

The Reliability and Consistency Indicator of the Modified Picture of the Jordanian Environment from Verbal Aptitude Tests

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Abstract

The aim of this study is to examine and derive the reliability and consistency indicator of the modified picture of the Jordanian environment from verbal preparation tests and evaluate these indicators for this test after its development and its application to members of the age group (16-18) in Jordan, and then derive the appropriate criteria for the interpretation of performance for the examined sample on this test.

the targeted population of the study consisted of all individuals belonging to the age group (16-18) in the Hashemite Kingdom of Jordan, and since this battery is only for the educated class within the age group (16-74 years), so students in the Ministry of education schools has been selected as an (accessible population) as a representative of the target population of the study which is all ages group between (16-18) years old in Jordan.

The study recommends that with respect to the total exclusion of customary and prevailing view associated with the selected students with higher academic achievement in all its branches and specially science branch, and the selection of others with low achievement in literary as well as professional, vocational and technical training centers branches, without considering the potential and aptitudes and interests of these students, perhaps he got high assessment have specific non-academic preparations, or a low estimate may not have the desire to study disciplines Various professional posed the real appreciation.

At the same time working to change the perception of inferiority to study disciplines in apprenticeship and professional training centers for the needs of the labor market by, on the other hand, contribute to reducing unemployment.

Keyword: reliability, consistency, indicator, modified picture, environment.

Importance of the study:

Introduction:

Under the policy of Jordan towards the direction of development, modernization and work on everything to raise the level of education and walk with the stunning advances in the world, and despite all the efforts, but the mechanism by which to help achieve those goals were not completely clear; for example, the side that is associated with the beginnings interests and perceptions of our students, the researcher believes that the General capacity of the student represented by the school achievement or the overall average should be taken into consideration, also knowing his interest and needs, in addition to the need for taking care of his special abilities and aptitudes as a an integrated system for the admission of students to the secondary level, especially with the presence of many academic and professional disciplines.

This study is a contribution to the development of a tool to measure preparations and application associated with the verbal side specifically, because the concentration -as we notes- is non verbal clever testing perhaps for its ease and speed of application.

Aptitude tests used to predict success in an academic discipline such as engineering or professional as arts or any other various application process performances such as lawyers, aptitude test measures the knowledge and skill base used in the prediction, the selection or placement, academic preparation tests are used for educational guidance and counseling (Alam, 2002; 1982, Anastasi).

The problem of the study:

Despite broad and great interest in education career in Jordan, but some psychologist forgotten or overlooked psychology sides that they should have taken into account when studying any aspect of the educational center whom is the student.

This study came to examine and derivate the psychometric properties such as validity and consistency of the verbal section of the (Multidimensional Aptitude Battery-II) and adapted it to the Jordanian environment, and the apply it to one of its age groups.

The objectives of the study:

The aim of this study is to examine the validity and consistency indicators and derivation and evaluation of psychometric properties of the verbal aptitude test after its development and its application to members of the age group (16-18) in Jordan, and then derive the appropriate criteria for interpreting the performance level in the sample examined on this test

Importance of the study:

This study derives its importance from the verbally test that measures the special preparations, and that's what is missing or rare in the library of educational in Jordan, as most IQ tests or bottled General cognitive which was applied or study its characteristics on Jordanian environment, particularly the preparations tests are of non-verbal performance-type.

The study hypotheses:

There are a number of hypotheses developed by the researcher prior to the application of the test tool:

First, assume that the sampled individual will seriously deal with the test, and that he would take it with a high degree of importance, and that he will abide by all instructions received from the examiner, and he will continue to write all the paragraphs of the test or at least would do what he has to answer as many as possible of the paragraphs that make up the test, especially that its number are relatively large (174) paragraph.

Second, it is also assumed that the sampled will answer each subdirectory test of tests of scale

In the same seriousness and perseverance, he will also answer the last paragraph as he answered the first one, and he will not attempt to answer the test paragraphs randomly.

If these assumptions-or some of them- which is assumed by the researcher are not achieved when applying the test it will be as a challenges assumed before to this study.

