

# Psychological Aspects of Studying the Conscious and Unconscious Components of the Cognitive Process

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***Abstract**---* At the present stage of world civilization, consciousness and the processes, which make up the cognitive aspects of our mind beginning to acquire more and more relevancy. Today, human intelligence has become a global force that drives social processes on a global scale. The cause of this phenomenon can be traced back to the fact that all the knowledge and experience in the world, words and concepts, ideas and conclusions are related to human activity. Another important fact is that by the 21st century, within the framework of the philosophical and psychological sciences, scientific studies were created and directions formed, effective methods were developed that made a definite contribution to the study of the conscious and unconscious. Particularly special attention is paid to the study of memorization, imagination, the influence of the unconscious on creativity, psychological settings in the consciousness and the unconscious and their psychophysiology, elements of cognitive reflection, stereotypes, psychological interpretation of habits and intuitions, reflection in the sensory mind, the role of unconscious intellectual functions in thinking, their manifestations as a phenomenon complementary to comprehension, the process of thinking that occurs in the subconscious.

***Keywords**---* Conscious, Unconscious Components, Cognitive Process, Intelligence, Habits, Skills, Values.

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## I. INTRODUCTION

In recent years, modern scientific-philosophical and comparative-methodological analyzes of scientists of our country on factors affecting consciousness and the unconscious, predictions of the mental development of the personality, problems of consciousness and the unconscious in creativity, were based on obtaining important scientific results. It is no secret that scientists of the ancient world, along with questions regarding knowledge, since the founding of philosophy in the teachings of Socrates, Plato (a reminder of the “world of ideas”), Aristotle (the spiritual part) studied the problems of unconsciousness, unconsciousness at the level of requirements of their time [4], [5], [3], [15].

## II. METHODS

Central Asian thinkers, such as Abu RayhanBiruni, Abu Ali IbnSina (better known as Avicenna), and Mahmoud Zamahshari, to some extent, approached to the problems of consciousness and unconscious in scientific terms. The philosophers of the East created unique and elaborate ideologies, in which thwy deeply analyzed the unconscious mental states and consciousness in general.

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The problem of consciousness and unconscious elements of the cognitive process has also been touched upon in the studies conducted by famed Russian scientists, such as A.Yu. Agafonov, D. B. Epiphany, I. B. Lebedev, B. F. Lomov, I. P. Merkulov, D. N. Uznadze, V. V. Selivanov, N. N. Pletenevskaya, A.P. Fedorkina, A.E.Sheroziya, N.S. Yulina. The value of their work presents itself of unparalleled importance because of their depth and multi-directional character. Some of the issues they have addressed in their works include the cognitive stylistic concept in the unconscious, the impact on the types of thinking (word-logic, pointer-figurative, objective-operative), interconnectedness in the conscious [1], [2], [6], [7], [8], [10], [11], [12], [13], [14], [16], among others.

The main issues which have been addressed by the contemporary uzbek scientists, such as E.G. Gaziev, E.V. Li, G. M. Ruzmatova, Z. T. Nishanova, R. I. Sunnatova include the main agents in the cognitive process, modern scientific, philosophical and a comparative analysis of the problems of the conscious and unconscious in scientific inquiry; the problem of human soul in the dialectics of consciousness and the unconscious in the teachings of the representatives of Freudianism, the passage of the individual-typological properties of the thinking process in the inextricable connection of the subject with the possibilities of self-sufficient development [17].

The issues of human consciousness, the unconscious mental state, the Sufis' mentality, and the "psychology of tasavwoof" have been addressed with depth and excellence in the teachings of Central Asian thinkers, such as Abu RayhanBiruni, Abu Ali IbnSina, and Mahmoud Zamahshari.

In the following years, when interest in the study of religious teachings in USA and Europe grew to a considerable degree, it was revealed that Sufism was one of the most popular religious trends [18]. Phenomena occurring in the unconscious plane, not accessible by willing act, not disclosed, even if they are accessed, the idea of IbnSina about the "natural conviction of the heart" became a novel phenomenon in the history of the study of the problem of "self-education of human nature." Now we turn to the unconscious causative agents of conscious actions. An action, which is on the plane of accessible consciousness, has unconscious pathogens, or to put it differently, motives. Moreover, we suppose that the "superconscious" should occupy the peak of the hierarchical pyramid of mental processes. It develops as a long and busy form of conscious activity. A new relationship or feeling, as well as a return to the consciousness of creative ideas, is considered its integral result.

