is not better accounted for by Rett's Disorder or childhood disintegrative disorder.

Within the autism spectrum, there are a range of disorders including autistic disorder, Asperger's syndrome, and Pervasive Developmental Disorder- Not Otherwise Specified (PDD-NOS). It has been shown that individuals with autism spectrum disorders often have a comorbid diagnosis of mental retardation, among other disorders (Bellini, 2004). Thus, autistic disorder is sometimes divided into subgroups (e.g., low-, medium-, or high-functioning) based on IQ, where high-functioning autism is often characterized by an IQ over 70 (Ozonoff, Rogers, & Pennington, 1991). Those individuals with autism

who are classified as high-functioning do not meet the comorbid diagnosis of mental retardation. In this study, only individuals within the autism spectrum who were high-functioning and had an IQ higher than 70, in addition to typically-developing adolescents, were examined.

Adolescence is an important age to study because individuals are struggling with the need for peer acceptance and high-quality friendships (Schwartz, 2009). Bauminger, Shulman, and Agam (2004) found that throughout middle childhood (i.e., ages 8 to 12 years), anxiety about peer relationships focuses around the knowledge of behavioral norms; whereas during adolescence, individuals generally feel the need to rebuild “territories of self” in order to obtain answers to self-identity issues. Moreover, during adolescence, individuals struggle with self-exploration and intimacy. Self-concept relates closely with the perception of social relationships, especially during the adolescent and pre-adolescent years. For these reasons, it was important to examine high-functioning autism among a group of adolescent individuals.

Statement of Problem

The autism spectrum population is growing at increasing rates, and this poses a significant concern for researchers worldwide. Further, research on autism is becoming more complex every day, as scientists are making new discoveries about the disorder. Particularly, it has been shown that individuals with autism spectrum disorders have comorbid diagnoses of anxiety, attention-deficit hyperactivity disorder, depression, and mental retardation, among others (Bellini, 2004). Social, emotional, and cognitive skills and behaviors must be adequately acquired throughout development in order for individuals to be successful in social interactions. Bellini provided evidence that

individuals with high-functioning autism suffer from many deficits in social functioning. This is of concern because deficits in social functioning affect peer interactions and the ability to establish meaningful relationships.

Other research has also found evidence supporting the notion that additional social/emotional factors may play a role in the impairments associated with high-functioning autism. For instance, researchers have found that general anxiety, depression, withdrawal, social anxiety, social worries, and deficits in interpersonal relations may be related to high-functioning autism (Bauminger, et al., 2004; Bellini, 2004, 2006; Gillott, Furniss, & Walter, 2001). Those previous studies have examined social/emotional factors in great detail, but many have neglected to explore cultural differences in social competence that may play a role in the development of a strong sense of self-worth in children across different ethnicities. Several other studies (e.g., Palmer et al., 2010 & Mandell et al., 2009) have found evidence that discrepancies exist between different ethnicities when it comes to the diagnosis of autism.

Philosophical Issues

Certain philosophical issues were examined within the context of this study. Specifically, ontology, epistemology, and axiology were explored in relation to the variables of this study. Ontology is a philosophical discipline that studies the existence of universals (i.e., the existence of entities such as God). Ontology also encompasses the study of general features that exist (Hofweber, 2004). Epistemology is the study of knowledge, or the social dimensions of knowledge and information (Goldman, 2001). Finally, axiology is the study of values, which includes all branches of moral, social, and political philosophy, aesthetics, and the philosophy of religion. For instance, a classical

question of axiology concerns whether the objects of value are subjective psychological states, or objective states of the world (Schroeder, 2008).

Ontology. Ontology has a long history of being connected with psychology (Overton, 1998). For example, initially developmental psychology was perceived as random and existing under multiple forces. However, Overton (1998) and others worked very diligently to first propose that psychologists held views that included random factors, then to reconcile those views with how science is practiced. Within the context of the present paper, human nature was perceived from a social constructionist point of view. Rather than researching the essentialist point of view of autism (i.e., the biological factors that influence the disorder), this study explored how human social interaction has impacted individuals with autism.

Individuals with autism spectrum disorders are generally viewed as deficient in their social capabilities. This is a problem because social, emotional, and cognitive skills and behaviors must be adequately acquired throughout development in order for individuals to be successful in social interactions. Children with autism, however, are often viewed as antisocial or passive members of society because of their deficiencies (Bouras, 1994). This view, nevertheless, is generally limited to those who are not fully informed or aware that children with autism can indeed be very active citizens. Many people perceive individuals with autism as very caring and compassionate, even though at times they may react indifferently during social interactions due to their deficits (Bouras, 1994). This ontological view sets the frame for this study because it allows for the exploration of the deficits of autism from a social psychological perspective.

