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The Reliability and Validity of a Spanish Translated Version of the Gifted Rating Scales

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Abstract

This study was a preliminary examination of the psychometric properties of a newly developed Spanish translated version of the *Gifted Rating Scales-School Form (GRS-S)*. Data was collected from elementary and middle schools in northeastern Puerto Rico. Thirty teachers independently rated 153 students using the GRS-S Spanish Form. Results indicated strong internal consistency for teacher ratings with alphas ranging from .98 to .99. Intercorrelations between scales are moderate to strong, ranging from .88 to .97. Factor testing of two separate models supported a six factor model proposed by authors of the GRS-S. Results provided initial support for the GRS-S Spanish translated version as a reliable and potentially useful screening measure to assist in the identification of island Puerto Rican gifted students.

Keywords

Gifted identification; Gifted Rating Scales; multi-cultural assessment

The concepts of giftedness and talent have not been without controversy; in fact, the concept has engendered a level of contentiousness within society referred to by some as a “love-hate” relationship (Benbow & Stanley, 1996; Colangelo & Davis, 2003; Gallagher & Weiss, 1979; Pfeiffer, 2008). American society values unique individuals who have overcome adversity and become successful and highly accomplished, but, at the same time, our culture is firmly committed to notions of equity and the equality of all citizens (Colangelo & Davis 2003). A recent expression of this commitment to egalitarianism in the United States is seen in the Public Law 107–110, No Child Left Behind Act of 2001 (NCLB). While NCLB encourages establishing global academic goals for all children, there is little consideration of differences in students’ individual ability levels or the needs of students at the high-end of academic performance. The educational system may be commended for wanting to increase the level of academic achievement for all students, but not for neglecting the needs or failing to provide support for children with special talents and abilities.

Children with special talents and abilities in Puerto Rico have also experienced insufficient support (Pérez-Brebán 2005b). However, there has been recent interest in serving Puerto Rico’s gifted population. For example, Pérez-Brebán (2005a) reports recent initiatives to develop a division of gifted education within Puerto Rico’s educational system. One of the

problems facing gifted education in Puerto Rico today is the challenge of correctly identifying gifted students. Many contend that this is one of the most critical issues to be resolved before the field can move forward and better serve gifted students. Over a 10-year period, two different surveys rated identification as either the primary (Cramer, 1991) or secondary problem (Pfeiffer, 2003) facing the gifted field. The *National Report on Identification: Assessment and Recommendations for Comprehensive Identification of Gifted and Talented Youth* (Richert, Alvino & McDonnel, 1982) highlighted several problems with the identification process, many of which still have not been rectified. First, the great majority of instruments are designed to only measure students who are achieving academically, regardless of performance in other areas. Second, some instruments have been used to assess areas of giftedness for which they were not normed. Use of intelligence tests to qualify students for gifted programs that include nonacademic components, e.g., creative arts, is an example of this practice. Third, tests typically used to identify giftedness do not necessarily predict adult expertise or success. It is common to find adults who develop an expertise in a specific field, despite failing to thrive academically during their school years (Richert, Alvino & McDonnel, 1982).

Use of teacher and parent rating scales has been common in the identification of gifted students. However, the majority of these scales suffer from limitations compromising their diagnostic value (Jarosewich, Pfeiffer & Morris, 2002). Many widely used scales include normative samples not representative of the population, lower interrater reliability and lack of diagnostic precision (Jarosewich, Pfeiffer, & Morris, 2002; Siegel & Powell, 2004). Despite these problems, ratings by teachers and parents are still considered an important method to assist in the identification of gifted students (Davidson, 1986; Pfeiffer, 2002).

It is precisely because existing gifted ratings scales are subject to such limitations the *Gifted Rating Scales* instrument (GRS; Pfeiffer & Jarosewich, 2003) was developed. The GRS not only measures academic and intellectual ability, but also creativity, leadership, and artistic talent. Standardization of the GRS utilized a sample that matched the latest U.S. census in terms of race/ethnicity, parent education level and regional representation. Additionally, during standardization, the GRS was co-linked to the new *Wechsler Intelligence Scale for Children-Fourth Edition* (WISC-IV) and *Wechsler Preschool and Primary Scale of Intelligence-Third Edition* (WPPSI-III) (Sparrow, Pfeiffer & Newman, 2005). As will be discussed, a psychometrically-sound rating scale is considered valuable, not only in the U.S., but in Puerto Rico and other countries.

