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INFLUENCE OF THE MOTIVATIONAL FACTOR ON INTELLIGENCE AND CREATIVITY FOR STUDENTS

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Abstract

The article substantiates the relevance of the problem of influence of the motivational factor for students on intelligence and creativity. The approach to the problem of human abilities began to change in the Enlightenment era by researchers, including J. Locke, D. Diderot, and K. Helvetius. Motivation in the structure of abilities is studied by most authors who claim that motivational determinants in the structure of personality are decisive which requires overcoming difficulties in solving various problems and tasks, thereby contributing to the development of abilities. To study the relationship between cognitive motivation and achievement motivation, it is necessary to identify the dependence of the level of development of creativity and intelligence on the motivational profile of the individual and conduct a comparative analysis. The study also revealed a direct correlation between motivation to preserve the "I" and the level of creativity of students of Dagestan universities. No relationship was found between motivation to preserve the "I" and the level of intelligence, as well as between other types of motivation and the level of intelligence and creativity in Dagestan students. Studies of the influence of the motivational factor on intelligence and creativity within each group of students (psychologists, orientalists, engineers) revealed the following relationships: motivation for self-realization and the level of creativity in the group of psychology students; cognitive motivation and the level of creativity in the group of oriental studies students; cognitive motivation and the level of intelligence in the group of engineering students.

Keywords: Creativity, factor, influence, intelligence, motivation, student

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1. Introduction

In the history of human knowledge, of particular interest have always been individuals whose outstanding abilities stood out clearly from the background of others. Interest in such personalities was expressed both in folk art in the form of fairy tales, myths and epics, and in the works by various philosophers, theologians, artists, and reflected in scientific works.

In ancient times, brilliant abilities were associated with the status of a person. For example, rulers and commanders were endowed with leadership abilities, and considered gifted with physical strength and intelligence.

The approach to the problem of human abilities began to change in the Enlightenment era. Many researchers, including Locke, Diderot, Helvetius (Zhdan, 2009) doubted the divine origin of the phenomenal abilities of man. They claimed that all people are born with identical abilities, but upbringing and life experience can make people different from each other.

Thus, in the historical study of abilities, there are two positions dividing scientists and philosophers into idealists and materialists.

2. Problem Statement

Abilities develop only in activities and remain as a potential (inclinations) or degrade in the absence of activity. Consequently, success depends on the level of development of abilities. The development of personal abilities depends on external and internal factors. Motivation in the structure of abilities plays a special role; motivational determinants in the structure of personality are decisive in the process of activity that requires overcoming difficulties in solving various problems and tasks, thereby contributing to the development of abilities (Sternberg & Subotnik, 2000). The problem requires the study and popularization of ways to resolve it in the professional community. To study the relationship between cognitive motivation and achievement motivation, it is necessary to identify the dependence of the level of development of creativity and intelligence on the motivational profile of the individual and conduct a comparative analysis.

3. Research Questions

The problem of individual differences in psychology is open and includes many theories, some of which contradict each other.

The concept of ability was defined by Teplov (2001) in his article “Abilities and Giftedness”, in which the author considered abilities as individual psychological characteristics that distinguish one person from another, determining the success of activities that are not reducible to knowledge, skills and abilities, but determine the ease and speed of learning new methods.

Teplov (2001) distinguishes between three signs of abilities: individual psychological characteristics; successful performance; not reducible to knowledge, skills and abilities.

The definition was criticized by Shadrikov (2010) who pointed out that the concept was not sufficiently described, since each of the criteria does not reflect the concept. According to Shadrikov, one

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can talk about features only when the thing to which they refer to is defined. The author says that success is determined by motivation. The third criterion does not single out the criterion of abilities at all, but only indicates characteristics that abilities cannot be reduced to.

In studying abilities, special importance is given to the motivation factor, which contributes to the inclusion of a person in activities and the development of general and special abilities, as well as the achievement of high results. The solution requires an integrative approach, knowledge and understanding of the relationship between abilities and activities, as well as a description of the psychological structure of abilities in general.

Bogozov, Gozman and Sakharov give the following definition of motivation: “This is an incentive to work with certain tasks.” “Motive” is defined as “the motivating cause of actions, the setting of goals.” The definitions show a close connection between the motivations and motives of a person and activity, as well as the similarity of the two concepts, which is expressed in designating them as a motivating force. Motivation and motive set the dynamics and directions of human behavior. A study of works on motivation shows that the authors associate the concept of motive with psychological processes and properties (emotions, attitudes, etc.) (Sternberg & Davidson, 2004).

