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Identification of Gifted Students in Oman: Gender and Grade Differences on the Gifted Rating Scales–School Form

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Abstract

Research suggests that teacher-completed gifted screening scales can reduce undernomination of students with culturally and linguistically diverse backgrounds. The purpose of this study was to examine the use of the Gifted Rating Scales–School Form (GRS-S) in the identification of gifted students in Oman. The participants of the study represented a national sample of 907 students from Grades 1 to 10 in five governorates in Oman. The MANOVA showed that the main effect of the gender was statistically significant on the GRS subscales. Females' mean scores on four subscales (Intellectual Ability, Academic Achievement, Artistic Talent, and Motivation) were higher than males'. A statistically significant effect of the grade was found on the GRS subscales. Third-grade students' ratings of artistic ability were higher than other students' grades.

Keywords

Gifted Rating Scales–School Form, gender differences, gifted, Oman

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Gifted Education in Oman

The field of gifted education in Oman is fairly recent. Oman did not focus on gifted education until the turn of the 21st century. There are few programs moderated by the Ministry of Education (MOE). For example, the ministry organizes the Mental Development Program in which students compete in oral competitions; written tests in math, science, and concepts of geography; and student research projects for specific grades. The Sultan Qaboos University, the only governmental university in the country, organizes a summer club where about 1,000 participants join a group of activities including lectures, symposia, and workshops in the field of innovations, projects, and other recreational activities. The Research Council in Oman (TRC) organizes a workshop for high-achieving students in which 15 to 20 distinguished students from Grades 7 to 9 participate in the Mental Development Program. This meeting includes training in robotics in addition to some lectures in providing participants with basic skills in scientific research and industrial innovation. Also, the MOE organizes the science exploration center where students study recent trends in technology.

In 2013, the MOE established a team of experts from different fields to develop a 5-year plan (2015–2020) dedicated to the identification and education of gifted students in Oman. Despite these efforts to best serve gifted students in Oman, some problems exist. Most of these efforts are still in the form of activities that are organized sporadically. Most of these activities are typical competitions, and no efforts have been made to make use of them in the identification of gifted students or even to provide them with resources to nurture their abilities. Another problem is the absence of the private sector in providing opportunities and grants to gifted students.

The Role of Rating Scales in the Identification of Giftedness

One of the problems of giftedness identification is that most assessment tools are directed toward intelligence testing. A few screening tools exist to consolidate intellectual ability tests in assessing multiple dimensions of giftedness (Jarosewich, Pfeiffer, & Morris, 2002). Teacher rating scales are widely used in the screening and identification of students for participation in programs of gifted students. They are possibly the most frequently used identification tools, coming after intelligence testing, in assessing gifted potential (Pfeiffer, 2002, 2015).

Several teacher rating scales for gifted students exist in the field: Gifted Evaluation Scale, Second Edition (GES; McCarney & Anderson, 1998), Gifted Rating Scales (GRS; Pfeiffer & Jarosewich, 2003a), Gifted and Talented Evaluation Scales (GATES; Gilliam, Carpenter, & Christensen, 1996), Scales for Identifying Gifted Students (SIGS; Ryser & McConnell, 2004), and Scales for Rating the Behavioral Characteristics of Superior Students (SRBCSS; Renzulli et al., 2002). However, the most widely used rating scales have limitations related to their diagnostic value (Jarosewich et al., 2002). Most of these scales have nonrepresentative standardization samples with low interrater reliability and lack of diagnostic value (Jarosewich et al., 2002; Siegle & Powell,

2004). Some of the rating scales assess only specific content areas such as math, language, and social studies (Feldhusen & Jarwan, 2000). Nonetheless, teacher rating scales are considered important in the identification of gifted students (Nicpon & Pfeiffer, 2011; Pfeiffer, 2002, 2015).

