

CREATIVITY, STRUCTURE AND CONTENT OF CREATIVE POTENTIAL: WHAT WE KNOW AND WHAT WE WANT TO KNOW

У статті здійснюється огляд досліджень творчості, структури і змісту творчого потенціалу особистості, опублікованих в англomовних виданнях за останні 25 років. Як наслідок, робиться висновок про те, що у з'ясуванні механізмів того, як мозок шукає проблеми і знаходить для них розв'язки, людство зробило певний поступ, проте фундаментальних відкриттів у цій галузі поки що не зроблено.

Ключові слова: *творчість, етапи творчого процесу, механізм творчості, структура творчого потенціалу, зміст творчого потенціалу*

В статье осуществляется обзор исследований творчества, структуры и содержания творческого потенциала личности, опубликованных в англоязычных изданиях за последние 25 лет. Как следствие, делается вывод о том, что в выяснении механизмов того, как мозг ищет проблемы и находит для них решения, человечество сделало определенный прогресс, однако фундаментальных открытий в этой области пока не сделано.

Ключевые слова: *творчество, этапы творческого процесса, механизм творчества, структура творческого потенциала, содержание творческого потенциала*

For centuries scholars are looking for answers to the question how the human brain finds the problems and their solutions. The fact is that, for such actions knowledge is necessary but not a sufficient condition. One can have an encyclopedic knowledge and thus nothing new to offer in science, technology, art and management. Taking stock of progress in clarifying the nature of the creative process, it should be noted that progress in uncovering the mystery of human cognition partly due to the contribution of the galaxy of eminent philosophers, psychologists, physiologists, etc.

First of all, these are J. Guilford, P. Torrance and A. Osborne. Their original work, in the opinion of S. Isaksen and D. Treffinger [1], is an important contribution for those interested in the planned development of creative talent. Although the beginning of system studies of this phenomenon is the 1950s of the 20th century, fundamental research in this area has already been implemented in the 19th century. It is shown in this analysis [2] that the study of creativity research interests focuses mainly on five basic questions: what is creativity and who is able to create, what are the characteristics of creative individuals and who benefits from the

creativity, can creativity be increased by conscious effort? We should also note that a common feature of published papers on these issues is the prevalence of philosophical maxims on the experimental basis for the conclusions.

Clarification of the essence of creativity, development of its diagnostic tools, identification of the links between the components of creativity, determination of factors and the impact on them, etc. involve the use of certain theoretical foundations.

The cornerstone of the knowledge creation is the investigation of its mechanism. Several theories, which to some extent are consistent and simultaneously compete, reveal the essence of the creative process.

Possibility of finding the problem and its creative solution, according to J. Guilford, is created by a state of information system instability. In the learning process of an individual, the acquisition and accumulation of knowledge form a system which goes through specific unstable states to increasingly sophisticated levels [3]. In a state of instability, there is a high probability of failure of the system and building on its base the new system.

In the theory of combining the creativity associated with the emergence of new traits resulting from accidental connection of elements of which they are composed [4]. It is possible to combine ideas in different ways in order to produce creative thinking. First of all, these are the layout of similar approaches and situational models. To compare these ways, students were invited to view the materials describing the educational programs and develop a new program using heuristics that apply to one of them [5]. At the conclusion of the study it is found that the use of heuristics associated with the same approach leads to better achievement when more previous programs show demonstrate.

In [6] it is postulated that the dream is a functional internal component of creativity. This study evaluated the levels of embedding behavior in dreams during a sleep. Involved in the survey, respondents were divided into those with a creative outcome and those with no such outcome. A group of individuals with creative product showed high level of embedding dreams during sleep compared to the group without the creative product.

In a study [7] the model of creativity, based on the choice of coercion is presented. In this model, coercion comes in pairs, which makes it impossible for the absolute reliability of solutions and promotes the search for new solutions. The most important constraint specifies a new target. Other coercion – elements for recombination – is strategically selected to implement targeted enforcement.