Unconsciousness occurs over time when the information space is changed, and serves as an agent of filling in the gaps in the information flow, and the completion of the self-emergence of mental structures. Much of the contemporary research focus on the fact that the components that regulate activities in an automated, conscious, half-conscious and unconscious state - skill, experience and habits as unconscious components of a person's cognitive activity are a problem that should be addressed in the framework of cognitive psychology. The transition of unconscious (implicit) knowledge in the process of cognition into awareness (explicitness) is usually interpreted as insight, on the other hand, the regulation of awareness is syncretized with the transition to automatic actions and forms experience. It seems to us that, paying attention to experience, the processes of cognition while developing a scheme of the main stages of the formation of experience makes it possible to highlight the components of cognitive reflection in the unconscious. Furthermore, the roles of stereotypes and intuition in unconsciousness are disclosed with skill. The problem of stereotypes is highlighted in the works of such researchers as P.N. Shikhirev,

Yu.L.Sherkovina, K.S. Gadzhiev (1999), I.S. Kon (1979), V.A. A. Zak (1976). It implies that the stereotypes are an opportunity to be self-conscious, to highlight one's strengths and weaknesses in comparison with others, and to recognize one's situation in society by evaluating actions performed in space and time.

A theoretical analysis shows that, between 1991-2016, new approaches and studies arose in Russia regarding the problem of unconsciousness and its components. In particular, between 2003-2016, scientists such as A.V. Myashentsev (2003), S.V. Griбанov (2003), D.V. Dzhamalyan (2004), T.A. Kashirskaya (2004), I.V. Evlannikova (2004), O.V. Stepanova (2004), N.A. Panikova (2005), D.F. Yulaev (2005), Yu.B. Shilova (2006), L.R. Danakari (2006), I.N. Valiev (2006), I.V. Vasilieva (2006), N.N. Pletenevskaya (2006), T.I. Barmashova (2006), N.Yu. Pereverzeva (2007), A.V. Bondarenko (2007), V.A. Shumakov (2007), V.A. Dmitrieva (2007), M.A. Plokhova (2008), O.V. Semenets (2010), L.Sh. Bagdasaryan (2010), A.G. Prodovikova (2010), O.V. Naumenko (2010), S.P. Makarov (2011), S.I. Grishunin (2011), E.A. Nikitina (2011), I.A. Kuyevda (2011), M.M. Berumova (2011), I.Yu. Beshkareva (2011), O.V. Bukreva (2013), T.M. Artemyev (2014), M.K. Mosienko (2016), A.V. Maslova (2016) conducted a number of researches addressing the topics of interrelation between consciousness and unconsciousness, their components and cognitive problems. Among these studies, O.V. Naumenko, in his seminal work on the "Varieties of the cognitive unconscious in solving computational tasks" [19] states that the "cognitive unconscious" is used for a complex of unconscious cognitive structure and processes in the information processing, and characterizes all aspects of cognition as an unconscious phenomenon; of particular importance for our study is the fact that it revealed the presence of implicit (unconscious) opportunities when performing operations of varying complexity.

The problem of unconscious in general, its variability and the layers, which comprise the human consciousness, Unconscious Attention, psychophysiological aspects of the unconscious in modern scientific inquiry have been addressed in the studies carried out by authors like, B. Boutwell[20], I.A. Chigareva[21], Athanasios Drigas, Maria Karyotaki[22], Uffe Hansen[23] Sam Sinder, Annie Griffith, Katie Danahy, Katharine Phillips [24] and others.

### **III. METHODS AND RESULTS**

Therefore, as the basis, we take the point of view associated with the structure of the unconscious, since it allows reflecting the actions of its main components and mechanisms more clearly and generally. The information flows of intuition of various modality and their levels of occurrence in the past, now and in future testify in favor of the possibility of considering choice as a universal integral mechanism (Fig. 1).