Epistemology. According to Grinker (2007), the discipline of psychology came to approach autism scientifically rather recently in comparison to other disorders. Autism is simultaneously a biological, psychological, and social phenomenon; therefore, scientists were exposed to both the objective and subjective characteristics of the disorder. In general, as well as with autism spectrum disorders, many people thought that mental illnesses were a religious phenomenon prior to the application of an empirical approach. Some believed that individuals with psychological disorders were possessed by demons or other evil spirits (Grinker, 2007). People also believed that having a child with autism was a consequence people paid for malevolent actions they led in their own lives. Today, the way in which professionals in mental health study autism is much more objective. For instance, it was through rigorous testing, communication among researchers, and observation that individuals came to accept that autism is characterized mainly by social and emotional deficiencies.

Even for scientists, the phenomenon of autism spectrum disorders is a great problem because of the significant social deficits that children with autism possess. Particularly, it has been shown that individuals with autism spectrum disorders have comorbid diagnoses of anxiety, attention disorders, depression, and mental retardation, among others (Bellini, 2004). Certain other constructs, such as internalizing problems, school environment, and friendships, have also been researched in order to learn more about the social deficits common in high-functioning autism.

Axiology. As described in the definition, axiology usually refers to having values, or refers to a situation where values drive how one asks and answers questions of importance. There is no debate that all individuals, including scientists, have values.

Values can either play a greater or lesser role in research, depending on the goals, awareness, and education of the researcher. Scientists typically either attempt to remove values altogether from their research as much as possible; or they let values permeate the range of research activities; or finally, they attempt to refrain from letting values guide the direction of their research.

When it comes to psychology, the topics studied are usually more emotionally salient than other disciplines, such as physics or mathematical topics. Therefore, it is imperative that scientists be very careful when they conduct research or practice psychology in order to minimize the effect of their own values. When it comes to studying autism, different values are common as many different types of individuals participate in this research and dissemination of findings. In fact, there may be disagreement over whether some of the work being done meets the criteria to be called “scientific.” For example, the people involved with the Autism Speaks movement may best be viewed as a group of activists. They are often actively in support of finding a cure for autism, and they tend to take part in activities, such as research studies, marathons, and other fundraisers that help the community. It is important to take into consideration the axiology of a study prior to carrying it out in order to judge any biases that might be present in the research. The current study attempted to maintain some values and experiences with autism, while still remaining objective in my research. Thus, though axiological values played an underlying role in this study, they were monitored carefully to remain unbiased.

In conclusion, the metatheoretical frameworks of ontology, epistemology, and axiology guided the research questions and hypotheses, as well as the data analyses of

this study. In order to examine how various social/emotional and cultural factors relate to social competence in children, researchers should maintain a social constructionist, objectivist mindset when carrying out this type of research.

Purpose of Present Study

The purpose of this study was to examine how various social/emotional factors relate to social competence in child development among a group of adolescent Hispanics and Caucasian/Non-Hispanics. Specifically, these factors were explored among children with high-functioning autism and typical development. Certain social/emotional factors, such as internalizing problems and personal adjustment, and factors related to socialization experiences, including ethnicity and peer relations, that may be related to social deficits were examined in this study. Another aim of this study was to explore the ways in which adolescents of Hispanic and Caucasian/Non-Hispanic descent differ by diagnostic group in social/emotional functioning and social competence. Other factors that influence social skills and peer relationships, such as social anxiety, were also explored. Variations in these factors across Hispanics and Caucasian/Non-Hispanics were examined to test whether they promote healthier social relationships.

Social/emotional factors related to autism were examined using the following variables: 1) internalizing problems, 2) behavioral symptoms, 3) adaptive skills, 4) emotional symptoms, 5) personal adjustment, and 6) social anxiety. The variables that were used to examine social competence in this study included: 1) social awareness, 2) social cognition, 3) social communication, 4) social motivation, 5) autistic mannerisms, and 6) getting to know each other during a peer interaction. By using a behavioral-scientific approach, this study sought to define how these variables may be useful in

understanding some of the social deficits associated with autism. In the following section, literature is reviewed concerning how deficits in the above-mentioned variables of social/emotional functioning may be related to social competence in a high-functioning autism population.

Literature Review

Previous Research Findings

Gillott et al. (2001) explored the prevalence and severity of anxiety in a high-functioning autism population and examined how children's self-awareness of their own activities plays a role in the extent and nature of anxiety in children with high-functioning autism. Participants included 15 children with high-functioning autism, 15 children with specific language impairment (SLI), and 15 typically developing children, ranging in age from 8 to 12 years. Children completed anxiety and social worries questionnaires. Children with autism scored significantly higher in anxiety (particularly, separation anxiety, obsessive-compulsive disorder, and social anxiety) than both comparison groups. Gillott et al.'s (2001) study is important because it provides evidence that children with high-functioning autism exhibit social worries and other anxious behaviors at greater levels than typically-developing children.

