Running head: IDENTIFYING GIFTED LEBANESE STUDENTS

# The Use of a Performance Assessment for Identifying Gifted Lebanese Students: Is DISCOVER Effective?

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## Abstract

The purpose of this study was to investigate the effectiveness of DISCOVER, a performance-based assessment in identifying gifted Lebanese students. The sample consisted of 248 students (121 boys, 127 girls) from grades 3-5 at two private schools in Beirut, Lebanon. Results showed evidence for DISCOVER's concurrent validity with the Raven Standard Progressive Matrices, as correlations between students' DISCOVER ratings in spatial intelligence and their Raven scores were high, whereas correlations between students' DISCOVER ratings in linguistic intelligences and their Raven scores were low. Interviews with teachers and parents corroborated the results, with a few exceptions. Of the total sample, 14.5% were identified, with no gender differences. The researcher concluded that DISCOVER could be used effectively in Lebanon for identification purposes, but further research is needed to support the findings.

# The Use of a Performance Assessment for Identifying Gifted Lebanese Students: Is DISCOVER Effective?

The identification of gifted students has traditionally relied on the use of IQ testing. Scores in the 97$^{th}$ percentile or above have typically enabled students' entry into programs for the gifted (Ford, Harris, Tyson, & Trotman, 2002). However, in the last two decades, scholars and researchers have questioned the use of IQ tests for identification purposes, due to the mounting evidence that these measures do not constitute the sole indicators of giftedness (Baldwin, 2005; Maker, 1993); instead, alternative methods such as the use of performance-based assessment and portfolios were examined as possible addition or even replacement tools for identification purposes (Gallagher, 2005). One reason for the dissatisfaction with IQ tests is that their use has led constantly to the under representation of students from economically disadvantaged and culturally diverse groups (Callahan, 2005), possibly because of their heavy reliance on verbal skills, which minority students often lack.

In Lebanon, a tiny country in the Middle East, a growing interest in gifted education has been noted among educators and scholars even though the country lacks a formal gifted education system at present. For this reason, identification problems have not arisen yet. In order to avoid such problems in the future and to establish programs in gifted education built on solid basis, research on identification measures is much needed in the country, given that the growing interest in gifted education will eventually lead to the establishment of grounded programs for gifted students. This study examines the effectiveness of DISCOVER, a performance-based

assessment in identifying gifted Lebanese students. DISCOVER was chosen because of its many characteristics that make it suitable for use with non-English speaking populations, such as its reliance on manipulatives and the possibility of its administration in the native language of the children tested.

*Status of gifted education in Lebanon*

Lebanon is one of the smallest countries in the Middle East (10,452 square kilometers), almost the size of the state of Connecticut. Schooling follows a lock-step system, with little attention given to individual differences. Programs for students with special needs are sparse, but when found their focus is mostly on students with academic problems rather than on students who show high ability. The closest to a formal program for the gifted is found in some private schools located in Beirut, the capital. These schools cater for students from high socio-economical status and have established for high-achieving students, what is similar to enrichment programs on pull-out bases, but these programs are still rudimentary and effected haphazardly without any grounding in a solid theoretical base. To a large extent, the reason for the lack of gifted programs in the country is due to the lack of reliable and valid instruments for identification. Currently, the country lacks measures standardized on samples of Lebanese students to assess intelligence; the only tests used for this purpose are imported from the West and translated into Arabic, the native language of the Lebanese, a process dangerously flawed. Hence, a great need exists for reliable and valid instruments for the identification of gifted Lebanese students as well as for programs for the gifted built on grounded theory.