Lee and Pfeiffer (2006) recently examined the reliability and validity of a Korean-translated version of the GRS, using both teacher and parent raters. They found strong reliability for both teacher and parent ratings in addition to substantial correlations with students' school performance. It was of particular interest to explore whether a Spanish version of the GRS might similarly be valid with the island-residing Puerto Rican population. The interest stems from the fact that the population is subject to the federal laws and legislation of the U.S. government, which, at this time, encourages but not mandates that states provide special programs for the gifted (Stephens, 2008). Despite these federal guidelines, there are currently no island-wide programs for gifted children (Asociación de Padres de Niños Dotados de Puerto Rico, 2004). A few privatized or teacher-initiated programs exist,

however, even for them the lack of early identification remains the major problem (Pérez-Brebán 2005b).

PURPOSE OF THIS STUDY

The purpose of this study was to translate into Spanish and test the reliability and construct validity of the Gifted Rating Scales-School Form (GRS-S). The premise was that a GRS-S Spanish form would demonstrate acceptable reliability and validity as a screening measure for identifying gifted students in Puerto Rico.

METHOD

Demographics and sample Participants were recruited from ten randomly selected public schools from the northeast shore of Puerto Rico. The average family size in this region is 3.33; 98.4% of the population is Hispanic/ Latino, the majority of which are, presumably, of Puerto Rican descent (U.S. Census 2000). The median family income is \$23,412 (in comparison to U.S.: \$50,046; Island-wide: \$16,543), thus 30.7% of families live below the U.S. poverty level. Although this area is mostly an urban metropolis, five of the schools meet the criteria for “rural” schools; the other five as suburban, as southern parts of the region are elevated, thus distancing some communities from metropolitan areas. Six of the schools were elementary (grades K-5), the other four middle schools (grades 6–8). The sample consisted of 153 participants, 72 male and 81 female. The participants were from grades one through eight and ranged in age between 7 and 14 years ($M = 11.12$ years; $SD = 2.32$); the mean age of the males was 11.24 years ($SD = 2.27$); the mean age of the females was 11.06 years ($SD = 2.34$). All participants were native to Puerto Rico and born of Puerto Rican parents. Participants were selected by teachers who were instructed to nominate students from varying ability levels based on their classroom performance.

Thirty teachers participated in the study and completed GRS-S Spanish Forms on the 153 students. All teachers completed, at a minimum, a bachelor’s degree in education. Participating elementary school teachers were all “home-room” teachers and taught fundamental academic subjects (i.e. Spanish, Math, Social Studies, and Science). Participating middle school teachers were endorsed in, and taught, one of four core courses: Spanish, Math, Social Studies, and Science.

INSTRUMENTATION

Gifted Rating Scales - School Form (GRS-S)

The GRS (Pfeiffer & Jarosewich, 2003) is a teacher-completed instrument and includes a Preschool/ Kindergarten Form (GRS-P) for ages 4:0 to 6:11 and a School Form (GRS-S) for ages 6:0 to 13:11. Only the GRS-S was utilized in this study. The GRS-S consists of six scales with 12 items each for a total of 72 items. The form yields raw score totals on all scales, which are converted to age-based T-scores and associated cumulative percentages.

The GRS is based on a multi-dimensional model of giftedness incorporating the *Munich Model of Giftedness and Talent* (Zigler and Heller, 2000) and the typology appearing in the

U.S. Department of Education Report, *National Excellence: A Case for Developing America's Talent* (Ross, 1993). Below is a brief description of each of the six *GRS-S* scales:

Intellectual Ability. This scale measures the teacher's perception of a student's verbal and/or nonverbal mental skills, capabilities, or intellectual competence. Aspects of intelligence measured by this scale include abstract reasoning, problem solving, mental speed, and memory.

Academic Ability. This scale measures the teacher's perception of a student's skill in dealing with factual and/or school-related material. Advanced competence and high levels of proficiency in reading, math, and other aspects of the school curriculum are indicative of academic talent, as is facility in acquiring new knowledge and skills and the ability to understand complex material. Students who are academically gifted often have large stores of information including broad knowledge of the world around them.

Creativity. This scale measures the teacher's perception of a student's ability to think, act, and/or produce unique, original, novel or innovative thoughts or products. Creativity can be expressed in a variety of ways: how a student solves problems, experiments with new ideas, formulates a solution to a group project, and/or uses imagination. Creatively gifted students are inventive, curious and inquisitive. They show a preference for challenge and complexity and engage in problem solving that is insightful and creative.