Gillott et al.'s (2001) study supports the notion that social anxiety and other anxious behaviors are related to high-functioning autism. The ritualistic desire for routine and maintenance of sameness may contribute to anxiety in children with high-functioning autism. The authors noted that individuals with autism exhibit different anxiety disorders than the general population. Additionally, the authors indicated that children with high-functioning autism may experience social worries due to rumination or active avoidance

of social situations. The researchers suggested that future research would do well to study social anxiety, in addition to other confounding variables (e.g., behavioral/ emotional responses of anxiety and family circumstances), in adolescents with high-functioning autism.

Bauminger et al. (2004) explored the link between the development of friendship and self-concept in children with autism. Participants included 16 adolescents with autism and 16 typically-developing adolescents, ranging in age from 8 to 17 years. Children completed a Friendship Picture Recognition Interview, as well as a friendship, loneliness, and self-perception scale. Children with autism scored lower on the subscales of social acceptance, companionship, security, and help than the typically-developing group. Children with autism reported higher feelings of loneliness than the typically-developing group. Friendship was significantly correlated with loneliness and self-perception.

Bauminger et al. (2004) also found that an individual's self-perception was negatively correlated with conflict in his or her friendships. In addition, the perception of general self-worth was significantly correlated with better friendship qualities, including those which provide companionship, security, and closeness in children with autism.

Bauminger et al.'s study is relevant to the current study because it provides evidence for the associations between friendship and self-concept in adolescents with autism.

Bauminger et al.'s study supports the notion that peer relationships play a vital role in the social/emotional well-being of children with autism. Findings showed that friendships contributed to general self-concept, loneliness, and social competence. For that reason, it is important for researchers to study the social deficits associated with autism and

understand the ability for children to develop friendships during peer interactions in order to better tailor intervention efforts.

In a study done by Bellini (2004), the purpose was to examine the prevalence and correlates of anxiety among adolescents with high-functioning autism. Participants were 35 boys and 6 girls, ranging in age from 12 to 18 years ($M = 14.22$), diagnosed with an autism spectrum disorder and their families. Adolescents completed social skills, anxiety, and social anxiety questionnaires, as well as a behavioral assessment. Adolescents with high-functioning autism scored significantly higher on measures of general anxiety and social anxiety than the normative sample. Bellini's (2004) study is important because it provides evidence that adolescents with high-functioning autism experience social anxiety and other social skill deficits at greater levels than typically-developing adolescents.

Bellini's (2004) study supports the notion that anxiety and other social skill deficits (i.e., poor assertion skills and low empathy) are related to high-functioning autism. Children with autism who had low or high empathy exhibited low social anxiety, whereas children with medium levels of empathy exhibited high social anxiety. Adolescents with high-functioning autism had high levels of internalizing problems. The author noted that individuals with low assertion or initiation skills may be more likely to experience social anxiety. The author indicated that adolescents who perceive their social skills as deficient may have increased social anxiety because they view themselves as less socially efficacious. The author noted that future research would do well to observe adolescents with high-functioning autism in peer interactions with typically-developing adolescents to study whether this notion holds true in actual social situations.

In another study done by Bellini (2006), the purpose was to examine the contribution of social skill deficits and physiological hyperarousal to the development of social anxiety in adolescents with autism spectrum disorders. Participants included the same sample as the previous study (Bellini, 2004). Adolescents completed social skills, anxiety, and social anxiety questionnaires, as well as a behavioral assessment. Social skill deficits and physiological hyperarousal combined to significantly contribute to variance in social anxiety. The implications of Bellini's (2006) study are that a child with autism who possesses high physiological arousal is prone to developing social fears or worries following negative peer interactions and withdrawing from future social interactions as a result.

Bellini's (2006) study has a variety of significant implications. First, it implied that effective intervention strategies for adolescents with autism, who are susceptible to having a combination of high physiological arousal and social deficits, are necessary. Second, the author noted that social withdrawal may result from negative social experiences because of the association between physiological arousal and social deficits. Social withdrawal impedes the development of social skills, limits the child's opportunity to learn from social interactions with others, and increases the chance for future failure with social interactions. Thus, the author concluded that a cycle is present in individuals with autism that should be considered by the therapists who work with them to facilitate their social interaction skills.

In a study by Mandell et al. (2009), the purpose was to examine ethnic and racial disparities in the identification of autism spectrum disorders. Participants included 2568 children born in 1994 (aged 8 years) selected from study areas in 14 different states.

Results indicated that Black, Hispanic, and “other” race/ethnicity children were less likely to have a documented autism spectrum disorder than White children. Mandell et al.’s study is important because it provides evidence that racial and ethnic disparities exist in the identification of children with autism. The authors noted that some possible explanations for these disparities could include institutional factors, such as access to health care, general prejudices held by clinicians, erroneous diagnoses or misinterpretation of symptoms, and/or false assumptions of prevalence rates which may lead to inaccurate diagnoses.