In terms of the integrative personal approach, the motivational sphere is one of the main determinants that influence the attitude and interaction of a person with various aspects of life, the attitude of a person to the world, to other people and to himself.

One of the key factors in the development of abilities is the internal motivation, which helps the individual to overcome difficulties and obstacles, solve problems and tasks. The motivational sphere of has a significant impact on the development and maintenance of personality traits such as perseverance and determination, volitional and emotional aspects of the personality, whose role is important for being successful (Agaragimova et al., 2021).

Thus, exerting a targeted impact on the development of abilities, it is necessary to create the psychological conditions of activities in such a way that they favor the development of cognitive motivation of the individual.

4. Purpose of the Study

The purpose is to choose methods to identify the level of development of creativity and intelligence.

5. Research Methods

During the diagnostic study, the following methods were used: observation; survey on how the motivational factor affects intelligence and creativity; mathematical statistics. The study was conducted at the Dagestan State University. The study involved 45 people, of which 15 people are students of the Dagestan State University, studying Oriental Studies; 15 people are students studying Educational Psychology; 15 people are students of the Dagestan State Agrarian University studying Agroengineering.

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6. Findings

At the first stage, research methods were chosen, and the sample was formed.

At the second stage, research hypotheses were put forward; differences between the three groups in terms of intelligence and creativity were studied; the influence of the motivational factor on intelligence and creativity was studied.

At the third stage, the results of the study were processed and analyzed; the conclusions were formulated.

To study the level of intellectual abilities of students, the method by Eysenck (4th and 5th subtests) was used; it is designed to assess the general level of development of intellectual abilities of an adult. The procedure was described by Nemov (2001).

The procedure for applying the methodology was as follows: the respondents were provided with the 4th and 5th subtests of the Eysenck test using the Google Forms service, each of which had 30 tasks, totaling 60 tasks. The tasks in this test were built on verbal, alphabetic and digital materials. The student was given 30 minutes to solve all 60 problems. The results were processed according to the test key.

To study the level of students' creativity, the modified version of the J. Renzulli creativity questionnaire was used. The questionnaire was formulated on the basis of criteria identified from the statements of the classic questionnaire by Renzulli.

The respondents were provided with 15 statements using the Google Forms service. The respondents rated each of the statements on a scale from – 2 (always NOT about me) to 2 (always about me), thus making a self-assessment. The results were processed according to the test key.

To study the individual motivational profile of students, the methodology of the system motivation profile (SPM) by Ryzhov (2017) was used. The SPM test is based on the stage-by-stage ranking of 32 needs and values, correlated with the systemic types of motivation.

The respondents were provided with the SMP test in an online format using the Google Forms service. They were offered 4 tables, each with 8 needs and values. They ranked the needs and values in each of the 4 tables from 1 (the most significant value or need) to 8 (the most insignificant value or need).

Mann-Whitney U-criterion was used to assess the reliability of differences in the level of intelligence and creativity in three groups; Ch. Spearman's rank correlation coefficient was used to test the hypothesis about the influence of cognitive motivation on intelligence and creativity.

The overall average value of cognitive motivation for the entire sample (45 students) was 70.33 %, which is a high level of motivation. This can be explained by the fact that all respondents (45 people) were adolescents, and their actual motivation was cognitive. Figure 01 shows the average values of cognitive motivation for three groups of students: psychologists – 68.33 %, oriental studies students – 71.66 %, engineers – 71 %.

Based on the results, we can conclude that in three groups, the average values differed insignificantly and were high.

The overall average value of motivation for self-realization was 58.64 % which demonstrates the high level of significance of this type of motivation. The significance of motivation for self-realization among psychology and engineering students was medium (55.60 % and 50 %), while the level of

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significance of motivation for self-realization in the group of oriental studies students was high level – 70.33 %.

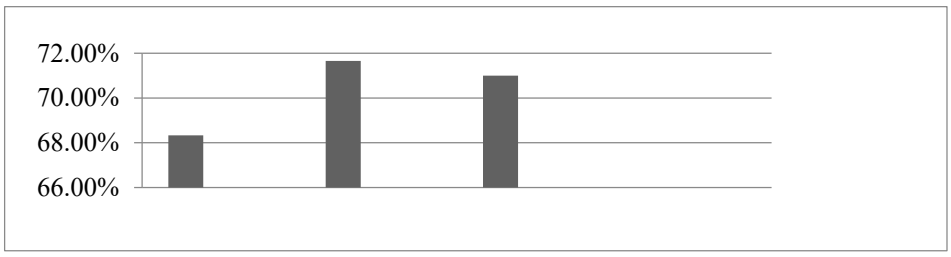

Figure 1. Average values of cognitive motivation for three groups of students (column 1 – psychologists, column 2 – orientalists, column 3 – engineers)

These results are not pathological, since in the age of 18-24, the motivation for reproduction is not relevant and less significant than cognitive motivation.