Artistic Talent. This scale measures the teacher's perception of a student's potential for, or evidence of ability in drama, music, dance, drawing, painting, sculpture, singing, playing a musical instrument, and/or acting. Artistic talent can be expressed in a variety of ways: how a student approaches activities, completes assignments, and/or uses art supplies or artistic media. Artistically gifted students learn artistic skills quickly and exhibit more technical sophistication.

Leadership Ability. This scale measures the teacher's perception of a student's ability to motivate others toward a common or shared goal. Leaders understand and monitor social dynamics and have strong interpersonal communication and conflict resolution skills. They effectively orchestrate collective action and influence group behavior. Gifted leaders exhibit strong social judgment and prosocial values such as integrity and trustworthiness and demonstrate the drive to lead and take initiative.

Motivation. This scale refers to the student's drive or persistence, desire to succeed, tendency to enjoy challenging tasks, and ability to work well without encouragement or reinforcement. The motivation scale is *not* viewed as a type of giftedness, but rather as the dynamic energy that drives or impels a student to achieve, akin to Tannenbaum's (1997) formulation that emphasizes drive as an important factor in explaining a gifted student's performance.

Each item is rated on a nine-point scale divided into three ranges: 1–3 Below Average, 4–6 Average, and 7–9 Above Average. This rating scale allows the teacher to first determine whether the child is below average, average, or above average for each item, compared to

other students the same age. The rating scale then allows the teacher to determine, within the specific range, whether the child is at the bottom, middle or top of the range.

The GRS-S scores from the standardization sample have strong reliability and validity (Pfeiffer & Jarosewich, 2007). Coefficient alphas ranged from .97 to .99 for the scales of the GRS-S and 1-week test-retest reliability coefficients were .88 or greater. The GRS-S scales were strongly correlated with other instruments measuring competencies related to giftedness, such as intelligence, as measured by the *Wechsler Intelligence Scale for Children-Fourth Edition* (WISC-IV). Further, the GRS-S scale scores discriminated children identified as gifted from children identified as not gifted (Margulies & Floyd, 2004). The GRS-S manual provides a classification system that indicates the likelihood that a student is gifted, based on their T score.

PROCEDURE

Written authorization was obtained from the university human research subjects committee and The PsychCorp, Harcourt Assessment Company, publisher of the GRS, to translate the scale into Spanish and evaluate its utility with the Puerto Rican population. Administration of the GRS-S was approved by the Puerto Rico Department of Education.

A rigorous translation procedure was followed in developing the GRS-S Spanish Form (Geisinger 1994; International Test Commission, 1993). A total of nine individuals, fluent in both Spanish and English, participated in the translation process; English was the first language for three of the participants, with Spanish as the first language for all others. Additionally, all participants had experience, either as educators or administrators, in both Puerto Rico and United States school districts, and were knowledgeable of both the Puerto Rican and North American culture.

The procedure began with an item-by-item translation of the 72 items by the primary investigator. Items were translated into Spanish by the first author of this article making necessary adaptations to ensure that each item was culturally meaningful while avoiding alteration of the original concept each item presented; the first author of the GRS-S was consulted throughout this initial process. A panel of seven individuals was provided a copy of the English version of the GRS-S, and asked to individually review and critique in writing the quality of the translation.

The panel then met as a group and reviewed each item, discussing their individual critiques, and provided suggested revisions of the translated GRS-S, which were taken into consideration in drafting a new revision. This new revision of the GRS-S Spanish Form was then translated back into English by another individual who had no previous exposure to the earlier translation process and was unfamiliar with the GRS-S. This “back translation” was then compared to the original version of the GRS-S, with input from its first author. Discrepancies were examined and final necessary adaptations were made to complete the final Spanish Form. Discrepancies were noted for few items and adaptations primarily involved selecting Spanish words that more accurately depicted the concept intended.

Principals from the randomly selected schools were contacted to solicit the participation of their schools. Once principals granted entry into the schools, informed consent was obtained from teachers who volunteered to participate in the study. Teachers who agreed to participate were instructed to select five or six students in their class: one student who was currently functioning very above grade level academically; one student who was currently functioning above grade level academically; one to two students who were currently functioning at grade level academically; one student who was currently functioning below grade level academically; and one student who was currently functioning very much below grade level academically.