Several principles led to the development of the Gifted Rating Scales–School Form (GRS-S): (a) It is user-friendly and does not require extensive training in administration, scoring, and interpretation; (b) it has acceptable reliability and validity indicators; (c) it is based on Pfeiffer's tripartite model of giftedness and the interpretive model that made the screening process simple; and (d) it can supplement intelligence testing (Pfeiffer & Jarosewich, 2003b). The GRS was also developed to assess students' profile of abilities over time. This serves two purposes: The first is related to program eligibility and the second is related to assessing students' progress in gifted education and program effectiveness (Pfeiffer & Jarosewich, 2003b). Another use of the GRS is related to curriculum through providing feedback to both teacher and students regarding the student's progress in one or more areas of the GRS (Pfeiffer & Blei, 2008). The GRS-S can be used as a first-level screening tool for a school or a classroom. It can also be used as a second-level screening tool with students who are already identified with another instrument (Li, Pfeiffer, Petscher, Kumtepe, & Mo, 2008).

Gender Differences on Teacher Ratings

Lee and Pfeiffer (2006) indicated that grade level did not have an effect on the GRS-S subscales. On the other hand, females were rated higher than males in four of the GRS-S subscales. Several research studies have been conducted to explore gender differences on the GRS-S. For example, Pfeiffer and Jarosewich (2007) examined the GRS-S on a U.S. sample of 291 males and 301 females with an age range from 6 to 13 years 11 months. The authors found a statistically significant main effect of gender on the GRS subscales. Females' scores in three subscales were higher than males: Leadership, Motivation, and Artistic Talent. No effect of age was found on the GRS subscales. Li et al. (2008) investigated the reliability and validity of the GRS-S scores on a sample of 499 elementary and middle school students in China. They found age and gender differences in favor of females. Pfeiffer, Petscher, and Kumtepe (2008) explored the validity and internal consistency of the GRS-S and the effect of gender, race/ethnicity, age, and rater familiarity on GRS-S ratings. Participants included 122 students from Grades 1 to 8 from elementary and middle schools in the Southwestern United States. The results indicated no effect of race/ethnicity, age, or rater familiarity with the students. Girls were slightly higher than boys across all the scales. Rosado, Pfeiffer, and Petscher (2015) explored the reliability and validity of a Spanish translation of the GRS-S. Participants included 618 elementary and middle school students (283 males and 335 females) from Grades 1 to 8. Alpha values for the subscales ranged from .98 to .99. The results also indicated that the gender effect was statistically significant in two subscales. Girls' scores in leadership and motivation were higher than boys'. No effect for grade was found.

Regarding the findings of the cross-cultural studies of the GRS-S, most of the research found that females were rated higher than males. For example, Rosado et al.

Table 1. Description of the Study Sample.

Governorate	Gender	Cycle 1 (Grade 1–4)	Cycle 2 (Grade 5–10)	Total
Muscat	Male	42	45	87
	Female	24	69	93
Dhofar	Male	45	45	90
	Female	26	65	91
Al-Dhahirah	Male	43	50	93
	Female	25	60	85
Al-Batinah-North	Male	24	69	93
	Female	23	65	88
Al-Sharqiyah South	Male	44	59	103
	Female	20	64	84
Total		316	591	907

(2015) found that girls were rated more highly than males in both Leadership and Motivation scales in a Puerto Rican sample. Likewise, Pfeiffer and Jarosewich (2007), on a U.S. sample, concluded that scores for girls were significantly higher on the Artistic Talent, Motivation, and Leadership scales. On a Korean sample, Lee and Pfeiffer (2006) found that girls were rated higher on all of the GRS-S scales. In China, Li et al. (2008) concluded that girls were significantly higher than boys on all of the GRS-S scales. Pfeiffer et al. (2008) found no significant gender differences on a Chinese sample.

This study is important for several reasons. First, no studies have been conducted to use an Arabic version of a gifted rating scale such as the GRS-S. Second, there is a great, unmet need to standardize gifted identification tools in Oman. The following question guided this study: Are there any grade and gender differences on teachers' ratings on the GRS-S?

