NATIONAL FORUM OF MULTICULTURAL ISSUES JOURNAL
VOLUME 10, NUMBER 1, 2013

The Hispanic Bilingual Gifted Screening Instrument: A Validation Study

Monica Fultz, PhD
Researcher
Bilingual Education Programs
Department of Educational Psychology
Texas A&M University
College Station, TX

Rafael Lara-Alecio, PhD
Professor and Director
Bilingual Education Programs
Department of Educational Psychology
Texas A&M University
College Station, TX

Beverly J. Irby, EdD
Associate Dean for Graduate Programs
Texas State University System Regents' Professor
Professor
Department of Educational Leadership and Counseling
College of Education
Sam Houston State University
Huntsville, TX

Fuhui Tong, PhD
Assistant Professor and Coordinator
Data Center
Bilingual Education Programs
Department of Educational Psychology
Texas A&M University
College Station, TX

Abstract

This study investigated the psychometric properties of the Hispanic Bilingual Gifted Screening Instrument (HBGSI), a teacher-rating scale. Specifically, the concurrent validity of the HBGSI with the Bilingual Verbal Ability Tests (BVAT) and the reliability of the HBGSI were examined. The sample of 527 Hispanic bilingual students in kindergarten through fourth grade in the two schools in Texas in the first part of this study, and 75 of those students in first through fourth grade were randomly selected to participate in the analysis of second part of this study. Statistical analyses focused on a split-half reliability coefficient of internal consistency for the purpose of establishing the reliability for the HBGSI, item-level exploratory factor analysis to determine the main factors contained in the HBGSI, and Pearson Product Moment correlation coefficient to determine the concurrent validity of the HBGSI with the BVAT. Findings reveal that HBGSI has substantial evidence of reliability and evidence of concurrent validity. Also identified were five factors in the instrument.

The United States population demographics have seen a dramatic change in the last few decades with population increases of 13.7% from 1990 to 2000 and 9.7% from 2000 to 2010 (U.S. Census Bureau, 2010). According to the U.S. Census Bureau (2008), there were 45.5 million Latinos or Hispanics[1] in the U.S. as of 2007, making people of Hispanic origin the nation's largest ethnic or race minority at 15%. Comparing that estimate to the 2000 Census report of 35.3 million Latinos or Hispanics at that time shows a rise of 28.9% in the population. As of 2007, of all people in the U.S. who spoke a language other than English in the home (55,444,485), 62.3% of those individuals spoke Spanish as their native language (Shin & Kominski, 2010). These figures certainly impact schools, Hispanic students are no longer a minority; in fact, of the 20 largest school districts in the U.S., four of those had Hispanic populations between 60.3% and 73.7% (i.e., Los Angeles Unified School District-73.7%, Dallas Independent School District-65.3%, Dade County School District-62.8%, Houston Independent School District-60.3%), and ten of the 20 largest districts had a majority minority Hispanic student population (Institute of Education Sciences, 2010).

Even though the population demographics have seen remarkable changes over the past several decades, there is evidence of a low representation of Hispanic students in gifted and talented (GT) programs (Brice & Brice, 2004; Castellano & Díaz, 2002; Ford, 2010; Irby, 1993; Irby & Lara-Alecio, 1996, 1999; Lara-Alecio & Irby, 2000; Ortíz & González, 1989; Vanderslice, 1998). In fact, Ford (2010) indicated as many as 38% of Hispanic students are lacking services in gifted education programs. Castellano and Díaz (2002) identified factors that contribute to the under-representation of Hispanic students in GT programs and listed them as: educators' low expectations, and nonresponsive curriculum, inadequate identification tools, and misunderstanding or lack of interest from the educational system. That misunderstanding, noted by Castellano and Diaz, may have been, in part, due to the fact that there were no nationally-

[1] In this paper, we use Latino or Hispanic interchangeably.

focused standards gifted education teacher preparation that emphasized the inclusion of students who were culturally or linguistically different until 2005 when the Joint Task Force of the Council of Exceptional Children (CEC) and the National Association for Gifted Children (NAGC) proposed such standards and included, among many others, the following terms in those standards: diversity, culture, language related to English learners, and multilingualism (Johnsen et al., 2005). These standards, adopted by NAGC and CEC in 2007 (National Association of Gifted Children, 2008b), place teachers in the forefront of identifying potential giftedness among diverse learners. In fact, the NAGC (National Association of Gifted Children, 2008a) stated "Classroom teachers are the primary agent for identifying and serving gifted and talented students in our nation's schools. Ensuring that highly able learners are recognized and subsequently served through systematic programming is of the highest priority" (para. 1). Therefore, teachers are on the front line in the identification process; thus, their understandings and subsequent initial nominations of potentially gifted, diverse learners are pivotal foundations in a school's provision of appropriate services.

In terms of identification tools, even 20 years ago, Marín and Marín (1991) stressed the importance of developing culturally appropriate tools that could assess Hispanic students, in particular, more accurately. Harris, Rapp, Martinez, and Plucker (2007) recommended the establishment of an initial screening system in identifying gifted students that is multi-faceted in procedures, including identification of learning characteristics, assessment of nonverbal cognitive ability, and in sources, including teacher rating. In our study, we sought to offer a solution for better identifying Hispanic, linguistically-diverse, gifted students by analyzing the psychometric properties of the Hispanic Bilingual Gifted Screening Instrument (HBGSI)[2] (Irby & Lara-Alecio, 1996) which is a teacher-rating scale. Specifically, we investigated the concurrent validity of the HBGSI with the Bilingual Verbal Ability Tests (BVAT) (Munoz-Sandoval, Cummins, Alvarado & Ruef, 1998) and the reliability of the HBGSI.

Under-Representation of Language Minority Students in GT Programs and Identification Process

Giftedness is not the monopoly of a particular ethnic background (Hughes, Shaunessy, Brice, Ratliff, & Alvarez-McHatton, 2006; Lara-Alecio & Irby, 2000), nor is it the prerogative of a specific social class group (Passow, 1986). Gifted and talented students can be found in all groups, regardless of their background or social status. Unfortunately, the underrepresentation of minority students in GT programs sends a hegemonic message (Collins, 2008), and proper assessment and identification of these students seem to be rather difficult and controversial. The current unsuitable and undemocratic testing procedures have left the American schools over a number of years with an under-representation of Hispanic students in GT programs (Brice & Brice, 2004; Ford, 2010; Irby, 1993; Irby & Lara-Alecio, 1996; U.S. Department of Education, 1993). For example, Donovan and Cross (2002) found that the chance for White students identified for GT programs is nearly twice as that for Hispanic/Latino students.

According to a 2008 survey representing one-third of the school districts in Texas, in identifying minority students for gifted education, districts most frequently use teacher

[2] *The Hispanic Bilingual Gifted Screening Instrument* may be found at www.teachbilingual.com

checklists, aptitude/intelligence tests, parent checklists, and achievement tests. However, there appears to be a gap between what they are using and what they believe to be most effective in identifying underrepresented groups. For example, while 265 districts reported using Aptitude/Intelligence Tests at the elementary level, only 172 reported this to be one of the most effective means for identifying underrepresented groups. No assessment was selected as being most effective in identifying underrepresented groups by more than 60% of the districts (The Research Division of the Texas Association for the Gifted and Talented, 2008).

As explained by Castellano and Díaz (2002), certain educational practices favor an exclusionary method to identify GT students. These practices are responsible for excluding many minority students with gifted potential from GT programs. They include: elitist conception of giftedness, inaccurate referrals, the inappropriate use of screening instruments, unequal educational opportunities, and low students expectations. These researchers emphasize that the definition of giftedness is selective of a few students and discriminatory. In a similar note, Irby and Lara-Alecio (1996) have enumerated several reasons for the misrepresentation of minority students in GT programs: (a) lack of cultural sensitivity by educators and administrators; (b) standardized tests that are biased; and (c) the use of a single measure to identify GT students.

Standardized testing, in particular, had been criticized and has been suggested to offer a poor match between students' knowledge, culture and values, as the test's content is assessed by standardized instruments (Callahan, 2003; Quintero & Cooks, 2002). These researchers have identified several factors that helped reveal the gap in standardized tests between students of color and the European American. Differences such as socioeconomic status, ethnic background, and cultural bias, among others, have been found. For example, Rodriguez (1992) raised the potential bias of testing Hispanic students when tests have been developed, validated and standardized on a non-minority White, middle-class population. Culture and socioeconomic factors are also important when assessing Hispanic students. According to Rodriguez (1992), if Hispanics are not test wise or their culture is not accustomed to being under the testing blade, then this population holds a cultural, testing disadvantage. He continued giving other reasons behind the culture concept, such as the value of testing for Hispanics, and lack of knowledge of the testing implications for the students' future. Anastasi and Urbina (1997) expanded this concept into what they call parameters where they include speed as part of the culture. Some cultures put emphasis on the speed at which performance is measured whereas other cultures do not. Following this reasoning, one can conclude that standardized assessment instruments seem to purge Hispanic students and hinder their progress. These instruments appear to be embedded in the main culture and discriminate against minority students.