Conflict encourages originality in the domains to which the individual is more prone, but limits it in other domains [8]. Incidentally, the conflict of interest as a business term, sends us to the plan, which cannot be effectively implemented due to internal differences between private purposes. Individual targets are independent and do not affect each other, but many of the goals are related and dependent on the same resources, workers etc.

The theory of selection operates with the multiple, different, updated time states. However, in the knowledge the thought or cognitive state changes the selection pressure against which the next state is estimated. Creative thought is the result of honing a vague idea through the

reinterpretation of the successful iterations with different real or imagined perspectives, in other words, through the actualization of the potential exposure with respect to the context. L. Gabora [9] shows that the mathematical description of contextual change of state introduces a probability distribution that is different from the distribution of Kolmogorov. Therefore, the classical formalism, such as selection theory, cannot be applied to the explanation of the creative idea. In that paper, he also proves that creative thought evolves not by selection, but by mainstream building set in motion contextually.

Some researchers tend to attribute creativity dispositional causes rather than situational. J. Kasof [10] in contrast to the authors of papers in which the problems of identity and relatively are investigated and little attention is paid to external influences on creativity, argues that the tendency to attribute creative behavior dispositional causes goes from the effects of dispositions on creativity and generate, in addition, deeply rooted tendencies and prejudices. Situational factor of creativity is likely manifested in the emotional state of an individual. One of the emotional states that «starts the creative process» is depression. The link between depression and creativity (especially an artistic one) is the focus of biographical and empirical diagnostic studies over the past several decades. However, the researchers state the spiritual aspirations, common to many prominent artists. In addition, depression can have a negative impact on the artist [11].

P. Dasgupta makes a call to the theory of creativity, using the ideas of Ch. Darwin, considering the historical episodes, taken from the life of J. Watt, G. Bose and P. Picasso. However, the author of the study [12] counterarguments based on a critical review of the data set, theory and logic used. D. Simonton defends the theory of creativity, which uses the ideas of Ch. Darwin – a blind nonmonotonic variation and selection. The commentary [13] revises Picasso's sketches related to the work on the painting «Guernica.» This pays attention on changing perceptions of the composition and components, as well as the inclusion in the picture of the first vision sketches by P. Picasso. This analysis supports the position of D. Simonton relatively nonmonotonic changes, including refunds. He also argues that the final version, in spite of being radically different with its components from studio sketches, borrows composition and theme from the original vision, but in a modified form of imagination, when a random event pushes Picasso's thinking in a new direction.

S. Moran [14] compares two metaphors used in the conceptualization of creativity. The first of them describes the creativity in terms of the intersection, exit outside. The second describes it in terms of reconfiguration of the problem or situation.

As can be seen from the above, the researchers agree that the core of the creative process is creative thinking. However, various concepts of creativity are different. Definitions usually cover several aspects of cognitive performance. Most often these are critical thinking, decision making and metacognition [15]. But at what point of view would creativity not be considered, convergent and divergent thinking are two types of individual reactions to the proposed problem. In addition, the theoretical generalization of scientific data concerning creativity is limited if it does not reflect the interaction of the individual, problem, process and product [16].

The question of what is the nature of creativity (general or specific) is one of the most controversial in its studies. Examples given H. Gardner, lead to the conclusion that the creativity does not exist in common, it is always specific. Recent work provides support for both positions [17].

W. Niu and R. Sternberg [18] find that the residents of the East are similar, but not identical to the concept of creativity, compared with Western type.

Differences in interpretation of creativity are not unique to different cultures, but also for the various activities. Creativity is possible in all human activity, while retaining the same core and specific. In the most general classification one distinguishes the scientific, technical, artistic and organizational creativity [19].