RESULTS

Descriptive and Reliability Data

Descriptive statistics for the GRS-S Spanish Form are illustrated in Table 1. Means and standard deviations for each of the scales are reported, which ranged from 47.41 to 48.29 and 14.99 to 15.75, respectively. Cronbach's (1951) alpha coefficients for the six GRS-S Spanish Form scales for the 153 participants in the Puerto Rico sample are also reported. Estimates ranged from .98 (Intellectual Ability) to .99 (all other scales). The split-half reliability scores for the teacher ratings were also quite strong, ranging from .91 to .98. Correlation coefficients between the GRS-S Spanish Form scales are presented in Table 2. As can be observed, intercorrelations were strong, ranging from .86 between Motivation and Artistic Talent to .97 between Academic Ability and Intellectual Ability.

Discriminant Validity of Factors

The hypothesized six-factor model for the GRS-S Spanish Form was tested by confirmatory factor analysis (CFA) using LISREL 8.7 (Joreskog & Sorbom, 2004), with a maximum likelihood estimation, utilizing the variance-covariance matrix. Additionally, the scale of each latent variable was specified as having a variance of one, due to the assumption of standardizing the latent constructs. One of the goals of a CFA is to examine the relationship of a specified theoretical model to one's sample data. It is just as necessary; however, to provide evidence that specified model indicates better fit when compared to an alternative model. Although fit indices are typically used to measure how well an empirical model compares to a baseline or independence model, it is often more precise to compare alternative structures of the same model to each other. To this end, the original six factor solution proposed by Pfeiffer & Jarosewich (2003) was tested, along with a unidimensional (g) model of giftedness. Several measures of fit were utilized to obtain a holistic view of the model-data performance, including the normed fit index (NFI), comparative fit index (CFI), relative fit index (RFI), the standardized root mean residual (SRMR), the root mean square error of approximation (RMSEA), and the ratio between the model chi-square and degrees of freedom.

The NFI and CFI are baseline comparison fit indices designed to measure how well the proposed model fits the data compared to an independence model, which assumes that there are no relationships, with estimates greater than .95 as evidence of good model fit. The SRMR and RMSEA should be examined as a population discrepancy fit indices, with values

up to .10 as evidence of acceptable fit, though it is preferred to see estimates less than .05. Though a model chi-square and associated p-value are typically used in latent models, this statistic is particularly sensitive to sample sizes less than or greater than 300; thus, a useful heuristic is the ratio of the chi-square to the model degrees of freedom, with values less than 3.0 as evidence of good model fit. Finally, in order to compare the two proposed models to each other, the Akaike Information Criterion (AIC) was used as the log likelihood measure, with smaller values indicating better fit.

As evidenced by results reported in Table 3, the proposed six factor model fit the data well: $\chi^2(2469, N = 159) = 5990.20, p < .01$; RMSEA = .10 (.095, .111; 95% confidence band); NFI = .98; CFI = .99; RFI = .98; SRMR = .02; $\chi^2/df = 2.43$, AIC = 7058.87. Modification indices indicated that the model could be slightly improved by setting error covariances between several items; however, the specified suggestions were between items within a particular scale and while statistical adequacy would have been achieved, conceptual parsimony would have not. Furthermore, it is generally deemed inappropriate to add such covariance terms (Bentler, 1990) with exceptions made when time variant properties warrant the addition. Structure coefficients for each item-scale relationship under the 6-factor model indicated that items were described well by the latent factors with strong ranges observed for each scale: Intellectual (.97–.98), Academic (.93–.99), Creativity (.93–.98), Artistic (.96–.97), Leadership (.92–.98), and Motivation (.97–.98). Associated effect sizes, evidenced by the R², indicated that significant proportion of variation for each item was explained by its proposed construct (Table 4).

Compared to this six-factor solution, the test of a single factor (unidimensional model) indicated that while several of the independence and error indices were within acceptable guidelines (Table 3), the RMSEA was nearly three times as large than the 6-factor solution, the χ^2/df was nearly five times as large, and the Model AIC was more than 4 times greater than the original model, indicating that the 6-factor model fit significantly better than the single, g factor model. Though structure coefficients were still strong for a latent g factor, ranging from .78–.98, the disparities between the χ^2/df , RMSEA, and especially the model comparison index (AIC) were great enough to preliminarily conclude that the initial model was a better selection for data fit.

Criterion Validity

The criterion validity of the GRS-S Spanish Form was assessed by examining the bivariate correlations between the GRS-S scales and student's grades in core academic classes of Math, Science, Social Studies, Spanish, and English. A subsequent total grade point average (GPA) was also calculated as a function of these estimates. The GRS-S Spanish ratings completed by teachers were strongly correlated with student grades (Table 5), with the strongest correlations between the GRS-S Spanish scales and student's total GPA. Academic Ability and Motivation scores had the strongest, and nearly identical, relationships with the selected student outcomes. Conversely, Artistic Ability scores showed the lowest correlation with student's academic performance (ranging from .67 –.79).