Two important concerns in today's society are central to our study: (a) the rapid Hispanic population growth which is reflected in the U.S. public schools, and (b) the long-term, debatable topic of bilingual assessment (Anastasi, 1985; Cummins, 1999; deWet, 2005; Daves, 1984; Eyde, Moreland, Robertson, Primoff, & Most, 1988; Vanderslice, 1998). The latter issue raises important concerns such as the misinterpretation of tests' scores (Anastasi, 1992) and, the under-representation of Hispanic students in GT programs (Cohen, 1990; Colangelo & Davis, 1991; Irby & Lara-Alecio, 1996; LaFontaine, 1987; Ortíz & González, 1989; Yoon & Gentry, 2009). Considering all these issues, a need for an accurate and reliable screening instrument for Hispanic GT students is a basic necessity.

A multiple-assessment process appears to be a valid solution to this problem and has been recommended for almost 15 years. For example, Irby, Hernandez, Torres and Gonzales (1997)

recommended the use of nonverbal, non-traditional, linguistic and cultural sensitive instruments to assess language minority students. Bermúdez and Márquez (1998) indicated that it is the responsibility of teachers to establish and promote a multiple source of assessment including record keeping of formal and informal samples of their students' work, as well as observation and collection of background data for each student; however, Fernández, Gay, Lucky, and Gavilán (1998) cautioned that teachers may be acculturated in their identification of gifted Hispanic limited English proficient students to the mainstream, typical notion of giftedness. In addition, Cantu (1998) recommended the use of different assessment tools that cover a wide range of areas (music, art, language, etc.). Warger and Burnette (2000) suggested the encouragement of family involvement, parent support group, simultaneous respect for the students' family background, developing curriculum relevant to students and building on their strengths.

The HBGSI and the Definition of Giftedness

Renzulli (1999) shared two purposes behind the identification of GT students: to provide students opportunities for cognitive development and to allow students to become thinkers and problem solvers. He tied these purposes very closely together giving examples of scientists and artists that produce talented work and at the same time, provide benefits to society. Valencia and Suzuki (2001) stated that the Three-Ring Conception of Giftedness (Renzulli, 1986, 1998) provides hope for better identification of minority in GT programs. Furthermore, Renzulli (1998) expressed that giftedness is developed or acquired, and it is the result of the interaction between a person, the environment around that person, and specific traits. He also spoke about gifted behaviors as opposed to gifted children. Renzulli (1999) affirmed that one single measure or one score cannot be used to identify giftedness. He stated,

> Persons who have achieved recognition because of their unique accomplishments and creative contributions possess a relatively well-defined set of three interlocking clusters of traits. These clusters consist of above average, though not necessarily superior, ability, task commitment, and creativity. (Renzulli, 2000, p. 100)

Accordingly, above average ability may be defined as general ability or specific ability; task commitment may be defined as motivation, perseverance, hard work, dedicated practice, and self-assurance, and creativity may be defined as solving problems techniques or developing original ideas. Individuals, who manifest these traits and develop an interaction among them, should be provided with a broad array of educational opportunities and programs to nurture that potential and develop it (Valdés, 2003). The traditional concept of intelligence becomes nonplus in this definition, because it is all three characteristics combined that matter. As reported in Irby, Lara-Alecio, and Rodriguez (2003b), Irby and Lara-Alecio expanded Renzulli's (1976) basic definition of giftedness and expanded it to the Hispanic, bilingual gifted student as "one who has above average intelligence (IQ), task commitment, and creativity that is situated within socio-cultural-linguistic characteristics" (p. 6); this definition is depicted in Figure 1. Renzulli's definition and the specific contextual components added by Irby and Lara-Alecio for the Hispanic bilingual gifted student broaden the definition for a more objective identification

process. Lara-Alecio and Irby (1993) added socio-cultural-linguistic aspect, a fourth set of characteristics to complete the concept of Hispanic bilingual gifted. This fourth element is all encompassing and surrounds the other three traits. The HBGSI follows an inclusionary perspective of the definition of giftedness (Irby & Lara-Alecio, 1996). This means that the foundation of the HBGSI was based on the idea that many students have the potential to be gifted and talented, if that potential is nurtured accordingly. This definition includes, rather than excludes, those students that have a potential to be identified as gifted. It was necessary to examine psychometric properties of the HBGSI to determine the probability of the instrument to identify potential Hispanic bilingual gifted students. Such an instrument can aid in reversing the under-representation of such students in GT programs, and ultimately it may have a role in building a more an egalitarian education system as described by Castellano (1998). This system would provide Hispanics an opportunity to be assessed, taking into consideration the background, culture, values, and uniqueness that they bring to the classroom.

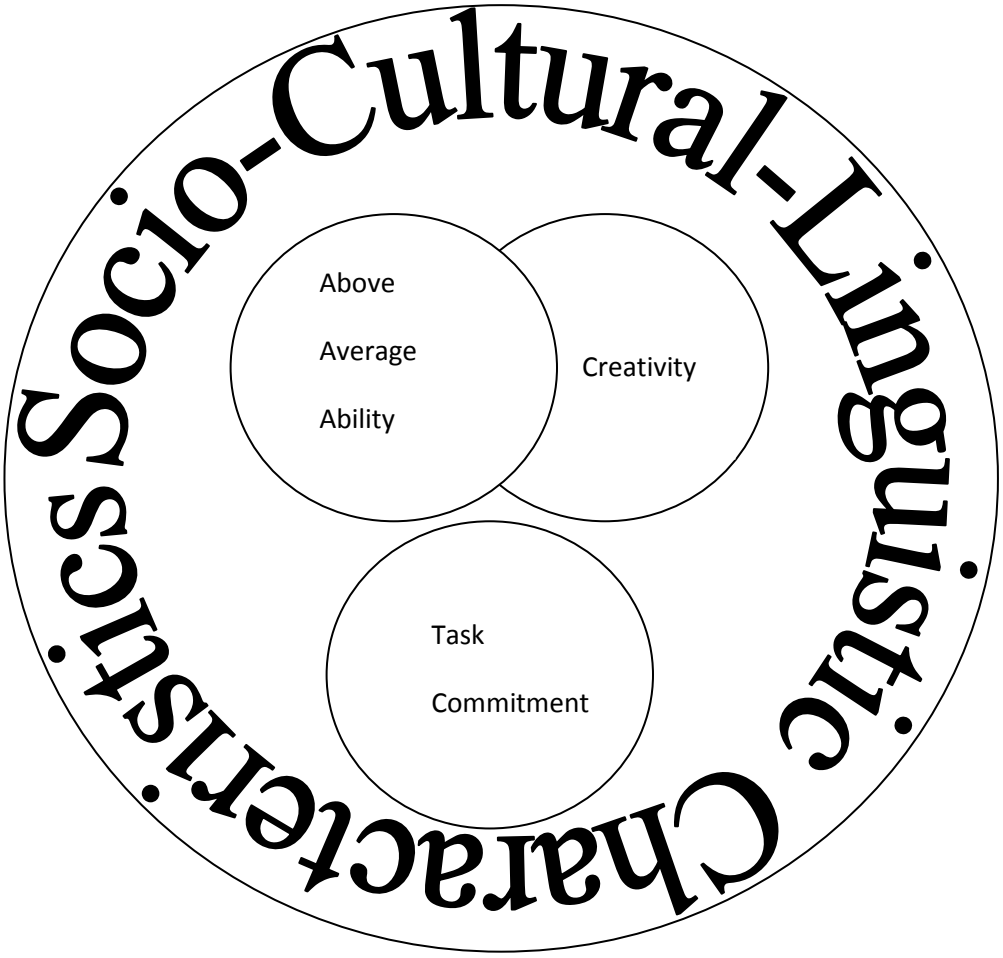

Figure 1. Irby and Lara-Alecio's broad definition of Hispanic English language learning gifted students inclusive of Renzulli's (2000) definition or three-ring conception of giftedness.

Irby and Lara-Alecio (1996) developed the Hispanic Bilingual Gifted Student Instrument (HBGSI). The major purpose of our study was to analyze psychometric properties of the HBGSI.

More specifically, we focused on the validity and reliability aspects that characterize this instrument. The research questions that this study addressed were the following:

1. What is the split-half reliability for the HBGSI?
2. What are the main factors that are identified in the HBGSI?
3. What is the concurrent validity of the HBGSI when compared to the BVAT, a normed cognitive measure, in kindergarten through fourth grade?

Methodology

Context and Participants of the Study

Texas has established several principles for the identification of minority GT students (Irby, Lara-Alecio, & Rodriguez, 2003a). These principles, approved by the school board, help determine the accepted definition of a GT student and the proper identification process of these students for the district. The identification stage requires at least five sources or criteria (objective and subjective measures) and it is subject to ongoing checkups for students transferring, exiting or entering the GT program. Once GT students are identified, Section 3.1C of the Texas State Plan for the Education of Gifted/Talented Students states that "school districts shall provide An array of appropriately challenging learning experiences in each of the four foundation curricular areas [English language arts/reading, mathematics, science, and social studies] for gifted/talented students in grades K-12." Further, according to state guidelines, curriculum and instruction for gifted students must be addressed by modifying the depth, complexity, and pacing of the curriculum and instruction ordinarily provided by the school (Texas Education Agency, 2009).

