ADAPTATION AND STANDARDIZATION OF ALTERNATIVE USES TEST FOR 9th CLASS PUPILS IN TASHKENT CITY

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ABSTRACT

The career guidance for 9th classes in secondary schools of the Republic of Uzbekistan is actual issue, because pupils in this education stage must decide where they will continue mandatory education. Human abilities can play essential role in the successful choosing future profession, so that, tests to diagnose different abilities should be developed. One of the human cognitive ability - the Fluency of Ideas is needed for the effective operation of many professions. Gilford's "Alternative Use" test is widely used in world practice to study this ability. In our research this test is adapted and standardized for 9-class (form) Uzbek nationality pupils of schools. The results of the standardization of the test, which involved 400 participants (200 males and 200 females) from schools throughout Tashkent City, are presented in the article. The test was provided in paper-pencil form. It consists of three parts. Participants were given limited time - 2 minutes to write their answers to each part. While the test evaluates such components as fluency, originality, flexibility and elaboration, the main goal is to study the fluency. The level of reliability of the test fluency is r=0.62 for males and r=0.57 for females. Similar to the results of other researchers, the correlation between the results of each section was insignificant when evaluating originality (0.17 ÷ 0.34). According to the test results, males dominated by the fluency and originality. The results concerning to elaboration showed females' domination in overall. This means that females are more likely to explain answers more broadly than to increase the number of response options. Given standard of estimation is valid only for Tashkent city. In order to standardizing the test on a republican scale we planned to carry out the test in the different regions of Uzbekistan.

Keywords: Ability, Fluency of Ideas, Alternative uses test, standardization.

INTRODUCTION

Human abilities play an important role in the recruitment of young people as they ensure the success of a particular activity.

Career guidance is a pressing issue, especially for 9th form pupils of secondary school in Uzbekistan, because in this study stage pupils should choose where they will continue their education after the 9th class (in college, lyceum, or school), with a clear focus on further profession.

Improving career guidance in our country requires learning from world achievements and adapting them to our country. Over the years there has been great progress in the area of human abilities in the world. To date, there have been worked out Human Abilities Taxonomy (Fleishman, 1992) and various techniques for their diagnosis have been developed. Unfortunately, about all methods concerning cognition have not been adapted and standardized for Uzbekistan.

In this article, we will focus on one human ability named as the Fluency of Ideas. The Fluency of Ideas is a crucial ability for many professions related to innovation. Therefore, it is necessary to analyze the methods used to diagnose it, to adapt and standardize it for the Uzbek youth.

LITERATURE REVIEW

When analyzing abilities' problems from the literature, we can see that the psychologists of the Republic of Uzbekistan and CIS (Commonwealth of Independent States) divided abilities into two types, general and special abilities (Kadirov, 1990; Golubeva, 2005). Shadrikov studies abilities by dividing them into general and professional (Shadrikov, 2010). However, a study of psychological literature of developed countries shows that four types of abilities have been classified by the American scientist Edwin Fleishman in taxonomy of human abilities. They are cognitive, psychomotor, physical and sensory abilities. These four types of abilities are further subdivided into several other types, with a total of 52 different abilities (Fleishman, 1992).

One of the ability discribed in human abilities taxonomy named as Fluency of Idea. Fluency of Ideas — the ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity) (Fleishman, 1992). The Fluency of Ideas is included in the class of cognitive abilities. At the same time, this ability is a type of Idea Generation and Reasoning ability.

The Fluency of Ideas is the type of ability needed for a wide range of specialties. In particular, the US O*Net webpage provides the abilities needed for over 1,000 specialties. There is a site where all specialities for Fluency of Idea listed in decrising rang of importance of this ability. According to this site, Fluency of Idea is more important for the following 15 specialties in Table 1.

Table 1. 15 Occupations Require High Level of Ability of Fluency of Idea (from https://www.onetonline.org/find/descriptor/result/1.A.1.b.1**).**

№	Importance	Level	Code	Occupations
1	81	61	27-043.05	Poets, Lyricists and Creative Writer
2	78	64	17-011.00	Architects, Except Landscape and Naval
3	78	59	27-027.00	Set and Exibit Designer
4	78	57	27-1011.00	Art Director
5	75	75	19-012.00	Physicists
6	75	59	27-013.00	Fine Artists, Including Painters, Sculptors, and Illustrators
7	75	59	19-029.03	Geneticists
8	75	59	11-031.00	Public Relation and Fundraising Managers
9	75	59	11-131.00	Training and Development Managers
10	75	57	27-032.00	Choreographer
11	75	57	27-025.00	Interior Designers
12	75	57	13-161.00	Market Research Analysts and Marketing Specialists
13	75	57	11-061.00	Purchasing Managers
14	72	66	19-021.00	Biochemists and Biophysicists
15	72	66	11-011.00	Chief Executives

As can be seen from the Table 1, the importance of the range of Fluency of Ideas for 15 occupations increases from 72 to 81 degrees, so that, there is a need to explore the ability of

Fluency of Ideas for career guidance, especially for those interested in the professions and specialities listed in Table 1.