In a study by Palmer et al. (2010), the purpose was to examine whether socioeconomic factors, such as local density of diagnostic physicians, explain the differences in autism prevalence between Hispanics and Non-Hispanic Whites. Administrative data for 1184 Texas school districts provided demographic and diagnostic information on children grades kindergarten through 12. Results indicated that for each 10 percent increase in Hispanic children in school districts, there was an 11 percent decrease in students diagnosed with autism. Likewise, for each 10 percent increase in non-Hispanic White children in school districts, there was a nine percent increase in students with autism. Palmer et al.’s study is important because it provides evidence that despite socioeconomic and health care factors, autism prevalence is still inversely related to the percentage of Hispanics in school districts. The authors noted that low autism prevalence among Hispanics may be associated with other unexamined socioeconomic, health care, or biological factors.

Summary of Literature

In sum, the social and emotional deficits associated with autism pose a burden for children's social skills and the development of essential peer relationships. Adequate communication, peer interaction, and social engagement are necessary for healthy child development. However, children with autism experience significant impairments that do not allow them to develop these skills optimally. Though previous research has explored the range of social impairments in autism largely, many studies have neglected to examine some of the cultural variations in social competence across both diagnostic groups.

Research Questions and Hypotheses

This study aimed to answer two main research questions. First, are there any specific social/emotional factors that may relate to social competence in children with high-functioning autism? Second, do Hispanics and Caucasian/Non-Hispanics differ in their overall level of social/emotional proficiency? In order to answer these questions, the following hypotheses were predicted:

- H₁: Within each diagnostic group, measures of internalizing problems, emotional/behavioral symptoms, and social anxiety will be negatively correlated with measures of social competence.
- H₂: Within each diagnostic group, measures of adaptive skills and personal adjustment will be positively correlated with measures of social competence.
- H₃: Cultural variations between Hispanics and Caucasian/Non-Hispanics will exist in measures of internalizing problems among children with high-functioning autism in comparison to typically-developing children.

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Method

Participants

Participants were 30 adolescents with high-functioning autism (25 boys, 5 girls) and 29 age-, gender-, and IQ-matched typically developing adolescents (24 boys, 5 girls), ranging in age from 9 to 17 years ($M = 14.06$, $SD = 2.48$). Twenty of the participants reported being Caucasian/Non-Hispanic, 32 were Hispanic, and 9 reported another ethnicity. The mean IQ for the sample was 103.59, with a standard deviation of 13.39. See Table 1 for additional information on participant demographics.

Table 1

Demographics by Group

| Characteristic | Group | |
|--------------------------|------------------|-----------------|
| | HFA ($n = 30$) | TD ($n = 29$) |
| Male/Female | 25/5 | 24/5 |
| Caucasian/Hispanic/Other | 9/17/4 | 11/15/3 |
| Age in years | 13.75(2.64) | 14.37(2.31) |
| Verbal Comprehension IQ | 101.17(14.41) | 106.10(11.98) |
| Perceptual Reasoning IQ | 104.70(16.98) | 101.17(14.60) |

Note: For gender and ethnicity, the values reported are sample sizes. For age and IQ, means are reported outside parentheses, and standard deviations are reported inside parentheses. The abbreviations used in Tables 1 are the following: High-Functioning Autism (HFA) and Typically-Developing (TD).

Participants with high-functioning autism had a community diagnosis of autism and were required to meet diagnostic criteria on two out of three measures: a 7 or above on the *Autism Diagnostic Observation Schedule* (ADOS; Lord, Rutter, DiLavore, & Risi, 1999), a 13 or above on the *Autism Spectrum Screening Questionnaire* (ASSQ; Ehlers, Gillberg, & Wing, 1999), and/or a 13 or above on the *Social Communication Questionnaire* (SCQ; Rutter, Bailey, Lord, & Berument, 2003). Typically developing participants were excluded if they met any of the criteria for autism on the ADOS, ASSQ, or SCQ. One typically developing participant was excluded from this study for meeting criteria for autism based on the ADOS. In order to be included in this study, all participants needed to have a Verbal Comprehension Index score of 70 or above on the *Wechsler Intelligence Scale for Children-IV* (WISC-IV; Wechsler, 2003a).

Measures

As part of a larger study, participants and their parents filled out a series of questionnaires. Adolescents completed the *Behavior Assessment System for Children, Second Edition – Self-Report of Personality* (BASC-2 SRP; Reynolds & Kamphaus, 2004). The BASC-2 SRP is a self-report measure of behavioral adjustment and emotional symptoms. The composite scales of this questionnaire include school problems; internalizing problems (i.e., atypicality, locus of control, social stress, anxiety, depression, sense of inadequacy, and somatization); inattention/hyperactivity; personal adjustment (i.e., relations with parents, interpersonal relations, self-esteem, and self-reliance); and emotional symptoms index (i.e., social stress, anxiety, depression, sense of inadequacy, self-esteem, and self-reliance). For this study, the variables that were

examined using the BASC-2 SRP included internalizing problems, emotional symptoms index, and personal adjustment.