Given the strength of the relationships between individual scales and student outcomes, it was also of interest to determine whether the *GRS-S* Spanish scales as a whole predicted

overall students' academic performance, as indicated by total GPA. Results from a multiple regression indicated that 74% of the variability in GPA could be accounted for by the *GRS-S*, a practically observed effect. Within the context of the model; however, the only statistically significant predictor of academic performance was Motivation ($p = .325, p < .05$), when controlling for the effects of the other variables. A summary of the findings are reported in Table 4.

Construct Validity of Scores

The scales from the *GRS-S* Spanish Form were correlated with students' grade point average (GPA) to provide evidence that the constructs from the *GRS* were observed to be related to academic achievement (i.e., convergent validity). *GRS* scores, on the other hand, were not related to gender, length of time the teacher has known the student, or how well they knew the student (i.e., discriminant validity). Results indicated that academic ability and Motivation were most strongly correlated with GPA ($r = .85, .84$). Conversely, weak relationships were observed between the *GRS-S* Spanish Form and gender, length of time, and how well teachers knew students. Observed estimates are reported in Table 7.

DISCUSSION

This study provided a preliminary examination of the psychometric properties of the *GRS-S* in its Spanish-language form in the context of a Puerto Rican population. The internal consistency of scale scores for the present sample indicate that the *GRS-S* Spanish Form scores possess a high degree of internal consistency. Strong alpha coefficients are considered excellent reliability indexes (Cicchetti, 1994), and are one way to assure that scale items assess the same underlying construct. Likewise, the standard error of measure for student score variability were relatively small indicating that student ratings would not typically vary from an average rating, given the internal consistency of the measure. The present estimates of reliability measured here (i.e., internal consistency and standard error of measures) were comparable to the U.S. standardization sample of the *GRS-S*, which resulted in internal consistency ranging from .97 to .99, and standard error of measures values ranging 1.00 to 1.73 (Margulies & Floyd, 2004; Pfeiffer & Jarosewich, 2003, 2007; Ward, 2005). Moreover, these findings are consistent with those found in separate international studies with a Korean-translated (Lee & Pfeiffer, 2006) and Chinese-translated (Petscher & Li, 2007) versions of the *GRS-S*.

Relatively strong intercorrelations among scales were obtained, particularly between the Intellectual Ability scale and the Academic Ability scale. These particular findings are consistent with results of the standardization sample and with previous findings of very strong correlations between measures of intellectual ability and measures of academic achievement in the general population (Wechsler, 2003). A strong correlation (.95) was also found between Motivation and Leadership. Previous research found motivation for achievement to positively correlate with leadership behaviors (McNeese-Smith, 1999). However, strong correlations among other scales remain unexplained; for example, the .96 correlation between Creativity and Academic Ability. It is unclear why creativity and

academic ability would strongly correlate. Although part of what could be observed are halo effects in teacher ratings, future research will want to examine this unanticipated finding.

Overall, the pattern of intercorrelations raises a question whether or not there is sufficient support for the six-factor model for the GRS-S Spanish Form. The present findings lend support to a conceptualization of giftedness reflecting domains sharing one underlying, common factor, perhaps *g*; however, testing for a common factor did not yield as acceptable results as did the original solution. Though partly confounded by a relatively small sample (i.e., approximately half of what would be considered minimally acceptable), perhaps future analyses should involve multiple theoretically driven modeling. Recent research by Petscher & Li (2007) showed that in a Chinese sample of students, a six-factor solution fit better than a *g* model, but also better than 2-factor, 3-factor, and multiple second-order factor models. Though evidence was observed to support the retention of two models, these results could be culturally contextual, and should be studied in greater depth with a larger sample to warrant such testing. A definitive index does not exist to determine model adequacy when understanding factor analytic results, and is often a compromise between statistical adequacy and parsimony. However, the current selected indices appear to lend support for the validity of a six factor model. The current sample size is less than ideal, yet at the same time, the preliminary findings suggest that the GRS-S Spanish Form scores retain appropriate psychometric properties.