Fleishman lists several techniques for diagnosing the Fluency of Ideas. The first of these is the Alternative Uses test (Guilford, Christensen, Merrifield & Wilson, 1978). This test is also known as the Guilford's Alternate Uses test, which basically asks for a wide range of options for how well-known items can be used for other purposes. The test is made up of several sections that must be complete within a limited time. This test is also familiar with the terms used in the study of divergent thinking, creative thinking (Dippo & Kudrowitz, 2013). Computerized versions of this test are now widely used in practice (Olteteanu & Falomir, 2016) in developed countries.

Fleishman also gives the following tests for diagnosing the Fluency of Ideas: Ball Aptitude Battery: Idea Fluency (Sung, & Dawis, 1981), Consequences (Christensen, Merrifield & Guilford, 1958), Ideational Fluency (Christensen & Guilford, 1961), Morrisby Differencial Test Battery: Ideational Fluency, Theme Test, Thing Categories, Topics Test – F-1 published by Educational Testing Service (Fleishman, 1992).

Based on Gilford's test, there was adapted and standardized Unusual Use test, by 500 participants, to study the creative abilities of schoolchildren in Russia (Averina, Sheblanova, 1996).

Unfortunately, there are no standardized tests to study adolescents' Fluency of Idea ability in Uzbekistan. Therefore, the main goal of our research was practical solution of this problem. The task was to adapt and standardize Gilford's "Alternative Use" test to explore the ability of Fluency of Ideas in 9^{th} classes in secondary schools.

METHODOLOGY

Participants

Test was conducted in the capital of Republic of Uzbekistan, in Tashkent City between 2018 and 2019. Participants consist of two hundred male and two hundred female pupils (M_{age}=15,5) of the 9^{th} form of secondary schools (also specialized schools) located in Tashkent City including all districts of city: Yunusabad district 12- and 273-schools, M.Ulugbek district 148-school and State General Education School Specializing in Professional Education, Mirabad district 110-Specialized State School, Shayhontohur district 102-school, Sergeli district 6-Specialized State School, Chilanzar district 178-and 138-schools, Yakkasaray district 144- and 100-schools, Yashnabad district 169-school, Almazar district 28-school, Uchtepa district 283-school. Participants studied in Uzbek language schools.

Method

We conducted the alternative uses test, created by J.P. Guilford in 1967. This is a multiple-item paper-pencil test that requires subjects to produce a variety of ideas relating to the use of an object (such as a brick or a newspaper) in a limited time. Test has three parts. Participants were given two minutes to complete separately each part. Before conduct test there was instruction and sample of task. The responses are evaluated on 4 components: originality (statistically uncommon when compared to responses to the overall data set), fluency (quantity), flexibility (number of different categories), and elaboration (amount of detail) (Dippo & Kudrowitz, 2013).

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

RESULTS

The results obtained for each part of the test were analyzed separately for boys and girls.
The correlation between the four attributes assessed by the 'Alternative Use' test, namely the originality, fluency, flexibility, and elaboration, was examined (Table 1).

Table 1. Correlation between results of Alternative Uses test's parts.

Correlation, r	**Female**			**Male**		
	$r_{1,2*}$	$r_{1,3}$	$r_{2,3}$	$r_{1,2}$	$r_{1,3}$	$r_{2,3}$
Originality	0,34	0,28	0,28	0,25	0,17	0,28
Fluency	0,54	0,57	0,59	0,64	0,60	0,63
Flexibility	0,51	0,52	0,56	0,52	0,54	0,60
Elaboration	0,46	0,41	0,41	0,41	0,34	0,40

*****-correlation between 1-part and 2-part of test

Table 1 shows that the correlations between the originality results within the 3 parts are very low for both boys and girls. Regarded to fluency, it was noted that the correlation rate was higher than that of flexibility and elaboration. In correlation results of fluency , the boys' scores were more likely to be higher than those for girls, 0.60 ÷ 0.64 and 0.54 ÷ 0.59 accordingly.

Standardization was performed based on the total sum of the results of each components obtained in 3 parts.

Despite the fact that the highest score (18) was fixed in the girls' group, boys in general showed slightly higher results than girls (Table 2). The reason for this can be explained by the number of types of response variants in the gender groups studied (Table 6).