Method

Participants

A random sample of 907 high-achieving students in basic-education schools in Oman was selected during the 2014–2015 school year. The rationale for choosing high-achieving students in both math and science was based on the belief that these students might exhibit signs of giftedness as reflected in teachers' ratings of their abilities. The population was 3,666 students. Basic education in Oman includes Cycle 1 (Grades 1–4) and Cycle 2 (Grades 5–10). The sample was selected based on three demographic variables: grade level (from 1 to 10), gender (male and female), and the governorate (Muscat, Dhofar, Al-Dhahirah, Al-Batinah-North, and Al-Sharqiyah South). Six schools were selected in each of the five governorates (two schools from Cycle 1, two male schools from Cycle 2, and two female schools from Cycle 2). The age range of the students was 5.8 to 14.6 years old. Description of the study sample is included in Table 1.

Instruments

The GRS-S. The scale is designed for teachers to rate students from 6 to 13 years (Pfeiffer & Jarosewich, 2003b). It consists of six subscales with 12 items per each scale for a total of 72 items. These subscales are Intellectual Ability, Academic Ability, Creativity, Artistic Talent, Motivation, and Leadership Ability.

The Intellectual Ability scale assesses the teachers' ratings of students' verbal and mental skills, capabilities, or intellectual competence. The subscale items assess teachers' ratings of students' abstract reasoning, problem solving, memory, and mental speed. The Academic Ability subscale assesses teachers' ratings of students' skills in mastering school content. The subscale items assess competence and proficiency in content areas such as reading and math. The Creativity subscale assesses teachers' ratings of students' ability to think in a unique and original way. The Artistic Talent subscale assesses ratings of students' abilities in performing arts such as drama, music, dance, drawing, playing a musical instrument, and acting. The subscale items assess ratings of students' dealing with activities and completion of assignments. The Motivation subscale assesses teachers' ratings of students' persistence, and enjoyment of learning and challenging tasks. The subscale items assess problem solving, experiments, and group projects. The Leadership Ability subscale assesses ratings of students' abilities to motivate others to achieve a goal. The subscale items assess skills such as conflict resolution, participation in group situations, and interpersonal communication. The GRS-S assesses more developmentally advanced skills than the GRS-Preschool Form (GRS-P).

The classroom teacher rates students' behavioral characteristics on a 9-point scale distributed into three ranges: 1 to 3 = *below average*; 4 to 6 = *average*; and 7 to 9 = *above average*. For the purposes of analysis in this study, the raw score of each of the six subscales was converted to a *T* score with a mean of 50 and an *SD* of 10 as mentioned in the scale manual (Pfeiffer & Jarosewich, 2003b). Means and standard deviations of the GRS-S subscales are illustrated in Table 2.

The English version of the GRS-S was translated into Arabic by a native speaker who had a master's degree from an English-speaking country and who had experience in gifted education as well. Then, the Arabic version was back translated into English by two Arab native speakers to validate the accuracy and suitability of language. The two judges approved the translation as identical to the original text in English. An agreement of about 93% was obtained for the two judges regarding the accuracy of the translation. The revision process was blinded. Also, to ensure the content validity of the instrument, it was shown to a group of professors (judges) of special education, gifted education, math education, and science education. It was also shown to teachers from Cycle 1 and Cycle 2 in elementary and middle schools. These judges (professors and classroom teachers) rated the scale on two dimensions: relevance of the items and linguistic accuracy. Most of the judges rated the scale items as highly relevant. There was an agreement of about 88% among the judges about item relevance. There were very few comments about wording. Also, the scale was pilot tested in two schools: elementary and middle in Muscat. All the classroom teachers who rated the students did not have any comments either about the wording or meaning or the cultural appropriateness of the items.

Table 2. Means and Standard Deviations for the GRS Subscales by Grade Level.