Study questions:

This study sought to answer the following questions:

1. What are the coefficients stability values of the of verbal aptitude test battery for the individuals of the study sample?
2. What the coefficients reliability values of verbal aptitude test battery of the study sample?
3. How to interpret the performance of study sample individuals on the verbal test of aptitude battery?

Previous studies

There is no study in the verbal aptitude test, not even it other non-verbal section, not in terms of codification or even develop a study of psychometric properties, and this, of course, due to the novelty of this test published in (1998). And the only study that dealt with this test is the study of Jackson (DouglasN. Jackson,1998), the aim of this study is to codify the aptitude of the test battery (MAB-II) multidimensional both its verbal and performance on the sample size of (1600) individual of equal gender (male = 800), (female = 800) representing different regions of the United States and Canada, this test is designed to be applied to the ages (16-74 years), and the standardization sample was divided into nine age groups and each age group made up of (200) individual, with the exception of the top two groups consist of (100) checked each, and on broad sectors of the population of the study.

Qutami (1981) study aimed at finding the indicators of reliability and consistency of a modified pictures for Jordan to test the aptitude for the teaching profession, and to ascertain the reliability coefficient of the test in two ways: comparing the results of high performers with those of low performers and the moral differences were at the indication level (0.01), and correlation factor was also found between the results of practical education course with the test results and was (0.65) which is an acceptable value and with significance, reliability was found by repetition on (40) male and female teachers who are in the teaching profession And another sample of (50) members of community colleges, the correlation coefficient in the first case was (0.73) and in the second case (0.53) which is statistically function, although not high. Performance standards was also found, according to the percentiles quartiles in USA environment, there was variation for the favor of American environment

Taha & Merhab study (1977) on the scale of Wexler adult intelligence mentioned in Ibn Rajab (2000) on the Moroccan environment, for comparison between verbal and performance IQ of the calibration process, there where statistically significant differences found between the verbal IQ and performance IQ at ($\alpha = 0.05$).

Omar & Jaber study (1991), which sought to codify the verbal intelligence test for secondary school and University, so the choice will be between five sections,: understanding the meanings of language, verbal classification, the linguistic heuristics, inductive reasoning (numerical) and identification of linguistic symmetry. This test has been applied to a sample of (108) students from the high school and University in the State of Qatar, coefficients of the test reliability have been calculated in repetitions way and the coefficient value in this way

was (0.79), and in half segmentation reached (0.81). the reliability of the test was confirm in three ways: calculate the correlation coefficient between student scores in this test and the average and the quarterly rate, then calculate the correlation coefficient between scores on this test and the scores on the reasoning test on shapes, and use the comparison between groups. Criteria for performance have been derived on this test represented in the heuristics rates and the IQ level.

The study done by Aharshao (1994) on Wexler scale to measure adult intelligence on a group of (15-25 years) adult in Moroccans classes, and sample size of (836) individual, the study showed a close relation between intelligence and social surrounding, to the benefit of the social surrounding with circumstances and economic potential and cultural conditions with surrounding the that lacked these circumstances and conditions with a steadiness between (0.70-0.92) and reliability between (0.73-0.84). For Wexler scale applied on a group of adult Moroccans, it shows that who shown a low intelligence appears in Peniah and Simon, seems more delay in verbal intelligence rather than practical IQ (performance).

Tareeri study (1999) and was entitled "the mental abilities of middle and high school students" in the city schools in Saudi Arabia, study tool included ten parts classified into three main dimensions: verbal ability, quantitative ability and the ability of understanding the relationships between shapes and graphics, the tool has been applied to a sample of (255) students from middle and high school students. Reliability coefficients were calculated for subsidiary measurements in two ways: Jetman equation, and half segmentation, showing that all the test scales have good stability coefficients. To check the validity of the test factor analysis have been used, internal consistency, correlation matrix, correlation coefficients between items on each scale and the total grade of the scale and also the overall grades of the test in its wholeness. The link between items and their subsidiary grades were stronger than correlation coefficients with overall grades of the test in its wholeness.