Undoubtedly, the fact that the organizational, scientific and technical creativity of an individual is limited to certain conditions, requirements, etc. Thus, that is not so obvious, artistic creativity is directed to certain genetically well-established aesthetic norms [20]. The existing models of art are usually based on the analysis of the original artists. J. Nemiro [21] analyzes the work of artists-interpreters, in particular, the actors. In this paper it is studied: social influences that undermine or encourage actor's creativity, tension between the personal characteristics of an actor and a role, spontaneity of an actor. In general, an actor's creativity is more improvisational, characterized by a coincidence process and its product, the influence of social factors in real time, the tension between individual and role performance and requires spontaneity. Positive social influences: clear direction, trust, freedom, respect, challenge, cooperation and communication with the audience. Negative impact on the work of the actor: distrust, colleagues who stopped to listen, and the feeling of interchangeability. The tension between an individual and an actor's role is characterized by catharsis and difficulties in distinguishing boundaries. The need of spontaneity is seen as crucial in the actor creative process.

The creative process is structured in a certain way. In different areas of human activity this structure is identical. To prove the above, the draft [22] showed that culinary creativity fits the framework of a modified version of the classical model of the creative process. Specifically, the four-phase model of creativity by G. Wallas – origin of the idea, aging of the idea, development of the idea and evaluation of the creativity product – is suitable for the analysis of culinary creativity, if it is improved by the introduction of Geneplore-model with its cyclical cognitive subprocesses.

Dedicated stages of the creative process are within the field of view of psychologists and educators. In one study [23] the task was to find out whether you can influence them, in particular – the process of incubation. The variables in this study were the duration of the interval between two solutions of the problems and the activity of those involved in research, manifested during this interval to generate words of five letters (they were offered a word starting with ten letters) as long as they are able to come up with such words. During a break, the study participants were resting, some participants were involved in activities related to the task. After a break (the incubation period) those involved in the study returned to the problem.

In both the first and second cases those involved in the study generated new solutions after the break, thus confirming the presence of an incubation effect. But those involved to do the same during a break in the second attempt generated more solutions than those who were not involved in such activities.

***It should be noted that in the scientific community there is no unity of opinion about the value of the incubation period in problem solving. In particular, in [24] two groups of participants took advantage of a break, during which they worked on the same or different tasks, and the third group worked without a break. The results showed that the use of a break, during which an individual is working on a different task, is more beneficial for the production of ideas compared with working on a similar task or continuous generation of ideas. The advantage of giving a break can not be explained in terms of the removal of functional fixity or general fatigue. While this advantage may be explained by removing task-specific fatigue, explaining the incubation effect in terms of unconscious information processing needs revision.

Evaluation of the idea is a critical aspect of the creative process. However, perhaps, the assessment of a new idea can be misleading. The error is the tendency to underestimate the originality of really new ideas. It is attempted to assess whether the analysis of the process leading to the generation of ideas and analysis of the product can compensate the mistake of underestimating highly original ideas [25]. The study found that this analysis reduces the error in the estimation of the original ideas.

G. Family [26], studying the problem of collective creativity, concludes that a single individual (or small group of them) can not offer an effective solution to a complex problem. In this complex analytical techniques, such as functional assessment of ideas and criteria matrix solutions may have more influence on the efficiency of the creative team than the amount of the proposed ideas [27]. As a result, information technology (IT) acquire the status of the main factors that affect the performance and efficiency of organizations. Advancement in communication technology allows companies to expand the potential base of team members, which still need to improve in the structuring. M. Basadur and M. Head [28] offer the technology of forming teams based on the cognitive styles of the participants rather than on their personal characteristics.

Collective creativity involves using the methods of group problem solving. The most widespread of these is the method of brainstorming. Improvement of this method, the conditions of its use in different situations is the subject of many scientific studies. The researches in this segment are determined in a certain way by the fact that companies often use interactive groups due to their specific advantages over the nominal groups, the creation of which provides a classic brainstorming. It appears, however, that members of nominal groups generate more ideas and more original ideas [29]. Rightly have concerns about the loss of a place in the process of group problem solving. Study [30] of groups which solve problems, consisted of many parts, found that creative achievement of groups multiplied with the number of highly creative team members. However, this occurs only when the ratio of team creativity – relevant processes within the group is relatively high.