	First (n = 85)		Second (n = 81)		Third (n = 87)		Fourth (n = 63)		Fifth (n = 96)		Sixth (n = 96)		Seventh (n = 101)		Eighth (n = 96)		Ninth (n = 99)		Tenth (n = 103)				
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	$F(9, 897)$	p	η^2
Intellectual Ability	47.64	12.05	49.27	10.44	50.47	9.36	50.88	9.03	49.01	10.16	49.50	9.58	50.74	10.24	48.82	11.16	50.97	9.47	52.41	7.59	1.86	.053	.019
Academic Ability	49.49	11.81	50.59	9.28	48.97	10.32	51.41	8.96	49.33	9.18	49.10	9.62	50.58	10.04	49.16	11.18	50.04	10.08	51.59	9.09	.87	.549	.009
Creativity	49.86	11.66	51.34	9.24	51.50	9.53	50.58	9.13	48.41	9.71	49.28	9.84	50.42	10.31	48.97	10.47	49.95	10.60	50.19	9.07	.87	.546	.009
Artistic	51.05	10.50	52.68	8.71	53.17	8.15	52.48	8.18	48.66	8.93	48.56	9.91	48.72	11.14	48.25	10.43	48.36	10.74	49.88	10.58	3.48	.001***	.034
Leadership Ability	49.61	11.64	50.93	8.72	49.55	9.00	50.84	9.53	49.78	10.00	49.12	10.24	50.66	10.39	49.26	10.28	50.20	10.34	50.33	9.63	.38	.942	.004
Motivation	50.31	11.23	50.93	9.64	50.24	9.12	50.56	9.20	49.15	9.60	48.79	10.68	50.61	10.42	49.55	10.84	49.77	10.38	50.44	8.64	.45	.907	.005

Note. GRS = Gifted Rating Scale.
***$p < .001$.

Table 3. Bivariate Correlation Coefficients Between the GRS Subscales and PCA-Teacher Subscales.

	IA	AA	CREAT	ART	LEAD	MOT	PCA
IA	—	.81**	.75**	.58**	.65**	.73**	.55**
AA		—	.71**	.51**	.68**	.76**	.52**
CREAT			—	.73**	.67*	.70**	.57**
ART				—	.59**	.56**	.46**
LEAD					—	.80**	.49**
MOT						—	.53**
PCA							—

Note. GRS = Gifted Rating Scale; PCA = Profile of Creative Abilities; IA = Intellectual Ability; AA = Academic Achievement; CREAT = Creativity; ART = Artistic Talent; LEAD = Leadership Ability; MOT = Motivation.
*$p < .05$, **$p < .01$, ***$p < .001$.

Reliability and Validity of the GRS-S Scores

The subscales reliability was measured using Cronbach's alpha. The reliability coefficients for the Intellectual Ability, Academic Ability, Creativity, Artistic Talent, Motivation, and Leadership Ability scales were .95, .93, .95, .96, .91, and .96, respectively, for the standardization sample ($n = 907$). An exploratory factor analysis (EFA) was conducted with 907 students to test the six-factor structure of the GRS-S. The direct oblimin rotation yielded six factors with eigenvalues greater than 1 and accounted for 67.24% of the total variance. The simple structure caused the items to load high. The factor structure was similar with the original six-factor model originally proposed by the GRS-S authors. For the purpose of criterion-related validity, GRS-S subscales scores were compared with the teacher rating scale of Profile of Creative Abilities (PCA; Ryser, 2007). The PCA consists of two subtests and two rating scales. The two subtests assess two aspects of divergent production. The rating scale assesses creative abilities, domain-relevant skills, creativity-relevant skills, and intrinsic motivation of children from 5 to 14 years. The PCA rating scale total score was used as a criterion measure for the purpose of concurrent validity. Pearson product–moment correlation was used to explore the relationship between the subscales of GRS-S and PCA. Results from Table 3 indicate that there is a medium correlation at the .01 level; indicating an evidence of the criterion-related validity of the GRS-S (see Table 3 for more details).