The research was conducted among the teaching staff and students of higher educational institutions. The number of the subjects of the present study is 392, from 18 to 38 years old, able to solve questions regarding the influence of the components of the unconscious on intellectual activity.

The following features of the components of the unconscious were considered: 1) skills and experience; 2) habits, action and stereotypes; 3) intuition; 4) insight in thinking.

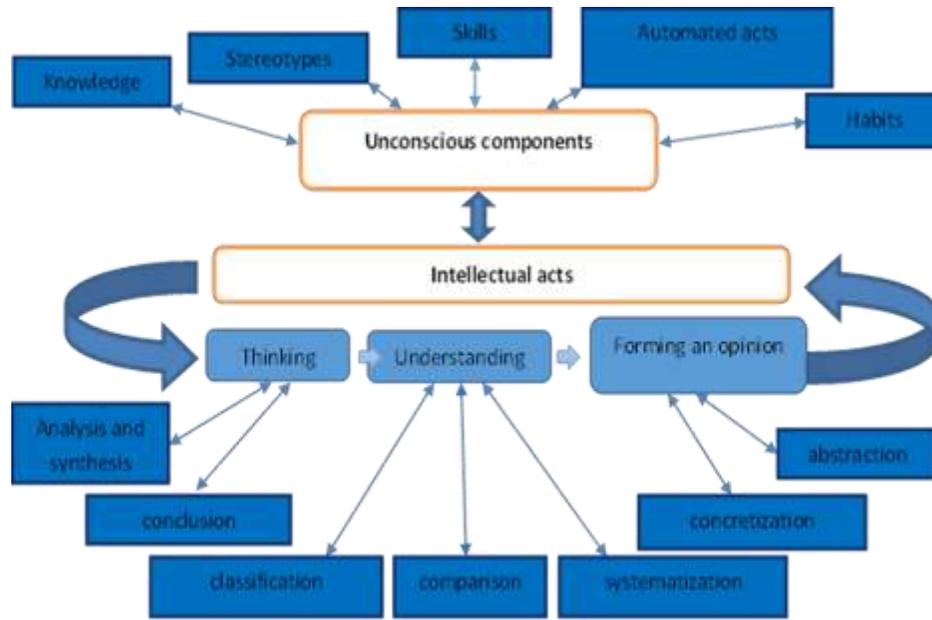


Fig. 1: The Influence of the Components of the Unconscious on Intellectual Activity

#### IV. DISCUSSION

In order to study the specific features of unconscious components of thinking, four stages of experimental research were carried out, based on the methodology and approaches of psychodiagnostic testing proposed by A.V. Brushlinsky and used in research by N.N. Pletenevskaya.

At various stages of solving the main task during the implementation of the thinking process, subjects were asked several times to fill out a semantic differential matrix corresponding to the main components of the task. 11 different concepts and 13 unipolar signs were inserted into the matrix. Each of the proposed eleven concepts, to some degree, was associated with the task; their quality was evaluated in accordance with 13 characters on a six-point scale. As can be seen from the indicators of table 1, formed based on the data provided by N.N. Pletenevskaya, the first factor is 51.02% of the dispersion of all elements; the second factor is 22.21% of the total dispersion. According to our empirical results, the variance of the change of the first factor is 49.4%, of the second factor - 24.4%.

Table 1: Factor Load Calculation Results

Factors	Factor load calculation results			
	Particular values	The share of each particular value in the total variance	Addition of private values	Addition of fractions of private values
<b>The results of factor analysis carried out by N.N. Pletenevskaya</b>				
№ 1	6,633134	51,02411	6,633134	51,02411
№ 2	2,887868	22,21437	9,52003	73,23848
<b>Results of factor analysis carried out as part of our study</b>				
№ 1	5,87690	49,43187	5,67432	50,52985
№ 2	3,23715	24,41863	9,23176	76,54298

There can be no doubt that, a factor analysis of the data collected after applying the semantic differential technique at various stages of the study showed various results demonstrating certain changes that occurred in the conscious and unconscious components of the subjects' thinking. Thinking is a volatile, dynamic process and is influenced by various changes that occur in the subconscious because of subsensory and verbal cues. In the process of awareness of the components of a mental task, the idea of it changes, which, in turn, leads to a change in unconscious assessments of the conditions for its solution.