Giftedness can be found in all cultures and is expressed through a variety of behaviors (Baldwin, 2005). Parents, teachers, and school officials need to have knowledge in giftedness

and its determinants so that they become “talent spotters”, always on the look-out for untapped hidden ability. The first step in this process is to adopt a broad view of the concepts of intelligence and giftedness which goes beyond high academic performance and encompasses a wide range of human abilities. This is of particular importance in Lebanon where work on gifted identification and programs for gifted students has just started, hence the significance of all kinds of research in this budding area, and the significance of this study in particular. One advantage for the lack of gifted programs in the country is the “clean slate” phenomenon; that is, educators can start working afresh, molding the field of gifted education based on empirical evidence yielded by the pool of research findings already available in the Western literature, a process potentially less problematic than attempting to fix flaws in already pre-existing programs. However, a thorough examination of the Western research is needed for fine-tuning of the findings to the Lebanese population instead of just importing evidence from the West and applying it blindly in the Lebanese culture. In sum, establishing a discipline of gifted education in Lebanon, effective and unique to the country is timely and critical. In a country with a history troubled with repetitive wars, it is the civic responsibility of scholars and educators to recognize and nurture the talents of its gifted citizens who represent the untapped promise for a better future for Lebanon.

*Research on DISCOVER*

The use of performance-based assessments has been on the rise in the last two decades. Advocates cite many advantages for using these instruments, such as assessment of higher-order skills, reducing the gap between testing and instruction, their coverage of broad areas of intelligence, and assessing students in life-like and complex situations (Maker, 1993; O’Neil,

1992). Several studies have been conducted on the effectiveness of these relatively new instruments, with mostly positive results (e.g., Pierce, Adams, Speirs Neumiester, Cassadly, Dixon, & Cross, 2007; Reid, Udall, Romanoff, & Algozzine, 1999; VanTassel-Baska, Johnson, & Avery, 2002), suggesting a paradigm shift in identification procedures. Madaus and O'Dwyer (1999) call performance assessments the "new technology" (p. 688) of testing today.

The performance-based assessment, DISCOVER, which is the focus of this study is grounded in Gardner's (1983) MI theory and based on Maker's (1993) definition of giftedness "the ability to solve the most complex problems in the most efficient, effective, or economical ways" (p. 71). Based on tasks (manipulatives) which require problem-solving and creative abilities, the instrument assesses six of the intelligences identified by Gardner: Linguistic, spatial, logical-mathematical, interpersonal, intrapersonal and bodily-kinesthetic, through activities carefully designed to tap into students' strengths and capabilities in these intelligences.

DISCOVER was developed to identify gifted students from culturally diverse groups and was tested in many countries where English is not the native language (Baldwin, 2005), hence the appropriateness of this instrument for this study. Since its inception at the University of Arizona (Maker, Nielson, & Rogers, 1994), DISCOVER has been administered in addition to students in the United States to thousands of students from diverse populations in countries such as China, France, Taiwan, Australia, England, and Bahrain. The data collected have served as the basis for research on the reliability and validity of the instrument.

*Inter-rater reliability*. In a triangulated inquiry on the inter-rater reliability of DISCOVER, Sarouphim (1999) investigated the alignment of ratings given to students by three independent raters: DISCOVER observers, classroom teacher, and the researcher. The results showed that the

DISCOVER observers, classroom teacher, and researcher gave similar ratings to students in the linguistic, spatial, and mathematical intelligences assessed in DISCOVER through structured activities, but their ratings were not as similar in the personal and bodily-kinesthetic intelligences assessed in DISCOVER through unstructured tasks. The researcher concluded that the DISCOVER observers were more effective in appraising students' intelligences when the appraisal was made through specific activities than when the appraisal depended on observing unstructured behavior. Sarouphim recommended that specific activities be developed for accurate appraisal through DISCOVER of the whole spectrum of multiple intelligences.

In another study on DISCOVER's inter-rating reliability, Giffiths (1996) compared the ratings observers gave to students on the spatial activities and those marked by independent raters who watched videotapes of the recorded administration. The results showed high inter-rater agreement, ranging from 80% to 100% with the highest agreement found between the observers and independent raters with the most expertise in the administration of DISCOVER.

*Fit between DISCOVER and MI theory.* Sarouphim (2000) investigated the alignment of DISCOVER with MI theory through a series of inter-observer correlations. The sample consisted of 254 elementary students, predominantly from economically disadvantaged Native American and Hispanic groups. The results showed low inter-observer correlations across grade levels between the activities that measure different intelligences (e.g., linguistic and spatial activities) and moderate to high correlations between activities that measure related intelligences (e.g., oral and written linguistic), indicating that students identified in one intelligence were not necessarily found gifted in the other intelligences. The results suggested that the different DISCOVER activities possibly measure different intelligences, a finding which supports the consistency

between DISCOVER and Gardner's MI theory.