Hispanic bilingual participants for this study were selected from a population of students attending two schools in a city public school district in Texas; this constituted a convenience sample in terms of the proximity of the schools to the researchers' universities. Five hundred twenty-seven Hispanic bilingual students in the two schools participated in the first part of this study, whereas 75 of those students participated in the analysis of the last research question of this study. All these students were enrolled in kindergarten through fourth-grade level in dual language and bilingual classroom programs. They were males and females approximately 6-11 years old, all of Hispanic background. School # 1 housed Pre-K through second grade; school # 2 housed third through fifth grade. Criteria for the selection of the elementary schools were as follows: elementary schools with a large concentration of Hispanic students in bilingual programs, and HBGSI already implemented.

According to the Texas Education Agency, school #1 and # 2 were rated as acceptable in the 2001-2002 Academic Excellence Indicator System (AEIS). School # 1 had an attendance rate of 96.7% and School # 2 reported a 95.4% attendance rate compared to a 95.5% average state rate. School # 1 enrolled a total of 540 students ranging from Pre K through second grade and School # 2 enrolled 493 students from third to fifth grade levels. Both of these schools offer bilingual and mainstream classrooms. Only dual language and bilingual classrooms were selected for this particular study. The following tables summarize the student ethnic distribution of School #1 and # 2. Table 1 shows a very large percentage of Hispanic students (almost 70%)

attending both schools compared to a relatively small White student representation (less than 6%) and an African American composition of approximately 25%. Unlike the student demographic characteristics in these schools, staff and teachers do not seem to be proportionally equaled. Table 1 also shows a distinct disproportional ethnic representation of teachers and students in School # 1 and # 2. There is a very high concentration of Hispanic students (almost 70%) compared to White (4%) in contrast to the relatively high percentage of White teachers (70.2%) compared to a low 25% for Hispanic teachers. This is an evident inequity of student-teacher ratio when considering their ethnic background. Additionally, School # 1 was comprised of 92.6% female teachers and School # 2 had 89% female teachers.

Table 1

Student and Teacher Ethnic Distribution for School # 1 and #2

Students	School # 1		School # 2	
	Students (n=540)	Teachers (n=69)	Students (n=493)	Teachers (n=55)
Hispanic	69.40%	25%	68.80%	27.20%
African American	24.80%	4.80%	27.60%	8.10%
White	5.70%	70.20%	3.70%	64.70%

Note. From Texas Education Agency's website report 2001-2002. Retrieved from http://www.tea.state.tx.us/perfreport/aeis/

Instrumentation

The Hispanic Bilingual Gifted Screening Instrument (HBGSI). The Hispanic Bilingual Gifted Screening Instrument is an inclusive instrument developed by Irby and Lara-Alecio (1996). This individual-teacher-administered instrument was designed to assess Hispanic students in grades K through 4th. Its purpose is to screen Hispanic students' eligibility into GT programs and recommend students for further GT testing.

The HBGSI began with 90 items in 1992. However, after undergoing several revisions, the number of items was reduced to 78. This screening tool currently consists of 77 items, one item was deleted since further investigation and analysis indicated it had added little or no value to the instrument (Irby & Lara-Alecio, 2003); additionally, there is short version that can be used based on continued research; however, for the purposes of this study, the longer version was included. Items are measured using a 5-point scale (5 as always exhibits the behavior/characteristic, 4 as often exhibits the behavior/characteristic, 3 as sometimes exhibits the behavior/characteristic, 2 as seldom exhibits the behavior/characteristic, and 1 as never exhibits the behavior/characteristic) (Irby & Lara-Alecio, 1996).

This screening instrument is the result of a comprehensive study and review of literature that narrowed over 400 characteristics of the Hispanic culture into 11 clusters. The clusters are: Social and Academic Language, Cultural Sensitivity, Familial, Motivation for Learning, Collaboration, Imagery, Achievement, Support, Creative Performance, Problem-solving, and Locus of Control. Research was based strictly on Hispanic gifted students, and is not intended to be generalized to other populations (Irby & Lara-Alecio, 1996).

Administration procedure. The HBGSI is available on-line (www.teachbilingual.com) to teachers, administrators, educators and anybody that would like to become familiar with this instrument. It has a 30-day-free-trial for those interested in finding out more about this instrument. Teachers can log on to the website, create their own classroom, and enter the name of students. Once the students' names have been entered, teachers can answer the 77 items in the HBGSI for each student. This is not a group-administered tool, so there will be one instrument per student in the classroom. The software program can run calculations and provide scores for each student. It also stores the information that the teacher has created, allowing the teacher to add, delete, change, and/or continue completing classroom information at any time. Once the entire classroom has been entered, the computer program will determine the mean score for that specific classroom. This mean score is used to determine the cut off score that establishes the splitting point between those Hispanic students that will be recommended for further GT testing and those who will not be recommended.

Since the HBGSI consists of 77 items and uses a 5-point scale, the maximum possible raw score a student can obtain is 385 if all answers are scored with a 5. The lowest would be 77, indicating a wide range of 308. It should be noted that when the HBGSI was administered in 2003, the instrument consisted of 78 items, which made the highest score to be 390 and the lowest 78.

HBGSI reliability information. This screening instrument is designed to be implemented during the first part of the identification process of GT students as a referral tool or preliminary screening stage for Hispanic students to be placed in a GT program (Irby, Lara-Alecio & Rodriguez, 2003b). During an exploratory study, an agglomerative hierarchical cluster analysis was completed by Irby and Lara-Alecio (1996) and the results confirmed the existence of eleven clusters. Sixty-one elementary (kindergarten through fourth grade) bilingual teachers volunteered to complete the HBGSI. The results produced a Cronbach's Alpha with coefficients ranging between .62 and .91. These results revealed a fairly high correlation between the characteristics depicted by the HBGSI and those considered as attributes of Hispanic gifted bilingual students. Further studies showed that the HBGSI was an effective screening instrument that discriminated between those students referred to gifted education and those who were not referred (Irby, Hernandez, Torres, & Gonzalez, 1997).

A correlational study was conducted in order to investigate the properties of the HBGSI with the Naglieri Nonverbal Ability Test (NNAT). Ten bilingual kindergarten through fourth grade classes constituted a sample of 175 students who participated in the study. The Pearson correlation revealed coefficients as high as .50 with $p < .01$ indicating a statistically significant positive correlation between the two instruments (Irby, Lara-Alecio, & Rodriguez, 1999). An additional study by Irby, Lara-Alecio, and Rodriguez (1999) reported the reliability coefficient of .99 based on only 34 items of the HBGSI.

The Bilingual Verbal Ability Test (**BVAT).** The Bilingual Verbal Ability Test (Muñoz-Sandoval, Cummins, Alvarado, & Ruef, 2003) is a standardized assessment instrument consisting of three batteries that measure bilingual verbal ability in L1 (English) and L2 (other language, in this case Spanish), as well as cognitive and academic language in bilingual students. It contains three tests measuring verbal ability: Picture Vocabulary (students name the objects displayed by the test administrator which rank in an increasing difficulty, 58 items), Oral Vocabulary (students name synonym and antonym words 20 and 24 items, respectively), and Verbal Analogies (students are asked to establish relationships between words, 35 items). Picture Vocabulary is designed to measure a students' ability to name familiar single-word objects. Oral Vocabulary has two parts: synonyms and antonyms. The examiner presents a word verbally and the subject must state a synonym or an antonym according to what part of the test is being administered. In Verbal Analogies, students are encouraged to complete a logical word relationship. All of these components start with the simplest words and increase in difficulty as it progresses.

The BVAT assesses students' vocabulary and oral academic proficiency in two languages (English and Spanish). The three batteries are administered in English first. Any missed item is then administered in the student's native language (Spanish for the sake of this study) and the scoring is 0 or 1 (0 meaning incorrect, 1 meaning correct response) (Muñoz-Sandoval, Cummins, Alvarado, & Ruef, 2003). The reason to select BVAT for the investigation of concurrent validity is because it can be used for placement, as well as entry or exit into different bilingual programs. It is an appropriate tool for assessing academic potential, scholastic aptitude, verbal cognitive proficiency, and for the placement of bilingual students (Muñoz-Sandoval, Cummins, Alvarado, & Ruef, 2003). It could be used to reverse the over-representation of bilingual students in special education programs. Additionally, when used in combination with other instruments, including observation, it could help to make more accurate placement decisions of students into different programs, such as gifted and talented (Muñoz-Sandoval, Cummins, Alvarado, & Ruef, 1998).

Normative data were based on 5,602 randomly selected subjects distributed all over the US. The subjects ranged from 5 to 90 years old. Subjects were selected using a stratified random sampling design (Muñoz-Sandoval, Cummins, Alvarado, & Ruef, 2003). In Texas, some testing was done in several school districts in Dallas, Arlington and San Antonio. Data were gathered from 1986 through 1988. The BVAT comprehensive manual (1998) provides evidence of content, construct, concurrent and predictive validity, and reliability measures. Content was measured through cluster scores. Construct validity was established by intercorrelations among the BVAT tests revealing correlations from .59 up to .96. Concurrent validity correlations with the Pre- LAS (Language Assessment Scales) ranged from .64 to .91 and a correlation of .86 was determined with the LAS, indicating a high correlation level with other measures of English Language Proficiency tests. Predictive validity was established by correlating the scores from the BVAT with school achievement scores, and the results showed correlations ranging from .65 to .85. Content validity was also examined and reported as high. Evidence of reliability was obtained through alternative form and yielded a correlation coefficient of .84. Split-half reliability coefficient (Spearman-Brown formula) was estimated to be .80.