Procedure

Fifteen research assistants from five governorates were recruited to collect data. We chose assistants based on their participation in previous research grants and experience in data collection in schools. Some of the assistants had MA and PhD degrees in education or educational psychology. The research grant team conducted a 1-day

workshop in which the assistants received an extensive training on data collection. The workshop included the data collection ethics and the distribution of the sample across each governorate. Also, we gave instructions to assistants to instruct teachers to rate their students the best they know. Then, consent forms were sent to teachers and parents in the elementary and middle schools in the five governorates (Cycle 1 and Cycle 2 schools). Around 50% of the schools agreed to collect data. After collecting the consent forms from parents and classroom teachers, the students were briefed about the grant purpose and goals. The assistants were told to inform teachers to select two students in their classes who met the following academic performance criteria: two students performing at the very above-average level, two students performing at the above-average level, two students performing at the average level, and two students performing at the below-average level. This procedure secured a heterogeneous sample of students according to different academic levels and was consistent with the procedure followed by researchers who validated the scale in international contexts (see Lee & Pfeiffer, 2006; Li et al., 2008). The classroom teachers were told to rate the behavioral characteristics of their students the best they know. The data collection lasted a couple of months. Data were analyzed using SPSS (Version 22). Means, standard deviations, and MANOVA were used to analyze the data of the study.

Results

Gender and Grade-Level Differences on the Arabic Version of the GRS-S

To explore the gender and grade-level differences on the GRS-S, we conducted a two-way between-group MANOVA to analyze multivariate main effects. Preliminary analysis showed that assumptions of multivariate normality and homogeneity of the covariance matrices were satisfactory (Box's $M = 713.51$, $p > .001$). The multivariate main effect for gender was statistically significant on the GRS-S subscales (see Table 4), Wilks's lambda = 0.96, $F(1, 887) = 4.13$, $p < .001$. Females' mean scores on the GRS-S subscales were higher than males' scores in four subscales: Intellectual Ability, $F(1, 887) = 4.31$, $p = .04$, $\eta^2 = .005$, Cohen's $d = .13$; Academic Ability, $F(1, 887) = 7.06$, $p = .008$, $\eta^2 = .008$, Cohen's $d = .20$; Artistic Talent, $F(1, 887) = 14.01$, $p = .000$, $\eta^2 = .02$, Cohen's $d = .26$; and Motivation, $F(1, 887) = 10.82$, $p = .001$, $\eta^2 = .012$, Cohen's $d = .23$. No statistically significant differences between males and females were detected in both Creativity and Leadership subscales. Most of the differences in the mean T scores between males and females were minimal. The effect size of the difference in the Artistic Talent and Motivation subscales was slightly above that of the other Intellectual Ability and Academic Ability subscales. The multivariate main effect for grade level was statistically significant on the GRS-S subscales. A statistically significant difference was just detected in the Artistic Talent subscale, $F(9, 887) = 3.48$, $p = .000$, $\eta^2 = .03$). Post hoc test (using Bonferonni) was conducted and indicated that statistically significant differences were found between third graders and eighth and ninth graders.

Table 4. Means and Standard Deviations for the GRS Subscales by Gender on the GRS-S Subscales.

	Intellectual Ability		Academic Ability		Creativity		Artistic		Leadership Ability		Motivation				
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*(9, 897)	*p*	η^2
Males = (*n* = 466)	49.31	9.89	49.08	10.27	49.62	9.66	48.74	10.13	49.36	10.08	48.87	10.50			
Females = (*n* = 441)	50.72	10.06	50.96	9.62	50.40	10.33	51.32	9.68	50.66	9.78	51.18	9.30	5.67	.001	0.03

Note. GRS = Gifted Rating Scale.