*Comparative validity*. Griffiths (1997) examined the comparative validity of DISCOVER with the WISC-III. The sample consisted of 30 Mexican American low-income children whose ages ranged between 9-11 years. Griffiths examined the relationship between students' ratings on each of the DISCOVER activities and their scores on the corresponding WISC-III subtests. Although overall students' ratings in the two measures were different (i.e., students identified as gifted through DISCOVER did not necessarily have IQ scores in the top 3%), analyses of separate activities corresponding to the different intelligences (e.g., math, linguistic, etc.) showed close resemblance, indicating evidence for the concurrent validity of DISCOVER with WISC-III.

*Gender and ethnic differences*. Finally, Sarouphim (2005) examined the effectiveness of DISCOVER on a large sample of 955 students taken from grades K-12 in10 schools in Arizona. The results revealed a good fit between DISCOVER and MI theory; also, no significant ethnic or gender differences in identification were found. A total of 20.9% participants were identified, suggesting that DISCOVER might contribute to diminishing the problem of minority under representation in programs for the gifted.

In sum, research on DISCOVER has yielded mostly positive results on its effectiveness in identifying students from culturally diverse groups. As Baldwin (2005) stated: "[DISCOVER] has undergone revisions to make it a valid and reliable tool for identifying individual strengths in multiple intelligences" (p. 107). However, data used in research on DISCOVER were mostly collected in the United States. The only study that was conducted on DISCOVER in Lebanon, the country where the present investigation has taken place, has included a small sample and

aimed at testing the ground for whether the assessment could be used effectively in Lebanon (Sarouphim, 2007). In that study, DISCOVER was administered to 49 fifth graders taken from one private school in Beirut. The results were similar to those found in the Western populations and showed a similar pattern of identification trends, such as in the high percentage of students identified (19% of the sample) and the lack of gender differences in identification. The results were also corroborated by interviews with teachers and the students' grade reports, indicating that DISCOVER could be used effectively in Lebanon. In the current study, a larger sample was used as well as additional instruments to validate the data. Research questions addressed the concurrent validity of DISCOVER with the Raven Standard Progressive Matrices, the alignment between the students' DISCOVER ratings and their grades, the congruence of teachers' and parents' nominations with students' DISCOVER ratings, and finally gender differences in identification.

## Method

### *Participants*

The sample consisted of 248 students (121 boys and 127 girls) taken from grades 3-5 at two private schools in Beirut, Lebanon. The participants were predominantly from middle SES, as evidenced by their place of residence and their parents' occupation. The participants' mean age was 8.1 years in 3rd grade (n=86, 36 boys and 50 girls), 9.2 years in 4$^{th}$ grade (n=77, 43 boys and 34 girls), and 10.2 years in 5$^{th}$ grade (n=85, 42 boys and 43 girls). They were all Caucasians and spoke English as well as Arabic.

### *Procedures*

All participants were given the 3-5 version of the DISCOVER assessment as well as the Raven Standard Progressive Matrices (RSPM). Interviews with teachers and with the parents

who nominated their children were conducted following the administration of the two instruments. The criteria for identification were set according to the standards specified by the developers of DISCOVER: a rating of *Definitely* in at least two of the assessment's activities.

## *Instruments*

### *The Raven Progressive Matrices*

The RSPM is a test of non-verbal ability designed for use equally effectively with English and non-English speaking populations. The RSPM is now used internationally for comparative purposes (Raven, Raven, & Court, 1998), thus the choice for its use in this study. Another reason for its use in this current investigation is that the RSPM is considered to be relatively culturally fair (Chaffey, Halliwell, & McCluskey, 2006) and has been tested with different populations. Basically, the test comprises 60 problems (divided into 5 sets of 12 items each) and consists of presenting a series of figures, each with a missing piece. Below each figure are six to eight alternative pieces, but only one completes the figure. The figures are presented in ascending difficulty and keep the student motivated (Baldwin, 2005; Raven et al., 1998).