Data Collection Procedure

The data collection consists of two stages. During the first part, bilingual classrooms from kindergarten through fourth grade were included. These classrooms were purposefully selected from the bilingual classrooms with a total of 527 participants. The second part of the study consisted of 75 students randomly selected from the original group from first through fourth grade. The first part of this study consisted of having access to the data stored and saved in an Internet website (www.teachbilingual.com). It should be noted that the first part of the study included participants enrolled in kindergarten through fourth grade. The particular schools selected had adopted the HBGSI as an instrument that teachers administer to students annually at the end of the school year.

During the second stage of data collection, BVAT was administered. Consent letters were sent out to the parents of all students attending first through fourth grade in School # 1 and # 2. These letters were sent home together with the students' report cards, hoping that this would render a higher response rate. The researcher matched the rosters of current students, with the list of students that were administered the HBGSI in May and the consent letters returned. Additionally, the researcher trained undergraduate bilingual students to help collect the data. Teachers and test administrators adhered to the ethical code and guaranteed the anonymity of the results at all times. For this second part of the data collection, the number of participants was reduced from the original 527 to 75 due to reasons that (a) not all of these students were enrolled in these schools during the second part of the study (there was participant mortality due to migrant parents) and (b) not all of the parents returned the consent form with proper signatures.

Data Analysis

The results of the HBGSI administered were gathered, coded and entered into a microcomputer using the SPSS. Data were copied into a zip disk for the convenience of transportation. Each participant was assigned a number. Data were coded and entered into a computer program, thus protecting the anonymity of the participants. The same procedure was used for the analysis of the BVAT. Once coding was completed for the results from both instruments, data were analyzed using the SPSS. Descriptive statistics were completed initially. The mean, range and standard deviation were calculated for the scores of the HBGSI and the BVAT. The primary research questions were answered as follows. The first research question focused on a split-half reliability coefficient of internal consistency for the purpose of establishing the reliability for the HBGSI. The second research question involved item-level exploratory factor analysis to determine the main factors contained in the HBGSI. A scree plot and Varimax orthogonal rotation technique were used to maximize factor loadings and to extract factors. Finally, the third research question was answered through the use of the Pearson Product Moment correlation coefficient to determine the concurrent validity of the HBGSI to the BVAT in grades K through 4.

Results

The major purpose of our study was to analyze the psychometric properties of the HBGSI. More specifically, we focused on the validity and reliability aspects that characterize this instrument. First, our study provided split-half reliability coefficients for the HBGSI. Second, we searched for the main factors identified in the HBGSI through an exploratory factor analysis. Third, our research explored the concurrent validity of the HBGSI to the BVAT.

The first analysis of the data consisted of a descriptive analysis of the test scores. Table 2 includes the range, mean and standard deviation for the HBGSI and the BVAT. As can be noted, the range of the HBGSI is considerably larger than that of the BVAT. The standard deviation is also considerably different. This may be due to the wide spread of scores in the HBGSI.

Table 2

Range, Mean and Standard Deviation for the HBGSI and the BVAT

	HBGSI	BVAT
Range	276	64
Mean	311.9	59.57
Standard Deviation	57.24	14.37

Note. *n* =75.

Results by Research Questions

Question 1: Split-half reliability. This first question targeted the reliability of the HBGSI- a method of internal consistency. In order to calculate this coefficient of internal consistency, two different statistical procedures were used to analyze the data and present the results in Table 3 of the reliability coefficients of the HBGSI. The first part of Table 3 displays the results of this screening instrument using split-half odd and even item selection. As can be seen, the reliability coefficients range from .79 to .94. SPSS was used to select the odd and even items in the HBGSI and calculate the coefficient of internal consistency. These correlations, as shown, are indicative of a high reliability coefficient of internal consistency. This suggests that the HBGSI meets the acceptable criteria to yield reliable results.

The second part of Table 3 shows the results of split-half reliability coefficients calculated from 39 randomly selected items comparing with the remaining 39 items. These coefficients range from .93 to .97, indicating a high correlation between the items, and supporting the results in the first part of Table 3. In addition, these coefficients are slightly higher than the ones provided in the first part of Table 3. After analyzing the data through two different statistical methods, one can conclude that the HBGSI shows similarly high reliability values.

Table 3

Guttman Split-half, Spearman-Brown and Cronbach's Alpha Reliability Coefficient (n= 527)

	Odd-even items	Random selection
Guttman Split-half	0.79	0.93
Equal-length Spearman-Brown	0.8	0.93
Alpha for part 1	0.94	0.97
Alpha for part 2	0.92	0.96

Question 2: Factor analysis. Exploratory factor analysis was used to address the second question in this study. As described by Kachigan (1991), factor analysis is a very powerful technique used to reduce large data to a few factors. A factor matrix was established with coefficients expressing the relationship between the items in the HBGSI and the underlying rotating factors (Kerlinger, 1973; Kachigan, 1991). Principal components factor analysis and varimax orthogonal rotation were used. Principal Components is the most commonly used variation in factor analysis (Kachigan, 1991). The main reason for rotating factors is to obtain a better interpretation of the factors (Nunnally, 1978), and to maximize the loadings in the factors in this particular case, those underlying the HBGSI. Table 4 shows Principal Component Analysis with Varimax rotation performed through SPSS on the 78 items of the HBGSI. Five factors were identified and extracted. Two different criteria were taken into consideration for the extraction of the factors, both conservative in nature. The first criteria required the following: (a) a minimum of 3 items to define a factor, (b) at least one item needs to load .50 or higher, and (c) the remaining 2 items need to load at least .30. The second criteria (Kerlinger, 1973) used to define factors was the following: (a) the factor matrix should have a loading close to zero for each row, (b) each column should have as many zero-or near- zero-loading variable as there are factors, and (c) "for every pair of factors (columns) there should be several variables with loadings in one factor (column) but not in the other" (p. 673).

According to Table 4, the first seven items in the HBGSI have a high loading on Factor 4. This is partially supported by the research conducted by Irby and Lara-Alecio (1996), who found that items 1 through 4 grouped together under the heading of Social and Academic Language, and items 5 through 7 group together under the heading Cultural Sensitivity. However, this study has found that items 5, 6 and 7 seem to group with the first 4 items (Factor 4). Items 1 through 4 ask the participant whether he/she likes to read, write, speak or listen in the native language. Items 5 through 7 focus on language, culture and tradition. Additionally, item 55 loads high on Factor 4. Exploring item 55, it was found that it targets vocabulary and language. Additionally, item 7 loads heavier on Factor 2. But after reviewing both items, the decision was made to incorporate item 7 and item 55 on Factor 4 since they shared a semantic connection to the concepts attached to Factor 4. Factor 2 in Table 4 shows high loadings for items 9 through 32, and 76 through 78. This is partially supported by the developers' prior research (Irby & Lara-

Alecio, 1996). They found that these items clustered together under 3 different headings, Familial, Motivation for Learning, and Collaboration. Factor 1 on Table 4 comprises of items 33 through 50, 61 through 65, and 71 through 74. This is also partially supported by the developers' prior research (Irby & Lara-Alecio, 1996). They found that items 33 through 35 load together under the heading Imagery. Items 36 through 50 were grouped under the heading Achievement. This study found that these items load together under the same Factor 1. Items 61 through 65 had been grouped under the heading Problem Solving. However, in their results this cluster included other items. Items 71 through 74 had been clustered under the heading Locus of Control with some other items. This study found that these items load together under the same Factor 1. Factor 3 consists of items 52, 53, 54, 56 through 60 and 66. These results are partially supported by Irby and Lara-Alecio (1996). Their results showed a similar grouping into headings Support and Creative Performance. Factor 5 involves items 51, 67 through 70 and item 75. This is as well partially supported by previous research. Several of these items were grouped together in a previous study (Irby & Lara-Alecio, 1996) and were labeled Problem Solving and Locus of Control. This study has grouped them slightly differently due to the loadings in Table 4. Item 8 had been deleted from the instrument after May 2003 by the test developers (Irby & Lara-Alecio, 2003). Although it has a significant loading on Factor 6 and Factor 7, both of those factors fail to meet the criteria described earlier (Kerlinger, 1973) and consequently, the decision was made to support the deletion of item 8. As mentioned earlier, Table 4 did not provide enough evidence to warrant the extraction of factors 6, 7, 8, 9 and 10. For that reason, only 5 factors were identified in this study.