Finding a solution to the factors, after the explanation of the conditions of the assignment, begin to acquire importance, which is, from one point of view, the possibility of introducing them into the system of new relationships. These new communication systems provide all the processes that occur in the subject's multi-directional thinking. According to the results obtained, it can be seen that the use of verbal cues leads to changes in the course of the thinking process in subjects both at the level of awareness of the conditions and requirements of the task, and in a state of unconscious mental actions. Between NN Pletenevskaya's research on the "Correlation of Consciousness and Unconsciousness in Solving Mental Problems" and our research we can observe common patterns in identifying certain changes in "subsensory" hints, the unconsciousness degree of the thinking process, certain changes in making a conscious decision, determining the impact of mental action as a process of thinking, hints (verbal or "subsensory") on the passage of operations, mental actions as a process of thinking. It seems to us that, the last point of view on the unity of awareness and unconsciousness in cognitive research is the most promising.

In our experiment, the reason for this was subsensory cues that served the study participants as catalysts for making a generalized intuitive decision, a conclusion.

Thus, with the introduction of new unconscious components (with a change in the unconscious plane of thinking), the process of thinking has qualitatively changed at the conscious level. The subjects distinguished generalized criteria in the relationship of the elements of the task, not only situational, but also empirical. Subsequently, clues at the subsensory level as a whole serve as the basis for a deeper awareness of the problem situation, the formation of a theoretical prediction of the desired solution, and finding the right answer.

After completing the study, in order to determine the impact of certain actions under the scientific research program, subjects were handed out a questionnaire consisting of 14 "open" questions. Majority of the participants in the questionnaire, that is, 51.6% (80 people) were women, and 48.4% (75 people) were men. The education level of the subjects was equal; they were students of arts and humanities. Majority were university students (65.8% - 102 people), a relatively smaller proportion were young teachers (34.2% - 53 people). The processing and systematization of the data obtained from the questionnaire showed that the majority, 54.8% to be exact, of the subjects (85 people) based on the results above confirm the effectiveness of the newly conducted research and the impact on awareness of the phenomenon of unconsciousness in the process of solving the problem.

Thus, a comparative analysis of the data of our experiment with the data obtained by N.N. Pletenevskaya using her model of studying the unconscious showed that there are no sharp differences between them. This indicates that the organization of this four-step experiment was adequate, and proves the influence of the unconscious on the

conscious in the course of solving the task. The conducted questionnaire survey also proves the data we obtained and confirms the reliability and effectiveness of the method of A. V. Brushlinsky. In the process of our scientific research, we, in contrast to N. N. Pletenevskaya, identified the following. According to the results of an empirical study, the mechanisms of general unconscious psychological components of thinking perform the “masking” and activating function of the unconscious part of consciousness. Furthermore, 1) the unconscious as a mechanism for protecting consciousness from unnecessary information entrusts itself with the collection of information and its storage. 2) The unconscious performs the function of protecting consciousness from excessive tension. The results obtained indicate that conscious and unconscious are closely interrelated and constitute a mechanism of mutual influence.

In order to influence the unconsciousness and consciousness at the intersection of the intellectual process, an empirical study was conducted, consisting of: 1) creating a model of the small-scale intellectual process of aggregates, analyzing the effectiveness of the state of consciousness and unconsciousness; 2) creating a model of the medium-scale intellectual process of aggregates, analyzing the effectiveness of the state of consciousness and unconsciousness; 3) creating a model of a large-scale intellectual process of aggregates, analysis of the effectiveness of the state of consciousness and unconsciousness; 4) studying and analyzing the periodic nature of unconsciousness in the intellectual process (237 subjects, 114 of them are women (51.9%), 123 men (48.1%)). The number of characteristics for choosing a mobile phone at an unconscious level was small (only 5), in the second stage - two times more, and in the third stage three times more.