Table 2. Estimation of Originality.

Level	**Female**	**Male**
Very low	0 ball	0 ball
Low	1 ball	1 ball
Middle	2-4 balls	2-5 balls
Good	5-6 ball	6-8 balls
High	7 and more balls	9 and more balls
Fixed maximal balls	18	15
Dispersion, Var (X)	7,96	10,09
Standard deviation, σ	2,82	3,17

The boys' group dominated girls in fluency in terms of maximal ball and overall evaluation criteria (Table 3).

Table 3. Estimation of Fluency.

Level	Female	Male
Very low	0-3 balls	0-3 balls
Low	4-5 balls	4-5 balls
Middle	6-10 balls	6-11 balls
Good	11-13 balls	12-14 balls
High	14 and more balls	15 and more balls
Fixed maximal balls	23	30
Dispersion, Var (X)	18,74	20,69
Standard deviation, σ	4,3	4,54

No gender differences were observed in the results of flexibility (Table 4).

Table 4. Estimation of Flexibility

Level	Female	Male
Very low	0-3 balls	0-3 balls
Low	4-5 balls	4-5 balls
Middle	6-9 balls	6-10 balls
Good	10-12 balls	11-12 balls
High	13 and more balls	13 and more balls
Fixed maximal balls	21	20
Dispersion, Var (X)	13,05	14,05
Standard deviation, σ	3,62	3,74

Although the highest elaboration score was recorded in the boys group, overall girls' results were higher than those of boys (Table 5).

Table 5. Estimation of Elaboration

Level	Female	Male
Very low	0-1 ball	0-1 ball
Low	2-3 balls	2 balls
Middle	4-9 balls	3-7 balls
Good	10-12 balls	8-10 balls
High	13 and more balls	11 and more balls
Fixed maximal balls	20	25
Dispersion, Var (X)	17,49	13,61
Standard deviation, σ	4,18	3,6

Table 6. Total response types and category numbers in the test sections

Parts of test	Female		Male	
	General number of kind of answer	Number of different categories	General number of kind of answer	Number of different categories
1-part	72	37	89	41
2-part	83	28	88	30
3-part	60	35	87	37

DISCUSSION

The 'Alternative Use' test has been studied by many scientists. We selected this method only to learn the ability of Fluency of Ideas. Consequently, among the four components (originality, fluency, flexibility and elaboration) obtained in this test, the most important are the results obtained concerning to the fluency. Indeed, it is suggested that fluency is the major dimension measured in Gilford's Divergent Thinking test, mainly in Alnernative Uses Test (Zeng, Proctor & Salvendy, 2011). The correlation between the fluency results obtained by the three parts in our study indicates that the reliability of the Fluency of Idea was 0.62 for boys and 0.57 for girls.

We noticed very low correlation between results of originality as other researchers also noted it. "It was found in Guilford's (1967) Divergent Thinking tests that when fluency subscores are partialized out, the original subscores become unreliable" (Zeng, Proctor & Salvendy, 2011). That is why it is important for scientists to summarize the results obtained in all parts for the evaluation of originality.

Gender differences in originality are also noteworthy. By looking at the total number of responses' variance at boys and girls in originality, Table 6 shows that boys' variances were dominant over all parts of the test. On this basis, flexibility is more higher in males than females.

As it can be seen from Table 5, female dominantion was found on component of elaboration. This means that girls wrote in an attempt to explain their answers in more detail. They put more emphasis on clarity, rather than the number of answers. Therefore, the fluency scores are slightly behind the boys.

The results did not show gender differences by flexibility.
We did not have the opportunity to compare our evaluation standards with other scholars. We think the results of our research will be important in examining the national specifics of this test. Participants in our research is between 15 and 16 years old. So, if we compare them with the US education system by age, they are similar to 10^{th} grade named as Sophomore.

The results of this test are planned to be carried out in all regions of Uzbekistan and thus standardized at the republican level. It is also desirable to standardize the "Alternative Uses" test for pupils who study in other languages (Russian, Karakalpak, etc.).

Computation is also a solution to some problems. In particular, there are cases where we found some pupils' handwriting is difficult to understand for researchers, and this case will not be problem in computer version. Calculating of results is also be automated and accelerated on the computer. Issues related to paper supplies will also be eliminated.

CONCLUSIONS

To study the Fluency of Ideas ability in Uzbek-language pupils of 9^{th} classes in Tashkent City, we recommend using the "Alternative Uses" test, by taking into account the estimation standard given above. Also, it is necessary to be aware of the presence of specific gender differences. It is advisable to direct pupils with a high level of ability of Fluency of Ideas to professions in which this ability is dominant.

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