Table 4

Rotated Component Matrix of the HBGSI using Varimax Rotation Method Extraction of Factors

Item	Factors									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	0.3	0.15	0.1	0.82	0.04	0.01	0.03	-0.04	0	0.02
2	0.32	0.17	0.19	0.77	0	0	0	-0.01	-0.01	0.07
3	0.17	0.2	0.1	0.84	0.11	0	0.08	0.06	0.1	0.04
4	0.2	0.25	0.09	0.82	0.05	0.05	0.06	0.02	0.06	-0.02
5	0.29	0.34	0.23	0.5	0.14	0.16	0.18	0.34	0.01	0.05
6	0.31	0.38	0.21	0.46	0.07	0.21	0.22	0.39	0	0.01
7	0.27	0.46	0.17	0.32	0.1	0.17	0.2	0.42	0.08	0.1
8	-0.03	0.06	0.03	-0.09	-0.02	0.53	0.36	0.02	0.13	0.11
9	0.24	0.67	0.19	0.1	0.16	0.14	0.24	0.05	0.08	-0.01
10	0.3	0.57	0.25	0.12	0.17	0.06	0.13	0.13	0.25	-0.03
11	0.17	0.49	0	0.11	0.08	0.13	0.56	-0.03	0.24	0.05
12	0.18	0.33	0.03	0.17	0.06	0.1	0.62	0.01	-0.13	0.06
13	0.09	0.77	0.08	0.16	0.06	0.16	0.2	0	-0.02	0.1
14	0.19	0.42	0.22	0.12	0.13	-0.06	0.58	0.11	-0.05	-0.12

15	0.17	0.55	0.09	0.15	0.11	0.06	0.62	0.03	0.07	0
16	0.48	0.58	0.19	0.29	0.01	0.08	0.16	-0.06	0.01	-0.17
17	0.32	0.57	0.18	0.29	0.03	0.01	0.18	-0.26	0.08	-0.16
18	0.51	0.61	0.19	0.22	-0.02	0.02	0.15	-0.21	0.03	-0.11
19	0.51	0.59	0.21	0.27	-0.03	0.03	0.1	-0.22	0.03	-0.16
20	0.23	0.58	0.05	0.14	0.41	0.14	0.12	-.0 6	0.24	0.02
21	0.25	0.6	0.14	0.08	0.31	-0.02	0.02	0.11	0.16	0.13
22	0.16	0.74	0.12	0.1	0.09	0.1	0.05	0.14	-0.2	0.08
23	0.45	0.51	0.3	0.11	0.05	-0.08	0.06	0.11	0.05	-0.04
24	0.29	0.76	0.21	0.15	0.12	-0.01	0.09	0.11	0.02	0.08
25	0.51	0.5	0.32	0.1	0.05	-0.02	0.08	0.28	0.03	-0.04
26	0.59	0.5	0.23	0.21	-0.01	0.06	0.19	0.03	0	-0.05
27	0.37	0.51	0.16	0.08	0.16	0.16	0.08	0.31	0.15	0.02
28	0.53	0.53	0.17	0.1	0.1	0.1	0.13	0.25	0.06	0.01
29	0.42	0.64	0.13	0.16	-0.01	0.06	0.04	0.02	-0.22	0.18
30	0.22	0.75	0.1	0.13	0.19	0.12	0.07	0.12	0.14	0.1
31	0.38	0.51	0.35	0.13	-0.02	0.25	0	0.27	0.01	-0.08
32	0.51	0.45	0.28	0.14	0.2	-0.04	0.11	0.08	0.24	-0.13
33	0.5	0.29	0.39	0.2	0.03	0.07	0.04	0.04	0.41	0.05
34	0.55	0.26	0.37	0.16	0.06	0.04	0.06	0.06	0.41	0.12
35	0.61	0.29	0.39	0.1	-0.06	-0.04	0.07	0	0.26	0.14
36	0.76	0.28	0.12	0.18	0.14	0.11	0.09	0.03	0.09	0.06
37	0.75	0.33	0.05	0.13	0.21	0.09	0.06	-0.05	0.12	0.06
38	0.71	0.23	0.16	0.18	0.02	0.15	0.11	0.16	0.12	0.04
39	0.6	0.23	0.31	0.16	0.19	0.15	0.23	0.19	-0.07	-0.06
40	0.71	0.23	0.1	0.19	0.3	0.1	0.14	0.02	0	0.11
41	0.74	0.21	0.04	0.18	0.1	0.04	0.11	-0.04	0.04	0.09
42	0.29	0.08	0.31	0.13	0.05	0.5	0.05	0.06	0	0.05
43	0.71	0.3	0.13	0.19	0.13	0.13	0.09	0.08	0.06	0.12
44	0.67	0.4	0.17	0.22	0.04	0.06	0.07	-0.02	-0.03	0.05
45	0.59	0.21	0.4	0.13	0.01	0.13	-0.01	0.24	0.05	-0.1
46	0.28	0.2	0.27	0.37	0.08	0.14	0	0.01	0	0.5
47	0.56	0.17	0.35	0.13	0.14	0.13	-0.06	0.1	0.38	0.03
48	0.49	0.23	0.35	0.11	0.3	0.09	-0.03	0.23	0.23	-0.06
49	0.53	0.04	0.4	0.11	0.2	0.21	-0.03	0.31	0.2	0.03
50	0.61	0.27	0.35	0.14	0.07	0.12	0.04	0.25	0.02	0.03
51	0.22	0.43	0.04	0.08	0.54	0.22	0.04	-0.06	0.23	0.03
52	0.17	0.15	0.35	0.11	0.23	0.62	-0.09	0.03	0.04	-0.07
53	0.23	0.08	0.42	0.11	0.11	0.6	0.06	0.08	-0.12	0.08
54	0.31	0.17	0.31	0.19	0.1	0.06	0.03	0.02	0.04	0.59
55	0.07	0.11	0.12	0.69	0.2	0.09	0.1	0.04	-0.03	0.15
56	0.17	0.22	0.76	0.13	0.19	0.08	0.03	-0.05	0.06	0
57	0.18	0.23	0.76	0.17	0.05	0.16	0.06	0.02	0.06	0.07

58	0.31	0.2	0.71	0.1	0.1	0.11	0.01	0	0.03	0.09
59	0.2	0.15	0.76	0.09	0.05	0.1	0.05	0.03	0	0.09
60	0.1	0.29	0.47	0.16	0.46	0.1	0.05	0.05	-0.01	0.2
61	0.47	0.21	0.27	0.13	0.27	0.11	-0.16	-0.03	-0.03	-0.02
62	0.72	0.18	0.2	0.09	0.16	0.18	0.02	0	-0.07	0.03
63	0.56	0.44	0.21	0.21	0.07	0.08	0	-0.1	-0.22	0.07
64	0.47	0.38	0.25	0.06	0.06	0.35	0	-0.04	-0.16	0.05
65	0.59	0.23	0.38	0.16	0.14	0.25	0.11	0.16	-0.06	0.09
66	0.2	0.09	0.71	0.09	0.11	0.19	0.09	0.08	0	0.07
67	0.42	0.05	0.34	0.12	0.49	0.14	0.02	0	0.05	-0.02
68	0.42	0.16	0.4	0.1	0.47	-0.03	0.24	0.02	-0.05	-0.15
69	0.31	0.2	0.27	0.25	0.52	0.14	0.16	0.15	-0.06	0.08
70	0.41	0.16	0.32	0.19	0.42	0.27	0.06	0.15	-0.12	-0.04
71	0.54	0.27	0.32	0.1	0.21	-0.06	0.1	0	0.07	0.12
72	0.5	0.35	0.1	0.13	0.21	0.09	0.14	-0.01	-0.2	0.23
73	0.54	0.21	0.39	0.22	0.16	0.15	0.17	0.17	-0.04	0.16
74	0.74	0.29	0.07	0.22	0.09	0	0.1	-0.05	-0.06	0.14
75	0.17	0.43	0.2	0.16	0.49	0	0.11	0.03	-0.03	0.25
76	0.35	0.52	0.03	0.17	0.2	0.08	0.25	-0.23	0.06	0.05
77	0.35	0.58	0.14	0.11	0.03	0.06	0.05	0.04	0.07	0.26
78	0.28	0.76	0.2	0.15	0.06	0.03	0.1	0	-0.05	0.07

Note. Extraction method: Principal Component Analysis. Rotation method: Varimax with Kaiser Normalization.

These findings are consistent with those in the HBGSI's scree plot found in Figure 2. Criteria for the identification of factors in the scree plot was defined by Brown (2001). He stated that researchers should not be concerned with the factors that lie in the debris or rubble at the bottom part of the mountain (after the elbow area). The scree plot for the HBGSI shows the debris area after an eigenvalue of five. As can be seen in Figure 1, and following Kachigan (1991), Cattell (1966) and Brown's (2001) criteria, there are five factors that could be identified in the HBGSI.