After the subjects were familiarized with the extended characteristic for 30 seconds, the overall picture completely changed. The number of correct answers in the control group decreased to 52.8%, and in the experimental group, it increased to 57.7%, that is, with an increase in the number of characteristics of the average level, an increase in the effectiveness of the unconscious and an equal decrease in the results of conscious decisions were observed. Familiarization of the subjects with an increased number of characteristics made it possible to improve the correct response indicators in the experimental group by 66.4%, respectively, this indicator in the control group decreased to 32.2%.

Thus, the amount of the intellectual process depends on the growth of information volume, which is directly proportional to the effectiveness of unconscious decision-making and inversely proportional to the results of an informed decision. In turn, unconscious decisions, being more productive depending on the growth in the volume of information, make it difficult to make an effective conscious decision.

In order to study the periodic characteristics of consciousness and unconsciousness in the intellectual process, an individual conversation was conducted with each subject ( $n = 237$ ) of the control and experimental groups as part of the fourth stage of an empirical study and made it possible to create an average statistical timing of making conscious and unconscious decisions (Fig. 2).

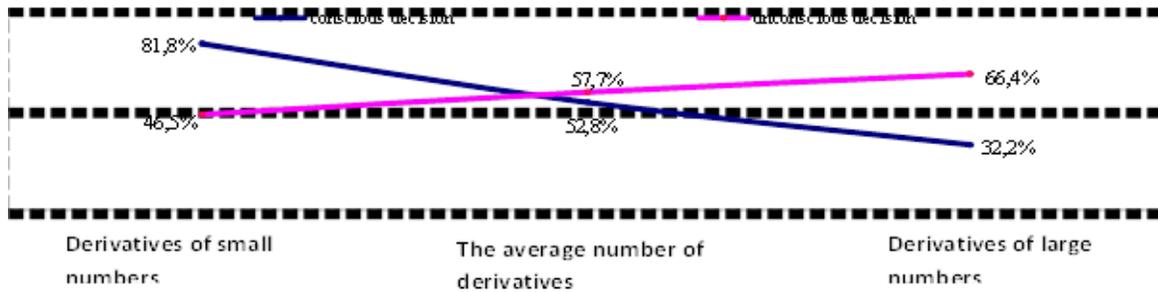


Fig. 2: The Dynamics of Conscious and Unconscious Decisions in the Course of Solving Intellectual Problems (n = 237).

It can be concluded that the derivative solutions to the problems of small volume by the subjects were carried out better at a conscious level than at an unconscious level. Moreover, in the process of a significant increase in the number of derivatives, the results of the subjects at an unconscious level were higher. This demonstrates the mobility and effectiveness of the unconscious in the process of solving intellectual problems with a large amount of information.

At the next stage, we carried out an empirical study, which consisted of three conditional stages aimed at arguing the influence of unconscious attitudes on the intellectual process, and 237 subjects took part in it. These are stage 1 - the formation of an unconscious level of installation during the intellectual process; Stage 2 - the influence of an unconscious attitude on the result of an intellectual process; Stage 3 - the study of the stability of an unconscious mindset in an intellectual process. The groups consisted of the control (n = 121) and experimental (n = 116).

At the first stage of the experiment, in order to form an unconscious setup, only the experimental group was connected (n = 116). This group was given the task of building a bridge across a 10-meter ditch using nine identical equilateral triangles. The side of an equilateral triangle is 2 meters (Fig. 3). The solution to this task is to turn the conditional supports of four triangles, placing them with their bases down (triangles numbered 1, 2, 3, and 4).

Then the subjects had to fill the gap between the triangles with five triangles with their bases up (the triangles numbered 5, 6, 7, 8, 9).

For the formation of a stable installation, the same tasks with a smaller number of figures and, accordingly, taking into account the length, were tested experimentally.