Parents completed the BASC-2 Parent Rating Scale (PRS). The composite scales of this questionnaire include externalizing problems; internalizing problems (i.e., anxiety, depression, and somatization); adaptive skills (i.e., adaptability, social skills, functional communication, leadership, study skills, and activities of daily living); school problems; and behavioral symptoms index (i.e., hyperactivity, aggression, depression, attention problems, atypicality, and withdrawal). Some example items from the BASC-2 PRS include, “Worries about making mistakes,” indicating anxiety, or “Sees things that are not there,” implying atypicality. Reliability and validity for the BASC-2 range from .67 to .95 (Schwartz, 2009). In the current study, the variables that were examined using the BASC-2 PRS included internalizing problems, behavioral symptoms index, and adaptive skills.

Adolescents and their parents completed the *Social Anxiety Scale for Children - Revised* (SASC-R; La Greca & Stone, 1993). The SASC-R is a 22-item self- and parent-report measure of social anxiety. Items on the SASC-R were developed to assess fear of negative evaluation, social avoidance and distress that is considered more general/pervasive, and social avoidance and distress in new situations or with unfamiliar peers. Higher scores on the SASC-R have been associated with lower levels of perceived social competence and to neglected and rejected peer status in fourth- through sixth-grade children (La Greca & Stone, 1993). Some example items from the SASC-R include, “I worry about being teased,” and “I’m quiet when I’m with a group of kids.” The SASC-R has been demonstrated to be reliable and valid with internal consistency for the subscales

ranging from .60 to .90 (Schwartz, 2009). The variable of social anxiety was determined using both the child and parent reports of the SASC-R.

Parents also completed the *Social Responsiveness Scale* (SRS; Constantino & Gruber, 2005), a 65-item rating scale which measures the severity of autism spectrum symptoms as they occur in natural social settings. The SRS provides a measurement of a child's social impairments, social awareness, social information processing, capacity for reciprocal social communication, social anxiety/avoidance, and autistic preoccupations and traits. The SRS assesses social responsiveness across five scales: social awareness (e.g., "Knows when he/she is too close to someone or invading someone's space"), social cognition (e.g., "Does extremely well at a few intellectual or computational tasks, but does not do as well at most other tasks"), social communication (e.g., "Enjoys and is competent with 'small talk' [casual conversation with others]"), social motivation (e.g., "Does not join group activities or social events unless forced to do so"), and autistic mannerisms (e.g., "Has repetitive, odd behaviors, such as hand flapping or rocking"). Previous studies have reported test-retest reliability of .88 in clinical subjects for the SRS (Constantino et al., 2003).

A high score on any of the SRS variables is indicative of high social impairment or low social competence. In the current study, the variables that were examined using the SRS included social awareness, social cognition, social communication, social motivation, and autistic mannerisms. It is important to note that because high scores on the SRS variables are indicative of low social competence, correlations between social competence and social/emotional measures should be perceived with caution. For instance, a negative correlation between BASC-2 PRS adaptive skills and SRS social

awareness indicates that the higher a participant scored on adaptive skills, the lower he or she scored on the SRS; thus indicating that the higher the adaptive skills score, the more socially aware.

In addition, parents completed a demographic questionnaire including information about ethnicity, age, and previous diagnoses. For inclusion/exclusion purposes and other demographic information, all participants filled out the WISC, ADOS, SCQ, and ASSQ.

Procedure

This research was conducted at the University of Miami's Social Development Laboratory under the guidance of Dr. Heather Henderson. All participants, originally recruited from the local community, were part of a larger, longitudinal study at the University of Miami. In addition to completing the aforementioned questionnaires, a subset of adolescents in the larger study participated in a peer interaction session in the laboratory. For the peer interaction, typically-developing and high-functioning autism participants were paired according to gender, IQ, and age. The current study focused on one of the tasks, "Getting to Know You" (GTKY) completed during the peer interaction. This task consisted of a 5-minute interaction during which adolescents were instructed to get to know one another. No further instructions were given; thus, participants were required to use their own intuition and social skills to successfully complete the task. Video recordings of the sessions were later observed and scored by student researchers for appropriateness of the conversation and interaction.

For each participant, a global rating of appropriateness was scored for the GTKY peer interaction task. Ratings were coded on a 5-point scale (1 = *not at all appropriate*; 5 = *everything in interaction was appropriate*). In order to determine the level of

appropriateness, the following factors were quantified and considered in the scoring process: total time of talking, turn-taking, sharing information, seeking information, responses without elaboration, eye-contact, and conversational efficacy. Interrater reliability for the global rating of appropriateness ranged from .81 to .94 (Schwartz, 2009).