Methodology of the study

This chapter contains a description of the study community and the method of selecting and distribution of the sample according to age and gender, as well as a presentation of the procedures for implementation of the study and correcting it from one side and the procedures of the test development, present adjustment replacement and arbitration that have been made for some paragraphs, all steps that the measurement scale have gone through, finding the psychometric properties of a test as reliability and consistency, and to derive criteria for the test performance in the light of examined results from the other hand.

In order for the test to be culturally free, it must be linguistically emptied either by the side of the examiner or the examinee as 1999 on particular (Abu Hatab et al., 1999), (Beta) for example, except giving the test instructions.

In this test, which relies entirely on verbal content, the researcher has moved it from Canadian to American environment to Jordanian environment but with the necessary change for some of the paragraphs related to the culture of the West in General and American culture in particular, and replaced it with the other paragraphs that are compatible with the Jordanian environment, so the question content must be familiar to all examinee both in terms of language or content.

The study sample and content:

The target population of the study consisted of all individuals belonging to the age group between (16-18) years old in the Hashemite Kingdom of Jordan, and since this battery of educated class only and located within the age group of (16-74 years), schoolchildren of the Jordanian Ministry of education have been selected as (accessible population) as a representative of the target population of the study which is all ages from (16-18) years old in Jordan.

Jordanians school of higher education have been selected specifically method in the intentional as a representative of all Jordanian schools, and these school belong to the districts of Al Karak governorate.

As for the members of the study sample it were selected randomly using the cluster way at the level of Division or class as a chosen unit to represent different grades in these schools, and at the same time stratified for gender, and taking into account the diversity in gender, age group (16-18) when choosing, so that the distribution of the study sample members is according these two variables. The sample size of the study was (612) students (319) female and (273) males. Table 2 shows the distribution of the study sample members by the Directorate of education, gender, and age.

It should be noted that departments do not include a specific number of students according to certain age groups, but in the same class level and here is the high school (classes: tenth grade, first and second secondary grades) ages between 16 and 18, are the target group.

Table (2)

The distribution of the sample of the study by Directorate, age and gender

Age Categories	Governerate	Alkarak		Southern Mazar		alkaser		Total		
	Gender	Male	female	Male	female	Male	female	Male	female	Total
16		37	44	55	63	30	39	122	146	268
17		35	38	29	35	31	36	95	109	204
18		18	25	22	29	16	30	56	84	140
Total		90	107	106	127	77	115	273	319	612

The results of the study

After all the procedures related to the development of verbal aptitude test whether translation, modifying , changing or replacing the paragraphs of the tests in accordance with the Jordanian environment, or procedures relating to the application of battery and correct answer sheets for regulating sample, exploratory experimental and samples, and after categorization all data, these data have been analyzed to extract statistics associated with study questions, the study found the following results presented by the researcher as follows:

First: To answer the first question in the study of "what are the stability values coefficients of multidimensional aptitude test battery test battery in the study sample members"?

The test has been applied to a sample size (93) students (37) male and (56) female student variation in gender and age has been taken into account in this sample, and after an interval of two weeks the test was applied again on the same sample to find stability coefficient of the test passages, the correlation coefficient was calculated between scores on the sub-tests and the total between the two times application, the values of correlation coefficients to General information test (0.91), and aptitude test was(0.92), and a test calculation test was (0.87), similarity test was (0.89), test of the meaning of vocabulary was (0.90), and for the entire test battery (0.88), all were significant at the level of $(0.01 \geq \alpha)$ and table (4) shows the coefficient of reliability test as a whole arithmetic mean and the standard deviations for scores in the two time application, and table 5 shows the coefficients values of stability for the sub-tests which the test consisted of.

This was the answer for the question related to estimation of the test stability consistency was assessed using (Test-retest).

Table No. (4)

Stability values coefficients for the test battery (MAB-II) *

Gender		First total	Second total	Test stability Coefficient vale as a whole
Male (37)	Arithmetic mean	82.35	89.27	
	Standard deviation	26.56	24.25	
Female (56)	Arithmetic mean	87.11	88.51	
	Standard deviation	23.71	21.47	
Total (93)	Arithmetic mean	84.72	88.89	
	Standard deviation	25.23	22.42	0.883**

** For the level of significance $(.010 \geq \alpha)$.

* It should be noted that the upper limit of the test as a whole = (174), and the increase in raw grades for the examined in a second application may be due to experience and remember factors.