### *The DISCOVER Assessment*

DISCOVER is performance-based and includes tasks which increase progressively in complexity and openness. Like the RSPM, the assessment is not a traditional test and children have fun working on solving the assigned problems. Basically, three activities are performed in class during the DISCOVER administration to assess spatial, mathematical, and oral linguistic intelligences. Logical-mathematical and written linguistic intelligences are measured a day or so following the classroom assessment through paper-and-pencil tasks. Bodily-kinesthetic and the personal intelligences are assessed by observing the behaviors of students throughout the administration which typically lasts two and a half hour.

The DISCOVER assessment measures the different intelligences by using different activities across intelligences and age levels. Different tasks are designed for grade levels from

kindergarten through grade 12. The focus in this study is on the DISCOVER version for grades 3-5. Typically, the DISCOVER administration takes place in the classroom. Trained observers gather around the children with an approximate ratio of 1:5 (one observer to five children). Each observer takes notes and records observed behaviors on standard sheets while the classroom teacher gives instructions in the children's dominant language. Observers pay attention to the children's problem-solving process as well as to their products. To avoid observer bias, observers rotate at the completion of each activity; thus each child is observed by at least two persons during the administration (Maker, 1992).

Following the administration, all observers meet to discuss the students' strengths and complete a behavior checklist on each child. Observers classify children's strengths in each activity into four different categories ranging from "no strength observed" to a "definite strength observed" using the ratings of *Unknown, Maybe, Probably,* and *Definitely*. The category *Definitely* corresponds to high ability or to giftedness in that particular intelligence assessed by its corresponding activity. A child who has a *Definitely* rating in at least two of the activities is identified as gifted.

*Data analysis*

Separate but identical analyses were performed on the data collected in each grade; then the same analyses were performed on data pooled from the entire sample. To determine concurrent validity, students' DISCOVER ratings were correlated with their RSPM scores. To assess gender differences, a 2X3 MANOVA was performed (gender by grade level). The ratings were coded as follows: 1 for *Unknown,* 2 for *Maybe,* 3 for *Probably,* and 4 for *Definitely,* then chi-square tests of significance were performed for gender by gifted participants to determine gender differences in identification.

*Results*

*Concurrent validity.* In this study, the students' ratings in each of the DISCOVER

activities were correlated with their RSPM scores. As shown in Table 1, the highest correlation was found between the students' ratings in the spatial analytical activity and their RSPM scores ($r$ = .776, $p$ < .01) followed by that between their ratings in the spatial artistic activity and their RSPM scores ($r$ = .547, $p$ < .01). The lowest correlations were between the students' RSPM scores and their ratings in the linguistic activities, oral linguistic ($r$ = 0.31, $p$ = 0.21, ns), and written linguistic ($r$ = .114, $p$ = 0.25, ns).

*Gender differences in identification.* A total of 36 children or 14.5% of the sample (19 boys and 17 girls) were identified through DISCOVER. Though the boys' DISCOVER ratings were generally slightly higher than those of the girls (See Table 2), the results showed no significant gender differences in students' ratings across grade levels and activities, with one exception found in the math ratings of fifth graders. The 2x3 MANOVA yielded nonsignificant results for gender by grade interaction ($F$[4,232]) = 1.62, $p$ = 0.57, ns), and no significant main effect for grade was found either ($F$[3,208]=0.83, $p$=67, ns). However, a significant main effect for gender ($F$[4,232] = 0.89, $p$ = 0.63, ns) was found, which led to further univariate analysis. The ANOVA revealed that boys significantly outperformed girls in math in fifth grade ($F$[1, 243] = 6.54, $p$ = 0.01), with an effect size of 0.41. Moreover, as shown in Table 3, chi-square tests did not reveal any significant gender differences in identification (i.e., no significant differences in the numbers of boys and girls who were given the *Definitely* rating in at least two of the DISCOVER activities) in all grade levels and across the entire sample ($\chi 2=1.59$, $p$ = 0.11, ns).