Another characteristic of the modern studies of the creativity is their interdisciplinary nature. For a long time, the tendency of neglecting the creative achievements of music, performing arts, etc. was observed in the creativity research.

Now there is a conclusive evidence that the creative aspect of achievements is analyzed in the study of folklore, linguistic, anthropology, etc. R. Sawyer [31], summarizing progress in these and other areas, states the fact of convergence in the interdisciplinary study of the game creativity.

Studies of creativity are practically unable to directly measure the parameters that characterize it. As a result, researchers have resorted them to indirect measurement units.

Although time or measures that include the time, are often used as a variable in the study of creativity, very few realized attempts to organize and integrate the divergent results and knowledge of the relationship of time and creativity. In [32] is studied a theoretical framework for understanding the relationship between creativity and cyclical, linear and eternity. Cyclicity is characterized by periodic measurement of creativity, linearity indicates its evolutionary aspects, eternity is connected with a deep immersion states of the creative process.

In the study of creativity surveillance of various organs are widespread, especially the brain and heart. In the experiment described in [33], measuring the frequency of the heart used in the study of cognitive processes, connected with problem-solving of interpolation and insight character. The results showed a continuous increase in the frequency of the heart in the process of solving the problem of the interpolation of the nature and the sudden increase of the specified parameter when respondents solved insight problem.

Another group of empirical data collection methods in the study of creativity encompasses the use of different kinds and types of tests and questionnaires. In eventually such scientific problems often resort to interviewing.

New perspectives in the study of creativity, which originate from B. Skinner, related to the investigation of variables that control behavior. Specific environment – behavior communication producing novelty include simulation, training, volatility, etc. [34].

Clarification of the relationship between the individual parameters that characterize the creative process, the components of creativity, involves the use of correlation and regression analysis, an experimental study [35].

In planning and carrying out investigations, processing of the results effectively used computer equipment. For a few specific cases of creativity [36] found that its appearance in the career of an individual is random and Poisson distribution. The distribution of performance of individuals in the sample is exponential. It's not difficult to show that these results are consistent with the Campbell-Simonton theory of creativity and relevant statistics to go beyond.

The study of creativity inevitably arises the task of evaluating the creative product. As a result, the synthesis of basic constructs associated with the creative product is proposed. Among satisfactorily valid and reliable methods for assessing creative products their public recognition dominates. The study of creativity by examining its products often use a chronological approach [37] and a grid of bold ideas [38].

However, so far evaluation of products of art remains unsolved problem. The objectification of art is deficient when it is used to explain the aesthetic practice. E. Jones [39] is against the objectification of art, because it is not quantized entity, it is likely art practice, formed by an unexpected clash between the catalytic material substances and perceptive observer.

Although the problem of creativity actively studied for half a century, until we get consistent results on the structure of the creative potential of the individual and the content. The theory of K. Dabrowski, which deals with the psychological stress as a necessary condition of mental development of the individual, to some extent contributes to the harmonization of the results of studies of these problems [40]. If an individual does not pass through positive disintegration, conditioned by the state of concern, he/she, according to K. Dabrowski, remains in «primary integration.» While progress in the area of disintegration, to a higher level of development is based on the over-sensitivity and higher than average response to stimuli.

Among the studies of the structure and content of the creative potential of an individual, especially notable are the emphasis towards the need of uniqueness, creativity motivation and value of orientation [41]. The main issues addressed in the study [42], related to the role of self-regulation at a time when children paint the real and imaginary objects. The results showed differences in self-regulation, depending on the type of problem (real or fictional object), the age and the level of creativity of participants.