The study of the motivational profile of Dagestan students showed that they have a single trend in the severity of eight types of motivation (self-realization, morality, altruism, self-preservation, self-preservation, vitality, cognition, reproduction). The most significant was cognitive motivation, the average value of which was 70.33 %. The results for other types of motivation are as follows: vital (59.05 %), self-realization (58.64 %), preservation of "I" (58.56 %). The level of significance of other types of motivation was below average: 41.66 % – moral motivation; 37.99 % – altruistic motivation; 37.88% – motivation for self-preservation. The least significant was reproductive motivation – 34.44 %.

To study the influence of the motivational profile on intelligence and creativity, Ch. Spearman's rank correlation coefficient was used. The values of correlation coefficients between eight types of motivation and indicators of intelligence and creativity are shown in Table 01.

Table 1. Correlation of motivation with creativity and intelligence

Types of motivation by B.N. Ryzhov	Intelligence level by G. Eizenk	Creativity level by J. Renzulli
Self-realization	**0.5**	**0.6**
Moral	0.1	0.2
Altruism	0.2	0.4
Preservation "I"	0.4	**0.5**
self-preservation	0.3	0.4
vitality	0.2	0.2
Cognition	**0.6**	**0.7**
Reproduction	0.1	0.1

Note: red color was used to highlight odds correlations reaching the level of statistical significance

Table 1 shows that in the sample of respondents, a positive relationship was revealed between the indicators of cognitive motivation and intelligence (r=0.7). The factor of cognitive motivation and intelligence has a direct relationship; therefore, with an increase in the cognitive motivation of students, their level of intelligence increases.

The results of the study of the relationship between cognitive motivation and creativity showed a positive correlation and a noticeable strength of correlation (r=0.6). Cognitive motivation and creativity have a direct relationship with an increase in the cognitive motivation, the level of creativity increases.

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The study also found direct correlations between the following indicators: motivation for self-realization and intelligence (r=0.5); motivation for self-realization and creativity (r=0.6); motivation to preserve the "I" and creativity (r=0.5).

A noticeable correlation (r=0.6) between creativity and motivation for self-realization was found. These data show that students who show themselves as inquisitive, proactive, decisive and ideological are the most striving for further professional and personal development and show a level of motivation for self-realization above the average (65–80 %).

When comparing intelligence and motivation for self-realization, a less pronounced but noticeable positive correlation was found (r=0.5). The respondents who correctly solved the largest number of tasks and received an above-average IQ value showed an above-average level of motivation for self-realization (55–70 %).

Another significant correlation was found between motivation to preserve the "I" and the level of creativity (r=0.5), which has a positive direction. However, no significant connection was found between intelligence and motivation to preserve the "I".

The study of the strength and direction of the correlation between motivation and intelligence and creativity within each contrast group was also conducted. The strength of correlations became less significant when dividing the total sample into three groups. In the study of the general sample (45 people) noticeable and high correlation intensities were found between cognitive motivation and intelligence; in the groups of 15 students a noticeable relationship was found only engineering students (r=0.5). Such differences may be due to the insufficient number of participants in each group to apply the Spearman's rank correlation coefficient.

The study of the influence of motivation on creativity in each group found a significant decrease in the intensity of correlations. If in the study of the general sample (45 people) noticeable and high correlation intensities were found between cognitive motivation and intelligence, in groups of 15 students a noticeable relationship was found only in engineering students (r = 0.5). Such differences may be due to the insufficient number of participants in each group to apply the Spearman’s rank correlation coefficient.

7. Conclusion

The empirical study revealed significant differences in the indicators of intelligence and creativity between students in Oriental Studies and Agroengineering. Oriental studies students showed the highest rates of creativity compared to engineering students; engineering students showed the highest rates of intelligence.

The study also revealed a direct noticeable correlation between motivation to preserve the “I” and creativity. Between motivation to preserve the “I” and intelligence, as well as between other types of motivation and intelligence and creativity, no relationships were found.

Studies of the influence of the motivational factor on of intelligence and creativity within each group (psychologists, orientalists, engineers) revealed the following relationships: motivation for self-realization and creativity in the group of psychology students; cognitive motivation and creativity in the group of oriental studies students; cognitive motivation and intelligence in the group of engineering students.

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