Discussion

The current study explored the gender and grade-level effect on the GRS-S subscales. We found support for the reliability and validity of the Arabic version of the GRS-S scores. The Cronbach's alpha coefficients ranged from .91 to .96. These coefficients were above the minimal standard of .80 (Bracken, Keith, & Walker, 1998). The findings of high reliability coefficients corroborate those reported in the English version (Pfeiffer & Jarosewich, 2003b), the Korean version (Lee & Pfeiffer, 2006), the Chinese version (Li et al., 2008), and the Puerto Rican version (Rosado et al., 2015) of the GRS-S.

The main effect for gender was statistically significant on four of the GRS-S subscales. Females' mean scores in four subscales (Intellectual Ability, Academic Achievement, Artistic Talent, and Motivation) were statistically significant higher than males' scores. The gender differences among the four subscales were minimal as indicated by effect sizes. The mean point difference of the four subscales was 1.5, 1, 3.5, and 3.5, respectively. The difference in mean scores is less than one-half standard deviation. Thus, it is considered a small effect size (Cohen, 1988). This finding corroborates what Pfeiffer and Jarosewich (2007) and Pfeiffer et al. (2008) found that females' ratings are consistently higher than males. They concluded that this slightly minimal difference is not likely because of the standardization sample, rather it is the teachers who "tend to perceive female students in their classes as slightly more motivated and talented artistically and as displaying somewhat stronger leadership ability, when compared to their male counterparts" (Pfeiffer & Jarosewich, 2003b, p. 47). The Motivation subscale does not represent giftedness, but an indicator of how the students' hard working contributes to academic achievement (Pfeiffer & Jarosewich, 2003b). Also, classroom teachers are more rewarding for females' behaviors in the classroom as females tend to follow classroom discipline and rules more than males. Research showed that the gifted females are better than gifted males throughout the school years in achievement (Joan, 2004).

The main effect for grade level was statistically significant only in the Artistic Talent subscale. Third graders obtained a mean of 53.17 and an *SD* of 8.15 although the effect size was small ($d = .03$). The interpretation of this finding is that third graders do not have much pressure related to academic subjects compared with higher levels. Teachers rated third graders as having more artistic talent than other grades. This finding is important as it might infer that students in earlier grades may have more time and effort to do artwork and when they go to upper grades, chances of doing artwork are less. However, the finding regarding the grade-level differences in this study is minimal. This is similar to the U.S. standardization sample (Pfeiffer & Jarosewich, 2003b) and the Korean sample (Lee & Pfeiffer, 2006; Pfeiffer et al., 2008) as no age or grade differences were found. This finding is also important because fourth-grade students' ratings of artistic ability were lower. The reason of this slump is that students become more prone to conformity at the age of 9. Their art turns to be realistic and they stick to rules rather than inventing them up (Runco, 1999). Another interpretation of this finding is when

students go to upper grades, academics are increasingly emphasized. Students with less innate artistic talent begin to be self-conscious of their academic work.

Finally, a number of important limitations need to be considered. First, although the sample was large and robust and it included five governorates in Oman, future research should recruit participants from the remaining six governorates of the country. The results of the current study might be generalizable to different regions in Oman but with caution. Second, because participating teachers rated students whom they nominated based on academic achievement and higher GPAs (grade point averages), the correlations between the subscales might have been influenced by the selection effects. Moreover, interpreting the results from rating scales warrants caution because of possible halo effects (Feeley, 2002). Inflation or overestimation in teachers' ratings might be due to the effect of the student's overall academic ability. Teachers' nomination of high-achieving students in the classroom might have contributed to bias in their ratings. Another suggestion is that future research in Oman might consider the adaptation of new culture-fair instruments such as the Universal Multiple Abilities Scale (UMAS; McCallum & Bracken, 2012). The UMAS serves as a multidimensional instrument to reduce language considerations and depend on local norms. Despite these limitations, this study is considered among the first empirical studies that address the validation of the GRS-S in the Arab-speaking countries and probably in the Middle East. Of course, more research is needed to validate other instruments that can be used in the identification of gifted students.

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