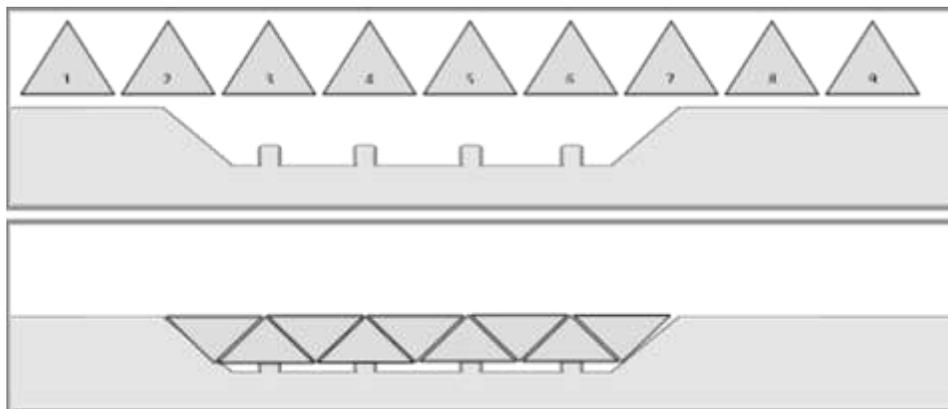


Fig. 3: Stimulating Materials and Solution Options at the First Stage of the Experiment

In the second stage of the experiment, subjects of both the experimental and control groups were admitted. The subjects (n = 237) were given a complicated task and the following choice:

- 1st option - 9 equilateral triangles with a side length of 2 meters;
- 2nd option - 1 trapezoid with a base length of 9 meters and 2 rectangles 3 meters long (Fig. 4).

In accordance with the solution of the problem, it was found that the majority of the subjects chose the first option as the material for the construction of the bridge; though, we cannot say this about the subjects of the control group. During an individual conversation, it was revealed that most of the subjects in the control group explained that with one trapezoid and two rectangles from option 2, the construction of the bridge can be carried out quickly and easily, and it will be stronger than the bridge built using equilateral triangles. At the same time, the subjects of the experimental group did not have a desire to explain which particular factor influenced their choice of building material. The setup created by the experimental group at the first stage of the experiment influenced the choice of subjects made by them at the second stage of the experiment, despite this, they had the idea that this option is not very simple and focused, that is, there was practically no The following rule was discovered, according to which the setup influenced the clear and simple solution of the problem by the subjects.

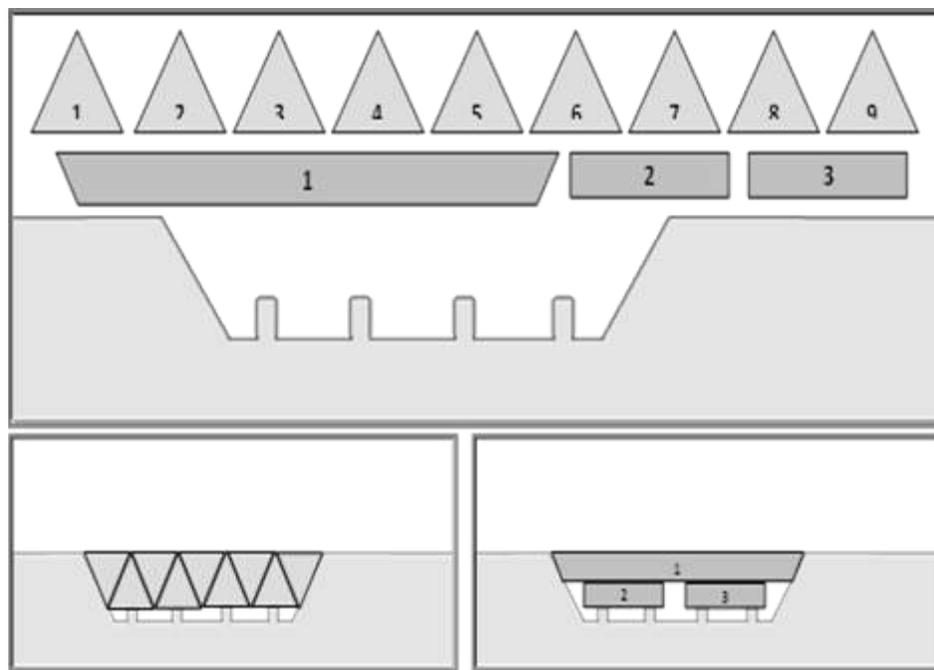


Fig. 4: Stimulating Materials and Solution Options in the Second stage of the Experiment