Table No. (5)

A consistency coefficient values for the test method -the Test-retest of all sub-tests that makes the verbal aptitude test

Test	General information	understanding	account	matching	vocabulary
Reliability coefficient	0.91 **	0.92 **	0.87* **	0.89 **	0.90 **

** at the level of significance $(.010 \geq \alpha)$.

Second:

To answer the second question in the study "what are the values of the validity of the verbal aptitude test of the members of the sample"?

Battery test of verbal aptitude was applied on the sample size of (113) students (67) female and (46) male, non-verbal intelligence test (Beta 3) has been applied on them, correlation coefficients has been calculated between the examined grades on (Beta-3) test, subtest tests and the whole grade for the test.

The battery of verbal aptitude was also applied to another sample at a different time (81) students (48) female and (33) male students and at the same time Ravn (RAPM) has been applied to them, correlation coefficients were calculated between the examined test scores (RAPM) and sub tests and the overall all testing scores table (6) shows the correlation coefficients of the battery aptitude with these tests.

Table No. (6)

The correlation coefficients of the aptitude test with Beta-3 test and RAPM test

measure	General information	understanding	calculation	matching	vocabulary	Test as a whole	number
(Beta-3)	0.334**	0.232**	0.227*	0.257**	0.235**	0.361**	113
Indication Level	0.000	0.001	0.010	0.002	0.004	0.000	
(RAPM)	0.257*	0.291**	0.337**	0.370**	0.342**	0.345**	81
Indication Level	0.010	0.008	0.002	0.001	0.003	0.000	

** Statistically significant at the level of $(.010 \geq \alpha)$.

* Statistically significant at the level of $(0.05 \geq \alpha)$.

Verbal aptitude battery test was applied after minutes it was followed by (Beta 3) test for measuring nonverbal intelligence; the same was done for testing successive Ravn matrices (RAPM). Note that the correlation coefficient between the total score on the battery and (Beta-3) test was (0.352), the correlation coefficient between the total score on the battery and the RAPM test was (0.3211), and the values of these links was statistically functional at the level of $(0.01 \geq \alpha)$, with regard to the estimation of synchronous test of validity for the test. Internal Correlation coefficients were also found for the sub test of battery as a whole and its transactions with the whole score on the battery and on the sample as a whole, and the results are shown in the table (7).

Table (7)

Internal links matrix between the sub tests and total test (n = 216)

Test	information	Understanding	Calculation	matching	Vocabulary	Total
information	1	0.441**	0.531**	0.493**	0.55**	0.798**
Understanding		1	0.532	0.558**	0.542**	0.787**
Calculation			1	0.457**	0.436**	0.719**
matching				1	0.561**	0.790**
Vocabulary meaning					1	0.814**

** Statistically functional value at a level of significance $(.010 \geq \alpha)$.

Through the matrix containing the values of these links, it is clear that the correlation coefficients between all sub tests and the total test was high and statistically significant, and this is an indicator of the internal consistency of the test because the high correlation between the sub test and a battery as a whole is an indicator that the sub test and the whole measure – in general – the same attribute, as every sub test measured an aspect of mental verbal ability.

The correlation between each subtest with the whole score on the battery is higher than the correlation with the other sub tests, while the link between them all is less. We can explain the strong link between sub tests that make up the verbal aptitude battery by saying that it goes back to the joint factor of general mental ability, for the interpretation of the differential relationship between, this is an indicator that each sub test measures a trait or different ability from other tests and that the high link between each sub test with the whole score of the battery it could be interpreted that the Sub test is a part of the battery as if the sub test was partly associated with itself.

While the high link between the components of the battery indicates that it in its wholeness represents one dimension and tend to be one factor which is the verbal factor, and it's all at the same time saturated with one factor which is a verbal IQ and this also explains its high correlation with the total score of battery.