*Parents' and teachers' nominations.* The results showed that students identified through the use of DISCOVER were all nominated by both their parents and teachers, suggesting that DISCOVER tapped effectively into these students' strengths. However, seven students nominated by parents and three by their teachers were not identified through the use of DISCOVER. On the other hand, all students who were identified were nominated by either their parents, teachers, or both. As one teacher said: "I knew all along that [these students] were

gifted. I am glad to know that my hunch was validated by a formal assessment". Interviews with the parents who disagreed with their children's scores showed that they believed strongly in their children's high ability, especially spatial artistic ability, a belief which was not substantiated by their DISCOVER ratings. As one parent stated: "When I was told that my child was being given non-traditional assessments, I thought that he finally had a chance to shine; I am disappointed because I don't think that these tests did justice to my son's true capability." Another mother said: "I always thought that my daughter was a born artist. Her artistic skills started to show as early as when she was three years old. I remember that she drew then a house with a garden in perfect proportions and with all the elements present. She spends most of her free time drawing. When people see her drawings, they cannot believe that this is the work of a child. I don't understand how these alternative assessments did not reveal her high artistic ability."

The teachers' interviews mostly corroborated the results, that they mostly agreed with DISCOVER's findings in relation to the identified participants, except in the case of three students, all males in 4$^{th}$ grade, and all in one section. The teacher did not hide her disappointment with the results and stated that all three non-identified students deserved to be given the label "gifted". When asked to justify her comment, she said: "I have watched these students' struggle with school work since the first day of class, but somehow I thought that the three of them were highly gifted in many different ways even though their grades were never outstanding. It's just a feeling that I had, based on their good behavior and great effort. I still believe that their abilities will be "discovered" one day, even if DISCOVER did not discover that!"

*Alignment of students' grades with their DISCOVER ratings.* All identified students had high grade-point averages, ranging between 3.8 and 4.0, indicating that their DISCOVER ratings were aligned with their classroom performance. Interviews with the teachers revealed that the identified students had been getting high grades throughout the school year and accordingly they

deserved to be given the label “gifted”.

*Discussion*

This study examined the effectiveness of DISCOVER, an alternative assessment, in identifying gifted Lebanese students. Concurrent validity of DISCOVER with the RSPM was studied, as well as gender differences in identification and the fit between the assessment’s internal structure and the theory of multiple intelligences on which it is based. The results provided mostly positive results, in support of the use of DISCOVER in Lebanon,

The correlations between students’ DISCOVER ratings and their RSPM scores showed that the spatial activities of DISCOVER were aligned with RSPM, indicating that the two measures assess similar abilities. Along the same lines, the results showed low correlations between students’ RSPM scores and their ratings in the linguistic activities of DISCOVER, suggesting that the two measures assess different abilities. These findings provide evidence for the convergent and discriminant validity of DISCOVER. Given that the RSPM is a measure of non-verbal ability, the high correlations found between students’ RSPM scores and their DISCOVER ratings in the spatial activities suggest a high concurrent validity between the RSPM and DISCOVER. Similarly, the low correlations found between students’ RSPM scores and their DISCOVER ratings in the linguistic activities give evidence for discriminant validity. These results also suggest that a good fit exists between the assessment’s internal structure and the theory of multiple intelligences since they show that students who were given a high rating in the spatial activities were not necessarily given high ratings in the linguistic activities as well, possibly indicating that the spatial and linguistic activities measure separate and different intelligences. Similar results were obtained in research conducted on samples of American students (Sarouphim, 2001; 2002; 2005).

Another interesting finding is the significant gender differences found in students’ math ratings in fifth grade, but not in the younger participants. Although in current Western research,

the results show that the gender gap in math has been narrowing down, previous findings did indicate that gender differences in math start showing in late elementary school, possibly because of the "masculine" label associated with high mathematical ability (Hyde, 2005). Early adolescence is the age during which individuals try to define their values and gender roles. Since the culture in Lebanon tends to be fairly traditional, it is not surprising to find that boys' ratings in math are superior to those of the girls, as Lebanese early adolescent girls do not wish to deviate from the norms and risk being labeled masculine. Similar results were found in the research performed on DISCOVER encompassing samples of American students from culturally diverse groups (Sarouphim, 2001).