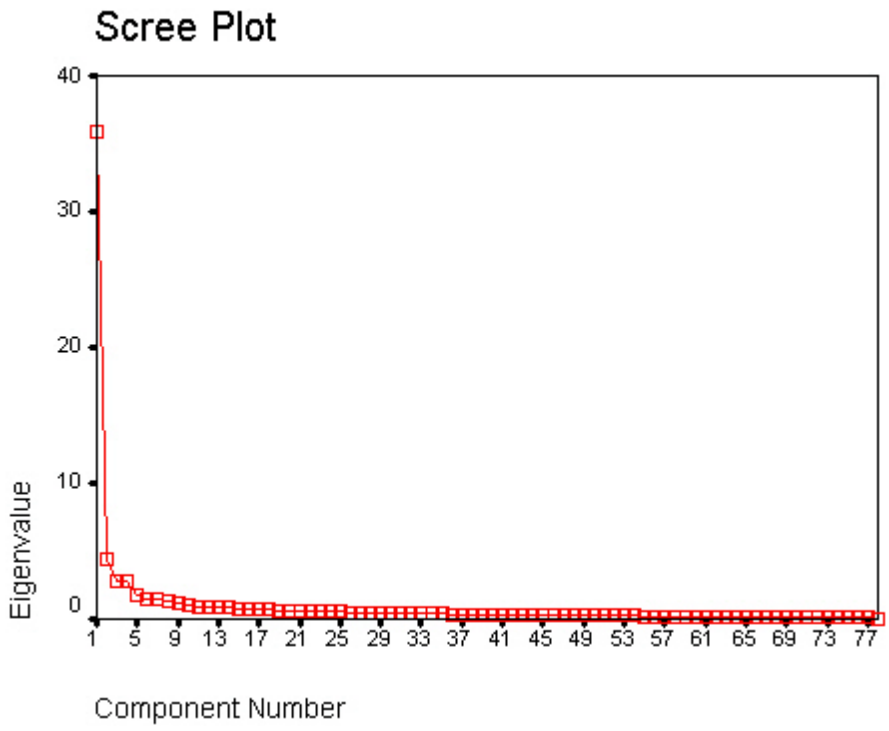

Figure 2. Scree plot for HBGSI.

A third factor identification method was investigated in this study. Table 5 presents eigenvalues, which measure the variation in a pattern and they are calculated by adding the factors squared loadings. They represent the amount of variance accounted for by a factor (Kerlinger, 1973). According to Table 5, the first factor accounts for the majority of the variance in the HBGSI (46%), the second factor adds a small percentage of variance, and so on. The factors that lie after the fifth factor do not seem to add considerable variability. In essence, Factors 6, 7, 8, 9 and 10 only account for a very small percentage of the variance- thus supporting the identification of 5 factors in the HBGSI.

Table 5

Eigenvalues for the HBGSI

Total Variance Explained						
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	35.87	45.98	45.98	35.87	45.98	45.98
2	4.34	5.56	51.55	4.34	5.56	51.55
3	2.82	3.61	55.17	2.82	3.61	55.17
4	2.79	3.57	58.74	2.79	3.57	58.74
5	1.78	2.28	61.03	1.78	2.28	61.03
6	1.45	1.85	62.89	1.45	1.85	62.89
7	1.41	1.81	64.71	1.41	1.81	64.71
8	1.29	1.65	66.36	1.29	1.65	66.36
9	1.14	1.47	67.83	1.14	1.47	67.83
10	1.04	1.34	69.17	1.04	1.3	69.17
11	0.95	1.22	70.39			

In summary, the results of the exploratory factor analysis provide evidence of the existence of five factors in the HBGSI analyzed through Varimax rotation method, in addition to the deletion of item 8 which did not meet the criteria established for the extraction of factors.

Question 3: Concurrent validity. This third research question analyzed the concurrent validity of the HBGSI in relation to the BVAT. By definition, concurrent validity is considered the extent that one's scores on a new test correspond to his/her scores on a recognized test that assesses the same construct and which is given shortly before or after the new test (Gall, Borg, & Gall, 2007). Cronbach (1975) explained that concurrent validity is used when researchers intend to substitute one instrument for another or when a high correlation exists between the two measures. In order to calculate the correlation, all scores from the HBGSI and the BVAT were converted to *z* scores using the SPSS statistical software. This type of score is used when data is

derived from a single sample and the mean and standard deviation are provided (Gravetter & Wallnau, 2004). Results showed statistically significant correlation, $r = .39$, $p = .01$. This is considered to be a moderate correlation.

In summary, the results from this study provided the following answers to the research questions. First, the HBGSI has empirical evidence of high split-half reliability coefficients ranging between .79 and .97. Secondly, factor analysis revealed the existence of five main factors among the 78 items. This found partial support from earlier studies. Finally, the HBGSI shows evidence of concurrent validity ($r = .39$) coefficient when compared with the BVAT.

Limitations

This study carries two limitations that the readers need to bear in mind. The first and foremost limitation is the generalizability of the results that cannot go beyond the characteristics of the sample, and the school settings in our study. This study involved the selection of two specific schools in the public school district and participants with Hispanic origin from bilingual classrooms were recruited from these schools. Second, the reader needs to be aware of the reduction in the sample size of the third research question. The inability to produce a sample as large as the one that answered the first two research questions may have had an effect on the concurrent validity coefficient. The first two research questions included a much larger sample, that is, all students enrolled in dual and bilingual programs in the two selected schools. However, the last question used a volunteer sample of participants that may represent a bias and have weakened the results of this study. Research with a larger sample is recommended that could additionally support the validity of this study.

Discussion and Recommendations

The findings of this study reveal that HBGSI has substantial evidence of reliability and some evidence of concurrent validity. There is a relatively high reliability coefficient indicating evidence of internal consistency in the instrument. It has also identified the existence of five factors in the instrument, and valuable characteristics that need to be considered when identifying and screening Hispanic students. The first research question investigated in this study provided evidence of a strong reliability coefficient, providing additional strength to the test's psychometric properties. The concurrent validity coefficient gave support to further uses of the HBGSI. However, further validation should be conducted if decisions about student placement into different programs are to be made using this instrument. Finally, the item-level factor analysis on the HBGSI helped identify the main factors that are involved in the identification of Hispanic gifted students. Those were Social and Academic Language, Cultural Sensitivity, Familial, Motivation for Learning, Collaboration, Imagery, Achievement, Support, Creative Performance, Problem Solving, and Locus of Control. More research is necessary that could duplicate the findings and support the conclusions from this study with another sample. Ultimately, we hope that we have provided insight and further information into the improvement of practices and identification of Hispanic bilingual students and provided information for the improvement of the screening practices which in due course may offer a more universal approach to equality in GT programs.

Several methods could help minimize the inaccuracy in the interpretation of the results of measures when testing language minority students. One of them is to validate the assessment instruments that are used with Hispanic students in reference to the particular use for which the test is being used (Anastasi & Urbina, 1997). Another important method to consider when assessing minority language students is the norming sample that is used to standardize an instrument. Valencia and Suzuki (2001) reported that since the Stanford-Binet intelligence test was introduced into the U.S. in the early twentieth century, the standardization sample used for the norming of this test remained, for over 60 years, as being predominantly White, excluding all minorities from the norms, until 1973 when the test was undergoing one of its many revisions. Extending the sample to include equal proportions of ethnic and language minorities in the norming sample of a standardized instrument could provide improvements towards the accuracy of tests' results (Valencia & Suzuki).

A third important topic to consider is the one described by Geisinger (1992). He advised on several main validity issues to consider when assessing language minority students: criterion-related -which includes concurrent and predictive- content, and construct validity. He emphasized how construct validity and well-trained test users can complement each other. Further research is constantly encouraged in order to better fit the ever-growing population of minority language students. Procedures such as validation of instruments are critical when assessing this type of student.

A fourth consideration is the one expressed by Ford and Thomas (1997). They stated their concern in the area of minority underachievement in U.S. schools and their rationale emphasized the lack of a consensus on the definition of giftedness, and the inappropriate methodology of assessing minority students. These two topics are pivotal to the identification of Hispanic GT potential students. Their promotion of the combination of different tools and methods helped remedy some of the inherent problems. They also stressed the use of quantitative and qualitative research as beneficial tools in the assessment process.

Finally, and after many decades of contradicting theories and beliefs about bilingual and gifted students, researchers started spreading the notion that standard IQ tests were ineffective assessment tools for the identification of giftedness among culturally diverse backgrounds (Castellano & Díaz, 2002). In order to accommodate for some of the differences between White and minority students regarding assessment fairness, teachers have started implementing new techniques. The use of a variety of instruments to assess minority language speakers has become an alternative and a necessity in the U.S. today. According to the Standards for Educational and Psychological Testing (1985), revised in 1999, an attempt was made to provide equal testing opportunities to all students in the form of alternative types of assessments that are necessary to satisfy English language learners. Minimal validity was placed on tests that do not take into consideration language differences. Additionally, the assessment of minority speaking students needs to be more in-depth and detailed than native speaking students (Mclean, 1995).

Castellano (1998) suggested that the combination of qualitative and quantitative measures could provide more accurate profiles of bilingual gifted students. Fortunately, several school districts across the nation have adopted a multiple criteria approach when identifying and assessing bilingual gifted students. These measures include portfolio assessment, numerous observations, behavioral checklists, past school performance, parental involvement, samples of creativity and/or achievement, dynamic assessment where the students put new knowledge into practice, and the use of verbal and non-verbal tests. These are the main tools that teachers and

educators can use in the process of screening or identifying potential minority candidates for GT programs.