Concurrent validity findings provide additional insights regarding the use of the GRS-S Spanish Form with island-residing Puerto Rican students. Correlation coefficients between the GRS-S scales and student academic performance were strongly associated with student's total grade-point average. Results of multiple regression analysis identified the Motivation scale as a significant predictor of students' academic performance, as measured by total grade-point average. This is an important finding since it provides initial support for the value of the Motivation scale, as proposed in the test manual (Pfeiffer & Jarosewich, 2003). A recent validation study using a Korean version of the GRS-S (Lee & Pfeiffer, 2006), on the other hand, reported Intellectual Ability and Academic Ability as significant predictors of student performance, but not Motivation. A more detailed examination of the role of motivation is warranted in future cross-cultural research. Such studies will want to include a battery of standardized motivation and educational tests and measures to better understand the criterion and construct validity of the GRS-S Motivation scale.

Future studies employing a larger and more representative sample of Puerto Rican students that incorporates differences in socioeconomic status and parent education level would be beneficial in further establishing the instrument's validity. A likely next study would be to examine the diagnostic accuracy and incremental validity of the *GRS-S* Spanish form when used as part of a battery of identification measures.

CONCLUSION

Overall, results provide preliminary support for the GRS-S Spanish Form as a reliable and potentially useful screening measure for use in the identification of island-residing Puerto Rican gifted students. Rating scales such as the GRS-S are cost-efficient screening

measures, making them attractive and practical as policies and procedures develop within gifted education programs in Puerto Rico. The availability of a scientifically sound identification measure meets an important need in the field of gifted education in Puerto Rico. At the same time, system-level issues, such as financing the program, will need to be considered in implementing gifted programs across Puerto Rico. Similar to other Latin American countries, the lack of specialized programs in Puerto Rico is due to financial barriers (Soriano, Blumen-Pardo & Castellanos-Simons 2000). Very recently, the only division created for gifted children in Puerto Rico's educational system closed after only three months due to a "lack of funds" (Pérez-Brebán 2005a).

Providing students with educational opportunities to develop their gifts and talents is a costly endeavor. The Puerto Rico Department of Education reported over 630,000 enrolled students in 2004, based on a concrete estimate of two percent of a population as gifted, i.e., approximately 12,600 of these students therefore may be considered eligible for participation in specialized programs. The Council of State Directors of Programs for the Gifted periodically reports financial statistics regarding expenditures for gifted programs across the country. In 1999 they reported that Arkansas, for example, spent \$8,529,963 in one school year to support programs for the 5,277 students identified as gifted or talented. Although expenditures will vary depending on the type of programs and services offered, this statistic helps to conceptualize the magnitude of financial resources entailed in the service delivery of programs for the gifted and talented. Additional island-wide and national attention to this matter, along with added resources, will be essential in the development of gifted education in the island.

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References

- APRENDO Asociación de Padres de Niños Dotados de Puerto Rico. 2004. Retrieved November 14, 2004 from <http://www.prgifted.org>
- Benbow CP, Stanley JC. Inequity in equity: How "equity" can lead to inequity for high-potential students. *Psychology, Public Policy, and Law*. 1996; 2:249–292.
- Bentler PM. Comparative fit indexes in structural models. *Psychological Bulletin*. 1990; 107:238–246. [PubMed: 2320703]
- Cicchetti DC. Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*. 1994; 6:284–290.
- Colangelo, N.; Davis, GA. *Handbook of gifted education*. Boston, MA: Pearson Education Inc; 2003.
- Cramer RH. The education of gifted children in the United States: A Delphi study. *Gifted Child Quarterly*. 1991; 35:84–91.
- The Council of State Directors of Programs for the Gifted. 1998–1999 State of the states gifted and talented education report. 1999 (Available from the Council of State Directors of Programs for the Gifted, 342 Belview Court, Longmont, CO 80501.).
- Cronbach LJ. Coefficient alpha and the internal structure of tests. *Psychometrika*. 1951; 16:297–334.
- Davidson K. The case against formal identification. *Gifted Child Today*. 1986; 9:7–11.