Based on the theory of N. Schwartz and given the position of F. Barron, the authors [43] tested the hypothesis that individuals have different system of values based on the level of their own creativity. Namely, creative achievement negatively correlate with the value blends of tradition, security and strength and are positively correlated not only with self-directed value-composite, but with universalism and stimulation.

The central component of the creative potential of an individual is the ability of divergent and convergent thinking, to combine the elements of thought. Creativity involves generating a new (using divergent thinking) and an assessment of novelty (by convergent thinking). The free production of the multiplicity due to divergent thinking unlimited offers enticing promises of ease in the creativity, but runs the risk of generating only unused products if it is not adapted to the reality. However, it is unacceptable to absolute the convergent thinking. Too low and too high level of development of each of these types of thinking does not help to creativity [44]. The study [45] are clarified the differences in convergent and divergent thinking, and also the destruction of the structure and the combination of the elements of thought, manifested in the solution insight and noninsight problems. Available data [46] indicate that the combination and reorganization of existing knowledge structures play an important role in the generation of new ideas. Moreover, the originality of the idea as a result of the combination is achieved by applying the operations of identification, mapping and development. In this case, the identification and mapping of objects affect the originality of the solution, but not quality.

R. Sternberg [47] comes to the conclusion that individuals are creative by making possession of a set of solution for typical problems and represents 10 common methods that are used in the process of creative problem solving.

A key component in the structure of the creative potential of an individual is the imagination. It is believed that creativity is connected with the processes of combination play, the result of which is the construction of mental constructs. Imagination in this process is responsible for finding alternative interpretations formed constructs. The study [48] is dedicated to experimental verification of this assumption. The findings suggest that individuals with creative imagination are better in interpreting ambiguous figures, compared with ordinary individuals.

A high level of creativity is a good association memory. The study [49] becomes clear link between creativity and processes of associative memory. Study participants showed a pair of words with the instructions to say yes, if they caught the association between words, and not otherwise. The second word in each pair was preceded by the first exposure for 200 ms. Positive associations are based on the similarity in meaning or pronunciation with the main word, in a neutral context words were either unrelated or second was a set of meaningless letters. The results of the study find that creative individuals differ from less creative by perception of these associative relationships.

The willingness to work at risk characterizes the creative potential of personality. Results of the study [50] show that risk aversion is a harbinger of creativity of an individual and, in addition, mediates the relationship between the promotion and creation. Risks associated with the search for new forms and content, increases the likelihood of a creative product. Findings of the study [51], in which after considering several historical cases of successful song works the authors show that a high level of creativity is associated with the desire to express new ideas and willingness to face and adapt to the possibility of failure, prove the above.

C. Van Hook and D. Tegano [52] confirm the presence of a curvilinear relationship between social conformity and creativity. Highly conformal and highly non-conformal children do not gain such high scores on creativity as those who are characterized by freedom in expression (i.e. those who do not strictly follows the model of conformity or nonconformity). Using the chi-square analysis has revealed significantly more children in the group with high creativity and freedom of expression in comparison with the number in the groups with low creativity and conformal or nonconforming children.

Separate block of components of creativity can be formed from properties that characterize an individual's ability to keep own self, mental balance, etc. Two samples of college students identified as those with high and low levels of creativity on the basis of their achievements on the results of the test and evaluation of creativity creative output (poetry) [53] are involved in the interviewing, the recording of which was analyzed from the perspective of the 15 styles own self defense. The results showed that 13 styles of self defense of the two groups of students on average are significantly different. In this creative students received high marks from fantasy, the deviations from a specific role, division, change of place, reaction formation, intellectualization, humor, suppression, sublimation. These students scored low marks for design, passive aggression, repression and altruism. The study [54] finds differences in anxiety and defense mechanisms for the different categories of individuals. To solve this problem there

have been selected two groups of male participants who scored highest or the lowest scores on the test results of creativity and were tested using a defense mechanism test, as well as answered the questionnaire about anxiety. The results indicate that the group with higher creativity is characterized by greater anxiety compared with that with lower creativity. Also, the first uses more safeguards than the second.