This is indicated by the factor analysis results using the basic components in extraction of factors and then rotates it using rotate perpendicular style (Alvarimax) to demonstrate the validity of aptitude battery building. For the proportion of explained variance that it could be interpreted was (59%) of the total contrast on the test as a whole. Table 8 illustrates this.

Table (8)

Test saturation coefficients of sub tests that make the verbal test with the found (abstract) factor

Sub test	General information	Understanding	Calculation	Similarities	Vocabulary meaning	The explained variation factor
Verbal ability	0.812	0.826	0.773	0.795	0.764	0.59

The variation in links between sub tests also indicates that the sampled that have a score in one of them does not necessarily have the same score in other sub tests, confirming that there were specific capabilities that individual can be good at. As a result, there is one factor that the aptitude battery can measure which is the mental verbal ability, where it could explain (59%) of the total variation on the battery and that all the five Sub tests saturated on this factor. This was the way to study the construction factorial validity for the multidimensional aptitude battery.

Third:

To answer the third question in the study "how to explain the performance of the study sample members on the test of multidimensional verbal aptitude battery"?

The results of the binary variance analysis of the score on the test with the age and gender considering that the total score is a dependent variables, for the age groups (16, 17, 18) as well as gender it represent an independent variables, results shows that there is statistically significant effect of age at level of significance ($0.05 \geq \alpha$) as shown in table (9).

Table (9)

The binary Variance analysis of the gender and age effect of the sample total scores on the aptitude battery (MAB-II)

The source of variance	The total squares	Freedom degree	The average squares	F value	The level of indication
Age	12323.07	2	6161.535	11.591	3.000*
Gender	180.899	1	180.899	0.340	3.840
Age*gender	1034.866	2	517.433	0.973	3.840
Error	322131.886	606	531.570		
Total	322131.791	611			

* Statistically significant at the level of ($0.05 \geq \alpha$).

Recommendations:

After the completion of this research, the study recommends the following:

1. this study was limited to age group (18-24) in Jordan, the researcher therefore recommends extending the target population of the study on other samples to cover age groups not covered by the study, which lies between (19-64 years), and the application of this test in different conditions and on other samples to find signs of consistency, reliability and psychometric characteristics and calculated the standards to regulate the entire aptitude battery on the Jordanian environment.
2. this study was limited to the verbal section of the test, so the researcher recommends the development, study the psychometric properties and study the derivation of environmental standards on performance section (non-verbal) from the battery, this test does not measure every all the behavior area for which it was put for, then there would be an overall assessment of the multiple cleverness abilities of humanity that this battery represent, taking in consideration that this research represents the first study about this aptitude battery.
3. the study recommends construction of the measuring tool stems from the Jordan environment that can be used for high school students with both academic and vocational education to be taken into account when classifying and distributing students to different branches of study, not making only the process of distribution depends on the student and school achievement rate, such tests have high predictive capacity, to help in determining the level of mental capacity among students and even the special ability of each student, it helps in the detection of such unknown potential.

4. the study also recommends the building of particular preparations tests in apprenticeship and vocational training centers in Jordan, as in the memorandum (of technical and vocational education in Jordan, 1983), like the tests of mechanical electronic and technical preparations and other to help each learner to take the theme commensurate with his potential.
5. the study recommends special tests to be used for the preparation of every business and professions in the institutions, and according to these preparation the selection and admission of candidates for jobs and occupations, whether public or private, civilian or military.
6. the study recommends that the Ministry of education has commissioned a group of specialists in educational measurement and Evaluation Department and faculty assessment in Jordan for building the tests to measure aptitude after the 10th grade and to apply them effectively so on these basis -in addition to a student and his choice – the classification and selection of students to different branches of academic professional and vocational training centers in Jordan, so the distribution of student will not only be according to their school achievement only.
7. the study recommends the total exclusion of custom and prevailing view associated with the choosing of students with higher grades for the academic achievement in all its fields and sending others with low achievement to vocational and technical training centers, without considering the potential aptitudes and interests of these students, perhaps the student who got high grades have specific non-academic preparation or the student with low grades may not have the desire to study the different professional disciplines imposed by the reality of appreciation. At the same time working to change the perception of inferiority to study disciplines in professional training and apprenticeship centers.

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