Also in regard to gender differences, another noteworthy finding is the lack of gender differences in identification, suggesting that the use of DISCOVER does not produce gender bias. Similar results were obtained in the pilot study conducted in Lebanon (Sarouphim, 2007). Educators have long shunned the use of instruments which lead to any kind of discrimination, especially with regard to gender or race. The fact that DISCOVER did not lead to gender identification bias in a culture as traditional as the Lebanese culture is quite significant. A program for the gifted in Lebanon should be established on solid grounds; hence, it is mandatory that the instruments for identification used be gender-bias free from the early beginning.

An interesting but not surprising result is that of the discrepancy found between a few of the teachers' and parents' nominations on the one hand and the students' corresponding DISCOVER ratings on the other. This finding is not surprising because several studies have documented the misguided perceptions of parents and teachers about what they consider evidence for giftedness (Baldwin, 2005; Pierce et. al, 2005). More often than not, teachers develop their own theories of what is gifted behavior (Miller, 2006) and at times confuse good behavior with giftedness, and parents tend to overestimate their children's abilities, particularly their sons'. On the other hand, the result that all students identified as gifted were nominated by

their teachers is in fact surprising and does not corroborate findings in the literature (Balwin). Typically, teachers underestimate the abilities of students who do not fare well academically. Moreover, they consider themselves more knowledgeable in their students' abilities than any instrument could reveal. As one teacher explained "teachers have worked with the child. They know the child better than the test does" (Pierce et. al). One explanation for the good match found in this study between teachers' nominations and the DISCOVER ratings may be due to the fact that all identified students had high grade point averages, thus confirming the teachers' belief that giftedness is interchangeable with high grades. In Lebanon, teachers do not have much experience, if any, in gifted education. Both teachers and parents need to be educated in what constitutes giftedness, given that gifted education is a new field in the country. A recommendation that stems from this study is to develop a booklet on giftedness and how teachers and parents could determine and nurture giftedness in the children through enhancing creativity, leadership, problems solving, language and math abilities. In one study, developing such a booklet gave parents insight into what giftedness meant and assisted them in successfully identifying gifted behavior (Karnes, 1984). Another recommendation is to train pre-service teachers in Lebanon in gifted education through adding courses in this field at the university level and to increase the awareness of experienced teachers who are already working in the field through a series of in-service training in gifted education.

Another finding in support of the use of DISCOVER in Lebanon is that about the good alignment between the students' DISCOVER ratings and their school grades. Similar results were obtained in the pilot study conducted on a small sample of Lebanese students (Sarouphim, 2007). Although this finding is surprising and does not necessarily corroborate the results of previous research conducted in the West, which have showed that students identified through DISCOVER do not all score high on traditional standardized tests (Sarouphim 2005), the finding is nevertheless significant in Lebanon since currently no Lebanese instrument exists yet for the

identification of gifted students. One would want to start a program for the gifted with an instrument which provides a good fit with school grades otherwise a clash between the two might affect negatively the validity of the instrument. In this regard, one explanation for the difference in results found in this study and those in studies conducted in the West might be related to the better match between the abilities needed to solve the DISCOVER tasks and the curriculum adopted in Lebanese schools. For example, a great emphasis is placed in Lebanese schools on the mastery of foreign languages, mostly English and French. By the time they graduate from high school, Lebanese students are almost as fluent (and in some cases even more fluent) in at least one foreign language as they are in their own native Arabic language. This emphasis might explain the high ratings that the Lebanese sample in this study had in the linguistic activities. Another explanation is that the Lebanese culture is a collectivistic culture as opposed to the individualistic culture of the West. It is a tight-knit culture in which traditions are transmitted orally from one generation to the next in the form of stories and folk tales. Thus, story telling (a task required in the oral linguistic activity of DISCOVER) is integral to the Lebanese culture and is engrained in its daily life, which might explain why Lebanese children fared better in the linguistic activities than the Western sample did.