The study highlights the impact of an unconscious mindset on an intellectual process, the formation of a mindset mechanism to the level of unconsciousness. At an unconscious level, the formed installation determines the choice of one of the methods for solving the problem, while the installation mechanism itself is formed at an unconscious level and, in accordance with the requirement of following the rule, makes it possible to redefine it only when the conscious part of the result of the intellectual process is introduced. At the same time, the influence of the unconscious attitude of the subjects, that is, the establishment of a periodic indicator of maintaining its stability

acquires special scientific significance. To achieve this goal, the third stage of the experiment is carried out, in which only the subjects of the experimental group participated ( $n = 116$ ). The control group was not involved at this stage of the experiment because its members did not form an attitude to solve an intellectual problem at an unconscious level. At the third stage of the experiment, the subjects are offered a more complicated task - "to complete the construction of the bridge over the 10-meter ditch in 3, 6, 9, 12 days". From the data obtained, it was found that the number of subjects who selected building materials from the first option decreased relative to the time to solve an intellectual problem. During the first decision, in the process of solving the intellectual problem, 84.5% of the subjects chose the 1st option, after 3 days this indicator decreased to 62.1% (72 subjects), after 6 days - to 38.8% (45 subjects), respectively after 9 days - up to 18.1% (21 subjects), and after 12 days - up to 7.8% (9 subjects).

Thus, under the influence of pathogens of different modality, the groups of subjects corresponding to different levels of an unconscious setting showed different reactive abilities, namely, in subjects with a strong nervous system, the installations had a low degree of stability, that is, they had a lower level of stability of unconscious settings relative to the subjects, possessing a weak nervous system. They are more susceptible to the formation of stable unconscious attitudes. In order to study and disclose the mechanisms of unconscious general psychological components of thinking, a person must create the necessary situation for choosing the answer to a specific task in order to study the general psychological unconscious components of psychology in determining the situation needed for a person to choose an answer to a specific task, the usual automated temperament makes it possible to feel the need to choose one of answer options for the job.

## V. CONCLUSION

In the studies of many authors, who have tasked themselves to address the problem of unconsciousness, conscious and unconscious are considered as levels of mental reflection. They also argue that the unconscious performs an auxiliary task, and awareness has stages. Modern psychology describes intellectual activity as a) a complex formation of mental activity; b) associated with practical actions and visual sensory processes; c) the study of speech in relation with previous experience; d) complex system and relationships which directly characterize the function of knowing the existing properties of an object in a generalized form; e) according to modern concepts, it has been experimentally confirmed that intellectual activity is a holistic process, which, however, is described as a multi-dimensional activity carried out by the subject at various levels and in different conditions.

During the conduct of an empirical study related to simulated tasks (building a bridge over a 10-meter ditch), the choice of the subjects was a difficult one, but in the course of solving the problem and choosing options answers, there was no simplification of the solution of the problem under the influence of unconscious settings. During rechecking the solution of the problem (building a bridge over a 10-meter ditch) after 3, 6, 8, and 12 days, despite the settings formed at an unconscious level, the subjects who chose the first answer option showed a decrease in the sequence of solving the intellectual problem. In our opinion, the trend we have determined shows that the stability of an unconscious mindset, characterized by long and short duration, shortened the time it took to choose the primary answer option.

The unconscious performs the task of protecting consciousness from excessive tensions. This might serve to prove that in any conditions, there are unconscious processes in the human psyche and only the results of this activity reach consciousness.

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### AUTHOR'S PROFILE



During his scientific career, Abdurakhimov Kodirjon Abdukhalilovich devoted himself to many studies on theory of psychology and its history, general psychology and individual psychology. In 2017, he was awarded PhD diploma for his work on subconscious, named "The impact of subconscious components on intellectual work". Focus of his studies were given to illustrate the impact of subconscious to intellectual activity. He describes the state of study of subconscious in psychology, its major problems and its theoretical-psychological aspects. He argues that subconscious, along with conscious elements, provides for the proper organization of the intellectual activity. During his scientific and teaching career, he published 1 monograph, 1 students' companion, 2 study-methodical companion, and numerous articles on 18 scientific journals and 25 scientific conferences at home and abroad.