- Gallagher, JJ.; Weiss, P. District of Columbia: Council for Basic Education; 1979. The education of gifted and talented students: A history and prospectus. Occasional paper no. 27. U.S.
- Geisenger KF. Cross-cultural normative assessment: Translation and adaptation issues influencing the normative interpretation of assessment instruments. *Psychological Assessment*. 1994; 6:304–312.
- International Test Commission. Technical standards for translating tests and establishing test score equivalent. 1993 (Available from the International Test Commission, c/o Dr. Ronald Hambleton, School of Education, University of Massachusetts, Amherst, MA 01003).
- Jarosewich T, Pfeiffer SI, Morris J. Identifying gifted students using teacher rating scales: A review of existing instruments. *Journal of Psychoeducational Assessment*. 2002; 20:322–336.
- Joreskog, KG.; Sorbon, D. LISREL 8.7. Mooresville: Scientific Software International; 2004.
- Lee D, Pfeiffer SI. The reliability and validity of a Korean-translated version of the Gifted Rating Scales. *Journal of Psychoeducational Assessment*. 2006; 24:210–224.
- Margulies AS, Floyd RG. Test review. *Journal of Psychoeducational Assessment*. 2004; 22:275–282.
- McNeese-Smith DK. The relationship between managerial motivation, leadership, nurse outcomes and patient satisfaction. *Journal of Organizational Behavior*. 1999; 20:243–259.
- Nunnally, JC.; Bernstein, IH. *Psychometric Theory*. 3rd Ed.. NY: McGraw-Hill, Inc; 1994.
- Pérez-Brebán, M. Ciegos, sordos y mudos en el DE: A la deriva más de 20 mil niños superdotados en el país. *La Perla del Sur*. 2005a Febrero. Retrieved February 10, 2005, from www.periodicolaperla.com
- Pérez-Brebán, M. Los padres de APRENDO: Nadan contra la corriente por el futuro de sus hijos superdotados. *La Perla del Sur*. 2005b Febrero. Retrieved February 10, 2005, from www.periodicolaperla.com
- Petscher Y, U H. Measurement invariance of the Chinese Gifted Rating Scales: Teacher and Parent Forms. *Journal of Psychoeducational Assessment*, 8. 2007
- Pfeiffer SI. Challenges and opportunities for students who are gifted: What the experts say. *Gifted Child Quarterly*. 2003; 47:161–169.
- Pfeiffer SI. Identifying gifted and talented students: Recurring issues and promising solutions. *Journal of Applied School Psychology*. 2002; 1:31–50.
- Pfeiffer, SI., editor. *Handbook of Giftedness*. NY: Springer; 2008.
- Pfeiffer, SI.; Jarosewich, T. *Gifted Rating Scales*. San Antonio, TX: The Psychological Corporation; 2003.
- Pfeiffer SI, Jarosewich T. The Gifted Rating Scales-School Form: An analysis of the standardization sample based on age, gender, race, and diagnostic efficiency. *Gifted Child Quarterly*. 2007; 51:39–50.
- Public Law 107–110. No child left behind act of 2001. 2001. Retrieved August 20, 2004, from <http://www.ed.gov/policy/elsec/leg/esea02/107-110.pdf>
- Richert, ES.; Alvino, JJ.; McDonnel, RC. National report on identification: Assessment and recommendations for comprehensive identification of gifted and talented youth. Washington, DC: U.S. Department of Education, Educational Information Resource Center; 1982.
- Ross, PO. National excellence: A case for developing America's talent. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement; 1993.
- Siegel D, Powell T. Exploring teacher biases when nominating students for gifted programs. *Gifted Child Quarterly*. 2004; 48:21–29.
- Soriano de Alencar, EML.; Blumen-Pardo, S.; Castellanos-Simons, D. Programs and practices for identifying and nurturing giftedness and talent in Latin American countries. In: Heller, KA.; Monks, FJ.; Sternberg, RJ.; Subotnik, RF., editors. *Handbook of giftedness and talent*. 2nd Edition.. Amsterdam: Elsevier; 2000. p. 816–828.
- Sparrow, SS.; Pfeiffer, SI.; Newman, TM. Assessment of children who are gifted with the WISC-IV. In: Prifitera, A.; Saklofske, DH.; Weiss, LG., editors. *WISC-IV: Clinical use and interpretation*. Burlington, MA: Elsevier Academic Press; 2005. p. 282–298.
- Stephens, KR. Applicable federal and state policy, law, and legal considerations. In: Pfeiffer, SI., editor. *Handbook of Giftedness*. NY: Springer; 2008. p. 387–408.

- Tannenbaum, A. The meaning and making of giftedness. In: Colangelo, N.; Davis, GA., editors. Handbook of gifted education. 2nd Ed.. Boston, MA: Allyn and Bacon; 1997. p. 165-169.
- U.S. Department of Commerce, Bureau of the Census. 2000. Retrieved in 2005 from <http://www.census.gov>
- Ward, SA. Gifted Rating Scales. In: Spiers, RA.; Plake, BS., editors. The 16th mental measurements yearbook. Lincoln, NE: University of Nebraska Press; 2005. p. 404-407.
- Wechsler, D. Wechsler Intelligence Scale for Children-Fourth Edition. San Antonio, TX: The Psychological Corporation; 2003.
- Zigler, A.; Heller, KA. Conceptions of giftedness from a meta-theoretical perspective. In: Heller, KA.; M6nks, FJ.; Steinberg, RJ.; Subotnik, RF., editors. International handbook of giftedness and talent. 2nd Edition. Amsterdam: Elsevier; 2000. p. 3-21.