Results

Chi-square and independent sample *t* test analyses revealed no significant differences between individuals with high-functioning autism and typical development on gender, $\chi^2(1, N = 59) = 0.003, ns$; age, $t(55) = -0.94, ns$; Verbal Comprehension Index, $t(57) = -1.43, ns$; or Perceptual Reasoning Index, $t(57) = 0.86, ns$.

Hypotheses 1 and 2

Correlational analyses were performed separately by diagnostic group for measures of social/emotional functioning and social competence in order to test hypotheses 1 and 2. For measures of social/emotional functioning, the BASC-2 SRP and PRS, as well as the parent and child SASC-R variables were examined. For measures of social competence, the five SRS variables and the global rating of appropriateness on the GTKY task were assessed. For the high-functioning autism group, BASC-2 PRS Behavioral Symptoms Index was significantly correlated with SRS Social Awareness ($r = .42, p = .038$) and SRS Autistic Mannerisms ($r = .44, p = .027$). For the high-functioning autism group, BASC-2 PRS Adaptive Skills were significantly correlated with SRS Social Awareness ($r = -.67, p < .001$), SRS Social Cognition ($r = -.47, p = .017$), SRS Social Communication ($r = -.49, p = .013$), and SRS Autistic Mannerisms ($r = -.41, p = .042$). For the high-functioning autism group, the SASC-R

parent-report of social anxiety was significantly correlated with SRS Social Communication ($r = .45, p = .027$) and SRS Social Motivation ($r = .47, p = .02$). See Table 2 for all high-functioning autism-group correlations.

Table 2

HFA Group Correlations for Social/Emotional Measures and Social Competence

| Measure | SA | SCog | SCom | SM | AM | GTKY |
|-----------------------------------|--------|-------|-------|------|-------|------|
| 1. PRS Internalizing Problems | .29 | .33 | .28 | .11 | .25 | -.02 |
| 2. PRS Behavioral Symptoms | .42* | .40 | .33 | .13 | .44* | .06 |
| 3. PRS Adaptive Skills | -.67** | -.47* | -.49* | -.21 | -.41* | -.24 |
| 4. Social Anxiety (Parent-report) | .20 | .22 | .45* | .47* | .16 | -.06 |
| 5. SRP Internalizing Problems | .01 | -.16 | .06 | .19 | .01 | -.30 |
| 6. SRP Emotional Symptoms | .02 | -.21 | .04 | .25 | -.04 | -.29 |
| 7. SRP Personal Adjustment | -.14 | .25 | .00 | -.30 | .17 | .22 |
| 8. Social Anxiety (Child-report) | .01 | -.14 | .08 | .25 | -.07 | -.10 |

* $p < .05$, ** $p < .01$.

Note. $N = 59$. The abbreviations used in Tables 2 are the following: High-Functioning Autism (HFA), Typically-Developing (TD), Social Awareness (SA), Social Cognition (SCog), Social Communication (SCom), Social Motivation (SM), Autistic Mannerisms (AM), “Getting to Know You” Appropriateness Global Rating (GTKY), Parent Rating Scale (PRS), and Self Report of Personality (SRP).

For the typically-developing group, BASC-2 PRS Internalizing Problems were significantly correlated with SRS Social Awareness ($r = .44, p = .03$), SRS Social

Cognition ($r = .50, p = .015$), SRS Social Communication ($r = .62, p = .001$), SRS Social Motivation ($r = .53, p = .008$), and SRS Autistic Mannerisms ($r = .54, p = .007$). For the typically-developing group, BASC-2 PRS Behavioral Symptoms Index was significantly correlated with SRS Social Awareness ($r = .50, p = .012$), SRS Social Cognition ($r = .73, p < .001$), SRS Social Communication ($r = .77, p < .001$), SRS Social Motivation ($r = .63, p = .001$), and SRS Autistic Mannerisms ($r = .74, p < .001$). For the typically-developing group, BASC-2 PRS Adaptive Skills was significantly correlated with SRS Social Cognition ($r = -.70, p < .001$), SRS Social Communication ($r = -.66, p < .001$), SRS Social Motivation ($r = -.59, p = .003$), and SRS Autistic Mannerisms ($r = -.62, p = .001$). For the typically-developing group, BASC-2 SRP Personal Adjustment was significantly correlated with SRS Social Cognition ($r = -.42, p = .039$) and SRS Social Communication ($r = -.42, p = .035$). For the typically-developing group, SASC-R parent-report of social anxiety was significantly correlated with SRS Social Cognition ($r = .44, p = .035$), SRS Social Communication ($r = .61, p = .002$), and SRS Social Motivation ($r = .63, p = .001$). See Table 3 for all typically-developing group correlations.