A finding which also does not corroborate the results of Western research is the lower percentages of students identified in Lebanon, about 25% less than those identified in the American sample (Sarouphim, 2001; 2005). While Lebanese students did better in the linguistic activities of DISCOVER, they did not do as well in the math and spatial activities, possibly because the tasks required in these two activities are less related to the material taught in Lebanese schools. For example, one of the problems in the DISCOVER math worksheet is solving magic squares, with which American students are familiar, but not all Lebanese students are. Therefore, another recommendation which stems from this study is that although DISCOVER seems to be a promising alternative assessment to be used for the identification of

gifted Lebanese students, the assessment might need a few alterations for a better match with the Lebanese culture, a task which necessitates further studies for determining the kinds of modifications that need to be made in the Lebanese version of the assessment. Also, further studies on larger scales, with samples consisting of students from different socioeconomic backgrounds are needed before generalizing the results to the larger population of Lebanese students. One major limitation of this study is that the sample was limited to students from grades 3-5, consequently further studies need to be more diversified with students across the spectrum of grades.

In conclusion, DISCOVER might become a leading instrument used for the identification of gifted students in Lebanon, but further research is of utmost importance, especially that gifted education is a relatively new discipline in the country and needs to be established on solid basis. Furthermore, in future research, emphasis must be placed on examining the DISCOVER tasks with scrutiny to determine the necessary modifications to be made to the Lebanese version without compromising the integrity of the assessment or its original design.

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Table 1

Correlations Between Raven Scores and DISCOVER Ratings

| | Third Grade (n=86) | Fourth Grade (n=77) | Fifth Grade (n=85) | All (N=248) |
|---|---|---|---|---|
| Spatial Artistic | .418** | .551** | .603** | .547** |
| Spatial Logical | .613** | .777** | .824** | .776** |
| Logical-math | .269* | .311* | .427** | .354** |
| Oral Linguistic | .212 | .198 | .224 | .201 |
| Written Linguistic | .127 | .072 | .137 | .114 |

Note. *p < .05, **p < .01

Table 2

Mean Ratings of Students in the DISCOVER Activities Across Grades

| | Third Grade | | Fourth Grade | | Fifth Grade | |
|---|---|---|---|---|---|---|
| | M | F | M | F | M | F |
| Spatial Artistic | | | | | | |
| Mean | 3.1 | 2.9 | 3.0 | 2.8 | 2.9 | 2.8 |
| SD | 1.1 | 0.9 | 0.8 | 0.6 | 0.5 | 0.4 |
| Spatial Analytical | | | | | | |
| Mean | 3.0 | 3.0 | 2.6 | 2.7 | 2.8 | 2.7 |
| SD | 0.2 | 0.7 | 1.0 | 0.9 | 0.5 | 0.8 |
| Logical-Math | | | | | | |
| Mean | 2.7 | 2.5 | 2.6 | 2.5 | 3.1 | 2.4 |
| SD | 0.7 | 0.5 | 0.8 | 0.9 | 0.4 | 0.3 |
| Oral Linguistic | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mean | 2.9 | 3.1 | 3.0 | 3.0 | 2.8 | 2.9 |
| SD | 0.7 | 0.9 | 1.2 | 0.8 | 1.0 | 0.8 |
| Written Linguistic | | | | | | |
| Mean | 2.8 | 2.7 | 2.9 | 2.8 | 2.8 | 2.6 |
| SD | 1.0 | 0.5 | 0.6 | 0.7 | 0.4 | 0.4 |

*Note: Unknown* = 1; *Maybe* = 2; *Probably* = 3; *Definitely* = 4.

Table 3

Chi-Square Tests of Significance for Gender by Gifted Participants

| Grade | Gifted Boys | | Gifted Girls | | All | | df | X2 | p |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | | | |
| Third | 8 | 16.6 | 6 | 16.0 | 14 | 16.3 | 1 | 0.09 | 0.34 |
| Fourth | 5 | 13.9 | 6 | 14.7 | 11 | 14.2 | 1 | 1.23 | 0.28 |
| Fifth | 6 | 12.0 | 5 | 13.9 | 14 | 12.9 | 1 | 2.21 | 0.09 |
| All | 19 | 14.0 | 17 | 14.9 | 36 | 14.5 | 1 | 1.59 | 0.11 |

## About the Author

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