Table 1

Descriptive and reliability statistics for GRS-S Spanish form.

Scales	Mean	S.D.	Cronbach's Alpha	SEM*
Intellectual	48.18	15.25	.98	1.53
Academic	48.20	15.21	.99	1.52
Creativity	48.54	15.75	.99	1.57
Artistic	47.64	15.30	.99	1.53
Leadership	47.41	14.99	.99	1.50
Motivation	48.29	15.26	.99	1.53

* Standard Error of Measure

Table 2GRS-S Spanish form scale correlations^a.

	Intellectual	Academic	Creativity	Artistic	Leadership	Motivation
Intellectual	–					
Academic	.97	–				
Creativity	.96	.96	–			
Artistic	.89	.90	.92	–		
Leadership	.89	.92	.91	.88	–	
Motivation	.91	.93	.91	.86	.95	–

^a All correlations are significant at $p < .01$ level

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Table 3

Measurement model fit indices.

	Model AIC	χ^2/df	RMSEA	SRMR	NFI	CFI	RFI
6-factor	7058.87	2.43	.10	.02	.98	.99	.98
1-factor	29,257.12	11.66	.26	.04	.96	.97	.96

Table 4

Standardized structure coefficients for GRS-S Spanish form.

Item	Intellectual ^a	R ²	Academic ^a	R ²	Creativity ^a	R ²	Artistic ^a	R ²	Leadership ^a	R ²	Motivation ^a	R ²
1	.97	.94	.93	.86	.96	.93	.96	.91	.96	.92	.98	.96
2	.98	.95	.98	.96	.97	.95	.97	.96	.96	.92	.98	.97
3	.98	.96	.98	.95	.98	.96	.97	.96	.97	.93	.98	.92
4	.98	.95	.97	.94	.98	.97	.97	.95	.97	.94	.98	.96
5	.97	.95	.98	.96	.98	.95	.97	.94	.97	.94	.98	.97
6	.98	.96	.98	.96	.98	.96	.97	.93	.98	.96	.97	.98
7	.97	.95	.98	.96	.98	.94	.96	.92	.96	.93	.98	.96
8	.98	.96	.98	.96	.98	.96	.97	.95	.96	.93	.98	.96
9	.98	.96	.99	.97	.97	.96	.97	.94	.96	.92	.97	.94
10	.98	.96	.98	.96	.97	.93	.97	.93	.92	.85	.98	.96
11	.98	.96	.98	.96	.96	.92	.97	.95	.93	.87	.98	.96
12	.98	.96	.98	.96	.93	.87	.97	.94	.97	.94	.97	.94

^a All scales significant at $z > 2$ level

Table 5

Concurrent validity of GRS-S Spanish form and student academic performance.

	Grade Point Average	Math	Science	Social Studies	Spanish	English
Intellectual	.84	.79	.79	.76	.81	.73
Academic	.86	.82	.80	.79	.83	.74
Creativity	.84	.81	.78	.76	.80	.71
Artistic	.79	.75	.73	.76	.76	.67
Leadership	.82	.78	.77	.77	.77	.73
Motivation	.86	.82	.80	.79	.82	.75

Note: All correlations statistically significant: $p < .01$

Table 6

Regression analysis of GRS-S Spanish form scales predicting GPA.

Variable	B	Std. Error	β	t	p -value
Intellectual	−0.001	0.013	−0.01	−0.09	0.93
Academic	0.036	0.019	0.434	1.88	0.06
Creativity	0.006	0.015	0.074	0.41	0.68
Artistic	0.004	0.008	0.051	0.50	0.62
Leadership	0.000	0.012	0.002	0.01	0.99
Motivation	0.027	0.013	0.325	2.10	0.03*

Table 7

Correlations between Spanish GRS-S scores and student GPA, gender, length of time teacher has known the student, and how well the teacher knows the student.

	Grade Point Average**	Gender	Length of Time	How Well Know Student
Intellectual	.84	.14	.01	.17
Academic	.86	.15	.00	.17
Creativity	.84	.12	.03	.19
Artistic	.79	.18	.08	.17
Leadership	.82	.17	.02	.20
Motivation	.86	.16	.03	.20

** All Correlations significant at $p < .01$ level.