Table 3

TD Group Correlations for Social/Emotional Measures and Social Competence

| Measure | SA | SCog | SCom | SM | AM | GTKY |
|-----------------------------------|------|--------|--------|--------|--------|------|
| 1. PRS Internalizing Problems | .44* | .50* | .62** | .53** | .54** | .18 |
| 2. PRS Behavioral Symptoms | .50* | .73** | .77** | .63** | .74** | .14 |
| 3. PRS Adaptive Skills | -.26 | -.70** | -.66** | -.59** | -.62** | -.04 |
| 4. Social Anxiety (Parent-report) | .17 | .44* | .61** | .63** | .44 | -.12 |
| 5. SRP Internalizing Problems | .27 | .03 | .18 | .00 | .06 | -.17 |
| 6. SRP Emotional Symptoms | .26 | -.22 | .27 | .05 | .14 | -.18 |
| 7. SRP Personal Adjustment | -.01 | -.42* | -.42* | -.25 | -.22 | .27 |
| 8. Social Anxiety (Child-report) | -.21 | -.07 | .00 | -.10 | -.12 | -.01 |

* $p < .05$, ** $p < .01$.

Note. $N = 59$. The abbreviations used in Tables 3 are the following: High-Functioning Autism (HFA), Typically-Developing (TD), Social Awareness (SA), Social Cognition (SCog), Social Communication (SCom), Social Motivation (SM), Autistic Mannerisms (AM), “Getting to Know You” Appropriateness Global Rating (GTKY), Parent Rating Scale (PRS), and Self Report of Personality (SRP).

Hypothesis 3

In order to explore cultural variations in social competence and social/emotional functioning, demographic data previously collected on ethnicity and race at the University of Miami were analyzed. In the original sample, 20 of the participants reported being Caucasian/Non-Hispanic, 32 were Hispanic, 2 were Asian, 1 was

Black/Non-Hispanic, 2 were Caucasian/Hispanic, 1 was Hispanic/Asian, and 1 did not report an ethnicity. Due to the small number of participants in the other ethnic groups, cultural variations were explored only between Caucasian/Non-Hispanics ($n = 20$) and Hispanic ($n = 32$). Thus, all other ethnicities were excluded from the analyses for Hypothesis 3.

Chi-square and independent sample t test analyses revealed no significant differences between Hispanics and Caucasian/Non-Hispanics on gender, $\chi^2(1, N = 52) = 0.01, ns$; diagnostic group, $\chi^2(1, N = 52) = 0.33, ns$; or Verbal Comprehension Index, $t(50) = 0.81, ns$. For age, however, ethnicities did vary significantly. The mean age in years for Caucasian/NonHispanics ($M = 14.90, SD = 2.06$) was significantly higher than the mean age for Hispanics ($M = 13.13, SD = 2.48$), $t(48) = 2.61, p = .012$.

Two-tailed, independent sample t tests were computed for ethnicity and all of the social/emotional and social competence measures using Bonferroni adjusted alpha levels of .0036 per test (.05/14). None of these findings was statistically significant. A Multivariate Analysis of Covariance (MANCOVA), examining ethnicity and diagnostic group, with age as a covariate, was performed on the BASC-2 variable Internalizing Problems (for both parent- and self-report). The MANCOVA assumption of parallel regression slopes was met. None of these findings was statistically significant.

Discussion

In summary, hypotheses 1 and 2 were primarily consistent with previous literature. Hypothesis 3 was inconsistent with previous findings. Some possible implications, limitations, and future directions are discussed.

Hypotheses 1 and 2

Hypotheses 1 and 2 were, for the most part, consistent with previous research (e.g., Bellini, 2004, 2006; La Greca & Stone, 1993). Consistent with previous literature, significant correlations were found between the measures of social/emotional functioning and social competence. For instance, across both diagnostic groups, parent-reports of social anxiety were significantly correlated with measures of SRS Social Communication and SRS Social Motivation. This is consistent with findings reported by La Greca and Stone (1993), which evidenced that higher scores on the SASC-R are associated with lower levels of perceived social competence in fourth- through sixth-grade children. Similarly, other measures of social/emotional functioning were associated with low levels of social competence in both groups (e.g., adaptive skills was significantly correlated with most SRS measures across both diagnostic groups). In general, though, more significant correlations were found among the typically-developing group than the high-functioning autism group. One possible explanation for this is that typically-developing children may have a higher sense of self-awareness than children with high-functioning autism; for that reason, they may have been able to report their levels of social/emotional functioning more accurately than children with high-functioning autism.

The observational measure of social competence derived from the “Getting to Know You” peer interaction task were unrelated to the measures of social/emotional functioning from the BASC-2 and SASC-R. Possible reasons for the lack of correlations between the GTKY variable and the other social/emotional variables could be due to the subjective nature of the scoring for the global ratings of appropriateness of this task. In addition, there was fairly limited variability in the scoring of the GTKY global ratings of

the peer interaction for both diagnostic groups. That is, participants' scores on the 5-point Likert scale were generally above 3 for all the children, particularly the typically-developing group. It is also important to note that the GTKY global ratings of appropriateness were based on an observed, subjective assessment, and thus, may not be truly indicative of social competence. Contrarily, parent- and self-report measures are based on a much longer period of time and greater breadth of experiences, and hence, may capture social competence more accurately than observational measures.