Castellano and Díaz (2002) noted that one does not need to be fluent in English to be intelligent. Gifted children come from all different ethnic and linguistic groups. The concept of proper identification of potential GT students is the reason for the underrepresentation of minorities in such programs. This disproportion is the result of an educational system that does not accommodate culturally and linguistically the diversity in students (Castellano & Díaz, 2002; Harris, Rapp, Martinez, & Plucker, 2007).

All of these are optional suggestions that teachers and educators in the field of bilingual should consider when assessing language minority students. Several books (Castellano, 2002; Valdés, 2003; Valencia & Suzuki, 2004) have been recently published that help understand the under-representation of minority students in GT programs and add explanations and research on the field of minority language assessment.

Conclusion

The United States has seen over time a change in the societal demographics that have characterized its history. Influx from many immigration movements has left the United States with a blend of citizenry. This transformation has been reflected in all parts of society, consequently affecting the demographics of the public schools. But representation of minorities and special populations has not been equally distributed in schools programs. Statistics show as much as a 70% misrepresentation of minority in GT programs (Ford & Thomas, 1997).

Researchers have commented on the issue of the under-representation of minority students in GT programs for some time (Bermúdez & Márquez, 1998; Cantu, 1998; Castellano, 1998; Castellano & Díaz, 2002; Cohen, 1990; Cunningham, Callahan, & Plucker, 1998; Jean, 1996; Irby, 1993, 2000; Lara-Alecio, Irby & Walker, 1997; Masten, Plata, Wenglar, & Thedford, 1999; Mclean, 1995; Plata, & Masten, 1999) and have offered alternative methods of screening and identifying minority language GT students (Ford, & Grantham, 2003; Ford, & Thomas,1997; Vanderslice, 1998). The dilemma of accuracy in testing multicultural background students was recognized early in the first decade of the twentieth century. However, it was not until the 1950's when it received the proper attention (Anastasi & Urbina, 1997).

Moreover, a consensus on the definition of intelligence and giftedness is necessary. Many fruitless debates have been initiated regarding the construct of intelligence and how to measure it (Valencia & Suzuki, 2001). Conventionally speaking, tests depend on language as a means of communication in the conveyance of questions and answers. Being able to distinguish between the students' *inability* to express content knowledge and their *lack* of content knowledge represents quite a challenge for teachers and educators. This inaccuracy is sometimes reflected in test results that may not indicate the true characteristic intended to be measured (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999). As expressed by the National Research Council (2000), unless the assessment of minority language speakers had intended to target English skills, any other performance results can be considered inaccurate. It is imperative that teachers and educators give special consideration to the language and culture of the student in the development, administration, scoring and interpretation of test scores, especially if decisions are

to be made based on the test results. This same concept applies to the test norms that are usually based on English speaking individuals. The American Educational Research Association, American Psychological Association, and National Council on Measurement in Education (1999) clearly expressed the notion that if a student does not perform well on a test, it could be the consequence of poor language proficiency instead of lack of content knowledge. Another important issue to be cognizant of is the fact that some bilingual students speak Spanish at home but they use English as their academic language, aggravating the choice of a language for a test.

Additionally, The American Educational Research Association, American Psychological Association, and National Council on Measurement in Education (1999) recommended trying to minimize the threats to validity and reliability of the interpretation of the test scores that may be related to language differences. Another important concept was testing an individual in the language he/she is most proficient or feels more comfortable.

Furthermore, instruments need to be a solid solution to the existing controversial problem relating to the interpretation of scores, and *must* be characterized by two critically important concepts: validity and reliability (Gall, Borg, & Gall, 2007). These properties are vital when assessing students and interpreting their scores. The need to develop and/or validate instruments that reflect students' cultural backgrounds has become a priority in the U.S. today. Irby and Lara-Alecio (1996) developed the Hispanic Bilingual Gifted Student Instrument (HBGSI), a screening tool that attempts to equalize Hispanic students' opportunity to enter GT programs. The HBGSI was designed to help identify potential gifted students among the Hispanic population of students, thus attempting to reverse the under-representation of Hispanic students in gifted education, and making an effort to satisfy the need to develop instruments that accommodate for this specific fast growing population.

References

American Educational Research Association, American Psychological Association, National Council on Measurement in Education. (1999). S*tandards for educational and psychological testing.* Washington, DC: American Educational Research Association.

Anastasi, A. (1985). Psychological testing: Basic concepts and common misconceptions. In A.M. Rogers & C.J. Scheirer (Eds.), *The G. Stanley Hall Lecture Series, 5,* 87-120. Washington, DC: American Psychological Association.

Anastasi, A. (1992). Introductory remarks. In K. Geisinger (Ed.). *Psychological testing of Hispanics* (pp.1-7). Washington, DC: American Psychological Association.

Anastasi, A., & Urbina, S. (1997). *Psychological testing* (7th ed.). Upper Saddle River, NJ: Prentice-Hall.

Bermúdez, A., & Márquez, J. (1998). Insights into gifted and talented English language learners. *Intercultural Development Research Association Newsletter*. Retrieved from http://www.idra.org/newslettersubscribe.htm/Newslttr/1998/Jun/Andrea.htm

Brice, A., & Brice, R. (2004). Identifying Hispanic gifted children: A screening. *Rural Special Education Quarterly, 23*(1), 8-14.

Brown, J. (2001). What is an eigenvalue? Shiken: JALT testing & evaluation. *SIG Newsletter, 5,* 13-16. Retrieved from http://www.jalt.org/test/bro_10.htm

Callahan, C. M. (2005). Identifying gifted students from underrepresented populations. *Theory Into Practice, 44*(2), 98-104.

Cantu, L. (1998). Traditional methods of identifying gifted students overlooks many. *Intercultural Development Research Association Newsletter, 6*, 1-14.

Castellano, J. (1998). *Identifying and assessing gifted and talented bilingual Hispanic students* (Eric Document Reproduction Service No. ED 423 104). Retrieved from http://www.ericfacility.net/databases/ERIC_Digests/ed423104.htm

Castellano, J., & Díaz, E. (2002). *Reaching new horizons. Gifted and talented education for culturally and linguistically diverse students*. Boston, MA: Pearson Education Company.

Cattell, R. (1966). The Scree test for number of factors. *Multivariate Behavioral Research, 1*(2), 140 –161.

Cohen, L. M. (1990). *Meeting the needs of gifted and talented minority language students* (ERIC Document Reproduction Service No. ED 321485). Retrieved from http://www.ericec.org/digests/e480.html

Colangelo, N., & Davis, G. A. (1991). Introduction and historical overview. In N. Colangelo & G. A. Davis (Eds.). *Handbook of gifted education* (pp. 3-13). Needham Heights, MA: Allyn and Bacon.

Collins, D. R. (2008). Educational differences: The educational backdrop of the Black students of the 1954 Era and the realities of contemporary African American students. *National Forum of Multicultural Issues Journal, 5*(1), 1-22.

Cronbach, L. (1975). Beyond the two disciplines of scientific psychology. *American Psychologist, 30*(2), 116-127.

Cunningham, C., Callahan, C., & Plucker, J. (1998). Identifying Hispanic students of outstanding talent: Psychometric integrity of a peer nomination form. *Exceptional Children, 64*, 197-209.

deWet, C.F. (2005, Winter). The challenge of bilingual and limited English proficient students. *The National Research Center on the Gifted and Talented.* Retrieved from http://www.gifted.uconn.edu/nrcgt/newsletter/winter05/winter053.html

Cummins, J. (1999, March). *Research, ethics, and public discourse: The debate on bilingual education*. Paper presented at the National Conference of the American Association of Higher Education, Washington, DC.

Daves, C. W. (Ed.). (1984). *The uses and misuses of tests.* San Francisco, CA: Jossey-Bass.

Donovan, M. S., & Cross, C. T. (Eds.). (2002). *Minority students in special and gifted education.* Washington, DC: National Academies Press.

Eyde, L. D., Moreland, K. L., Robertson, G. J., Primoff, E. S., & Most, R. B. (1988). *Test user qualifications: A data-based approach to promoting good test use.* Washington, DC: American Psychological Association.

Fernández, A. T., Gay, L. R., Lucky, L. F., & Gavilán, M. R. (1998). Teacher perceptions of gifted Hispanic limited English proficient students. *Journal for the Education of the Gifted, 21*(3), 335-351.

Ford, D. (2010). Under-representation and gifted education: The more things change, the more they must not stay the same. *Gifted Education Press Quarterly, 24*(4), 2-6.

Ford, D., & Grantham, T. (2003). Providing access for culturally diverse gifted students: from deficit to dynamic thinking. *Theory Into Practice*, *42*(3), 217-225.

Ford, D., & Thomas, A. (1997). *Underachievement among gifted minority students: Problems and promises*. Retrieved from http://www.ericec.org/digests/e544.html

Gall, M., Borg, W., & Gall, J. (2007). *Educational research* (8th ed.). New York, NY: Longman.

Geisinger, K. (1992). Fairness and selected psychometric issues in the psychological testing of Hispanics. In K. Geisinger (Ed.), *Psychological testing of Hispanics* (pp. 17-42). Washington, DC: American Psychological Association.