Evaluating social/emotional functioning using different measures of evaluating social competence may provide better insight to the understanding of social deficits in autism. Bellini (2004) noted that research would do well to observe adolescents with high-functioning autism in peer interactions with typically-developing adolescents to study whether self-efficacy is related to social anxiety in actual social situations. Attempts to quantify the deficits associated with high-functioning autism are a significant priority for researchers. Understanding how children with autism interact with their peers is essential for the development of intervention strategies and treatment of the disorder. One method that may prove more effective when evaluating peer interactions is microanalytic coding. A microanalytic coding system codes each behavior as it occurs in order to examine frequently changing contingencies in interpersonal environments, such as family and peer interactions (Jones & Schwartz, 2009). Unfortunately, these coding systems pose limitations for some researchers because they are very time and resource intensive.

One significant pattern across all the correlations is worth noting. That is, for the first and second hypotheses, correlations seemed to be present among most of the parent-

reported measures. For instance, the parent-reported measures of Adaptive Skills were significantly correlated with most of the SRS variables, which were also parent-reported. These findings may be indicative of a method bias inherent in this study. For instance, because all of the parent-reported measures were correlated with one another, this could mean that the parents' scores on the social/emotional functioning and social competence variables were simply being consistent throughout the study.

Hypothesis 3

No differences were found between Hispanics and Non-Hispanics and the measures of social/emotional functioning and social competence. The lack of significant findings for the other variables tested for Hypothesis 3 could be due to the likelihood of Type II error and low power inherent in this study. In order for a finding to be significant at the .0036 alpha-level, a study would need to possess a very high level of power. However, due to the limited sample size in this study, it was very difficult to reach the level of power necessary to obtain significant results at the .0036 alpha-level. Nevertheless, it was necessary to adjust the standard .05 alpha-level to .0036 in order to correct for the possibility of obtaining significant findings due to chance.

In addition, findings from Hypothesis 3 should be perceived with caution, as the ethnic groups differed significantly in age. The mean age for Caucasian/Non-Hispanics was about 14.9 years, whereas the mean age for Hispanics was about 13.1 years. When age was examined as a covariate, there was no significant effect between ethnicity and diagnostic group on the measure of internalizing problems. This implies that Hispanics and Caucasian/Non-Hispanics do not differ in terms of internalizing problems. Mandell et al. (2009) and Palmer et al. (2010) reported discrepancies between ethnicity and

diagnoses of autism; however, they did not report that Hispanics should differ from Caucasians in terms of internalizing problems, or other variables related with autism.

Though many previous studies have examined interpersonal factors of autism in great detail, many have negated to explore the cultural implications that may play a role in the development of a strong sense of self-worth in children with high-functioning autism. It would be interesting to explore the ways in which two ethnicities differ in other social/emotional skills to determine how various cultural attitudes towards disabilities impact the development of strong peer relationships in children with high-functioning autism. In order to do this, future studies can run similar analyses of variance testing diagnostic groups as one factor, ethnicities as another factor, and social/emotional functioning as a dependent variable. By doing this, researchers will be able to investigate social/emotional differences in diagnostic groups across various ethnicities.

Several other limitations of this study are worth noting. First, as with all self-report measures, issues of social desirability and lack of validity in answers come into play when analyzing the BASC-2, SASC-R, and SRS self-reports. Another aspect that may have hindered this study was its relatively small sample size, considering the difficulty of collecting data using a high-functioning autism population. Another limitation is that, during the peer interaction, participants with high-functioning autism were paired only with typically-developing participants, and vice-versa. Future researchers may want to examine a high-functioning autism group with a high-functioning autism group and/or a typically-developing group with a typically-developing group in order to accurately observe social competence in peer interactions. It may be that when pairing a high-functioning autism adolescent with a typically-developing

adolescent, the typically-developing individual leads the conversation or makes the atmosphere more “appropriate.” Thus, it would be interesting to determine how individuals with autism would perform when paired with one another. In addition, future research would do well to examine other predictors, such as IQ or social cognitive skills, of individual differences in social competence.

The results of this research can add to the body of knowledge concerning autism because they can provide information on more efficient early intervention techniques, which are vital in minimizing the deficiencies of autism. For example, child care institutions may find it effective to address factors that are comorbid with autism, and not simply the presenting problem, when treating children in this population. In addition to early intervention strategies, this study sheds light on the notion that treatment approaches for adolescents with high-functioning autism should consider various other disorders comorbid with autism, and not just those factors emphasized by the *DSM-IV-TR* (2000). Finally, the findings discovered in this study may open the door for future research to examine whether certain cultural lifestyles are more effective in coping with and preventing social deficits in children with developmental disabilities.

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