Harris, B., Rapp, K. E., Martinez, R.S., & Plucker, J. A. (2007). Identifying English language learners for gifted and talented programs: Current practices and recommendations for improvement. *Roeper Review*, *29*(5), 26-29.

Hughes, C., Shaunessy, E., Brice, A., Ratliff, M. A., &Alvarez-McHatton, P. (2006). Code switching among bilingual and limited English proficient students: Possible indicators of giftedness. *Journal for the Education of the Gifted*, *30*(1), 7-28.

Institute of Education Sciences. (2010). *Status and trends in the education of racial and ethnic minorities*. National Center for Education Statistics, U.S. Department of Education. Retrieved from http://nces.ed.gov/pubs2010/2010015/tables/table_7_3.asp

Irby, B., Hernandez, L., Torres, D., & Gonzalez, C. (1997). *The correlation between teacher perceptions of giftedness and the Hispanic Bilingual Screening Instrument*. Unpublished manuscript, Department of Educational Leadership and Counseling, Sam Houston State University, Huntsville, Texas.

Irby, B., & Lara-Alecio, R. (1996). Attributes of Hispanic gifted bilingual students as perceived by bilingual educators in Texas. *SABE Journal*, *11*, 120-143.

Irby, B., & Lara-Alecio, R. (2003). *The Hispanic Bilingual Gifted Screening Instrument: A factor analysis report*. Retrieved from www.teachbilingual.com

Irby, B., Lara-Alecio, R., & Rodriguez, L. (1999). *Assessment from multiple perspectives for second language learners; an analysis of the Hispanic Bilingual Gifted Screening Instrument* (Eric Document Reproduction Service No. ED 430 404). Retrieved from http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=ED430404&ERICExtSearch_SearchType_0=no&accno=ED430404

Irby, B., Lara-Alecio, R., & Rodriguez, L. (2003a). *A multivariate analysis of the Hispanic Bilingual Gifted Screening Instrument*. Retrieved fromwww.teachbilingual.com

Irby, B., Lara-Alecio, R., & Rodriguez, L. (2003b). *Complementing the assessment of gifted bilingual students with the Hispanic Bilingual Gifted Screening Instrument.* Retrieved from www.teachbilingual.com

Jean, D. (1996, Spring). Valuing, identifying, cultivating, and rewarding talents of students from special populations. *The National Research Center on the Gifted and Talented*. Retrieved from http://www.sp.uconn.edu/~nrcgt/news/spring96/sprng965.html

Johnsen, S., Kitano, M, Montgomery, D., Olenchek, R., Rogers, K., & Van Tassel-Baska, J. (2005). *Proposed NAGC and CEC initial knowledge and skill standards for gifted and talented education with supporting research-based evidence*. Retrieved from http://reference.kfupm.edu.sa/content/j/o/joint_task_force_council_for_exceptional_84979.pdf

Kachigan, S. (1991). *Multivariate statistical analysis*. New York, NY: Radius Press.

Kerlinger, F. (1973). *Foundations of behavioral research*. New York, NY: Holt, Rinehart and Winston.

LaFontaine, H. (1987). *At-risk children and youth- The extra educational challenge of limited English proficient students*. Paper presented to the Council of Chief State School Officers, Washington, DC.

Lara-Alecio, R., & Irby, B. (1993). *Identifying the bilingual gifted*. Paper presented at the 22nd National Association of Bilingual Education Annual Conference, Houston, TX.

Lara-Alecio, R., & Irby, B. (2000). The culturally and linguistically diverse gifted. In C. Reynolds (Ed.), *Encyclopedia of special education* (pp. 506-510). New York, NY: John Wiley & Son.

Lara-Alecio, R., Irby, B., & Walker, M.V. (1997). *Diversity of the gifted*. Retrieved from http://ldn.tamu.edu/Archives/program/articles/gifted.pdf

Marín, G., & Marín, B. (1991). Research with Hispanic populations. *Applied Social Research Methods Series*, *23*, 66-81.

Masten, W., Plata, M., Wenglar, K., & Thedford, J. (1999). Acculturation and teacher ratings of Hispanic and Anglo-American students. *Roeper Review*, *22*(1), 64.

Mclean, Z. Y. (1995). History of bilingual assessment and its impact on best practices used today. *New York State Association for Bilingual Education Journal*, *10*, 6-12.

Muñoz-Sandoval, A., Cummins, J., Alvarado, G., & Ruef, M. (1998). *Bilingual Verbal Ability Test: Comprehensive manual*. Itasca, IL: Riverside Publishing.

Muñoz-Sandoval, A., Cummins, J., Alvarado, G., & Ruef, M. (2003). *Bilingual Verbal Bilingual Verbal Ability Tests features*. Retrieved from http://www.riverpub.com/products/clinical/bvat/features.html.

National Association of Gifted Education. (2008a). *Teacher preparation and program/services standards.* Retrieved from http://www.nagc.org/index.aspx?id=1863.

National Association of Gifted Education. (2008b). *Teacher preparation standards in gifted and talented education*. Retrieved from http://www.nagc.org/NCATEStandards.aspx.

National Research Council. (2000). *Testing English-language learners in U.S. schools: Report and workshop summary*. Washington, DC: The National Academies Press. Retrieved from http://www.nap.edu/catalog.php?record_id=9998.

Ortíz, V., & González, A. (1989). Validation of a short form of the WISC-R with accelerated & gifted Hispanic students. *Gifted Child Quarterly*, *33*(4), 152-155.

Passow, A. H. (1986, February). *Educational programs for minority/disadvantaged gifted students*. Paper presented at the Distinguished Lecture Series of the San Diego Unified School District, CA.

Plata, M., & Masten, W. (1999). Teacher ratings of Hispanic and Anglo students on a behavior rating scale. *Roeper Review*, *21*(2), 139-144.

Quintero, K., & Cooks, J. (2002). Teaching to the test when one size doesn't fill all. *Voices from the Middle*, *10*(1), 60-61. Retrieved from http://www.ncte.org/pdfs/subscribers-only/vm/0101-sept02/VM0101Shades.pdf

Renzulli, J. S. (1986). The three-ring conception of giftedness: A developmental model for creative productivity. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 53-92). Cambridge, England: Cambridge University Press.

Renzulli, J. S. (1998). The three ring conception of giftedness. In S. M. Baum, S. Reis, & L. R. Maxfield (Eds.), *Nurturing the gifts and talents of primary grade students* (pp. 1-27). Mansfield Center, CT: Creative Learning Press.

Renzulli, J. S. (1999). What is this thing called giftedness, and how do we develop it? A twenty-five year perspective. *Journal for the Education of the Gifted, 23*(1), 3-54. Retrieved from http://www.sp.uconn.edu/~nrcgt/sem/semart14.html

Renzulli, J. S. (2000). The identification and development of giftedness as a paradigm for school reform. *Journal of Science Education and Technology, 9*(2), 95-114.

Renzulli, J. S., Harman, R. K., & Callahan, C. M. (1971). Teacher identification of superior students. *Exceptional Children, 38*(1), 211-214, 243-248.

Rodriguez, O. (1992). Technical and societal issues. In K. Geisinger (Ed.), *Psychological testing of Hispanics* (pp.11-15). Washington, DC: American Psychological Association.

Shin, H.B., & Kominski, R.A. (2010). *Language use in the United States: 2007*. Retrieved from http://www.census.gov/prod/2010pubs/acs-12.pdf

The Research Division of the Texas Association for the Gifted and Talented. (2008). *The state of gifted education in Tex*as. Retrieved from http://txgifted.org/files/pdf/2008_ Research_Division_Report.pdf

Texas Education Agency. (2009). *Texas state plan for the education of gifted/talented students*. Retrieved from http://www.tea.state.tx.us/index2.aspx?id=6420

U.S. Census Bureau. (2008). *Newsroom: Facts for features-Hispanic heritage month*. Retrieved from http://www.census.gov/newsroom/releases/archives/facts_for_ features_special_editions/cb08-ff15.html

U.S. Census Bureau. (2010). *2010 census data*. Retrieved from http://2010.census.gov/2010census/data/

U.S. Department of Education, Office of Educational Research and Improvement. (1993). *National excellence: A case for developing America's talented.* Washington, DC:

Valdés, G. (2003). *Expanding definitions of giftedness, the case of young interpreters from immigrant communities*. Mahwah, NJ: Lawrence Erlbaum Associates.

Valencia, R., & Suzuki (2001). *Intelligence testing and minority students*. Thousand Oaks, CA: Sage Publications.

Vanderslice, R. (1998). Hispanic children and giftedness: Why the difficulty in identification? *The Delta Kappa Gamma Bulletin, 64*(3), 18–23.

Warger, C., & Burnette, J. (2000). *Five strategies to reduce overrepresentation of culturally and linguistically diverse students in special education* (ERIC/OSEP Digest #E596). Retrieved from http://firstsearch.oclc.org/webz/FSFETCH?fetchtype= fullrecord:sessionid=sp01s w01-41694-dls3dld

Yoon, S. Y., & Gentry, M. (2009). Racial and ethnic representation in gifted programs. *Gifted Child Quarterly, 53*(2), 121-136.