The effectiveness of creative activity to a certain extent is determined by the ratio production ideas – evaluation ideas. The study [55] verifies the hypothesis that different relationships idea – estimate (I – O) are optimal for creative problem solving in various areas. As expected, the high (I – O)-relations are inherent in scientific activity, the low values of this ratio are fixed for activities classified as application solutions, conservative values of (I – O)-characteristic of the relationship generally associate with the management of nonprofit organizations.

Although structurally creative potential is invariant under the gender, substantive content of its components, in some cases, gender-determined. The study [56] investigates the gender role orientation relationship with the creative achievements and cognitive styles. Specifically are considered stereotypically masculine activity, stereotypically feminine activity and androgen (a combination of the first and second). The results showed that the orientation on stereotypically masculine activity was positively associated with creative achievements in the field of business. Androgenic individuals are more productive in the field of literature, theater and movies. Orientation to stereotypically masculine activity is also positively associated with cognitive style six hats, which is a measure of cognitive flexibility. C. Keller, L. Lavish and C. Brown [57] examine the relationship between creative styles, autosuggestion and gender role orientation. The results of the study found that creative styles of psychologically bisexual persons, compared with styles of psychologically homosexual persons are connected with the highest rating in the subscales of CSQ-R: self-hypnosis creativity, use of technology, use of other people and use of senses. The results also allowed to conclude that the creative styles of psychologically bisexual individuals are of great similarity in comparison with creative styles of psychologically homosexual persons.

The study authors [58] conducted a survey of properties that characterize the creative potential of the individual. It also turns out the position of the respondents as to the desirability of these properties. The results showed that the respondents only in the most part considered creative properties as desired. In other words, some individual properties have received relatively high ratings of creativity, but significantly lower ratings in terms of desirability.

The results of the final study [59] showed that the core characteristics of the creative potential of the individual were an original and flexible thinking, imagination, the ability to observe, the desire to achieve the goal, self-confidence. In this creativity is not always associated with wisdom, perseverance, individualism, artistry and humor.

Identifying a group of individuals with a high level of creativity, researchers actually take the position that such individuals have a number of common features. At the same time, being structurally homogeneous, they may differ among themselves on a substantial level. The study

[60] of cross-cultural differences in creative thinking of American and Japanese students showed that the former were significantly more successful in the graphic block of Torrance Tests of Creative Thinking (TTCT), compared with the latter. J. Kaufman [61] explores how students-writers and students-journalists differ in their style of thinking. To this end, they were asked to describe a series of photographs. As expected, students-writers scored more points than the students-journalists in a narrative style. The interaction surveyed factors takes place to paradigm style. Male-journalists far inferior to men-writers and there is a trend in the opposite direction for women. Organizational creativity is specific regarding substantive content of the structural components of creativity. Managers of enterprises - manufacturers of consumer goods have taken part in the experiment [62], in which they took possession of and used Simplex-method for solving the real problems of governance. The study found the relationship between positional and behavioral variables (skills), on the basis of which the relevant causal model was developed. The most important variable was the behavioral skill implicated in the formation of the number of options. The main positional skill is to prevent premature assessment of options (postponement).

The analysis shows that in determining the structure of creative potential and content of its components, researchers often use the opinion of experts, including high school teachers, teachers of secondary schools, etc. As an example, it is possible to consider the study [63], based on the identification of personality traits associated with creativity, and aimed at the study of the perception of creative students by teachers. In this study, teachers formed a generalized model of the creative individual and grouped the students with whom they work on most favorite and least favorite. In a similar study [64] teachers called on five characteristics of creative and non-creative students. Their responses are summarized in 42 creative and 33 non-creative properties, features, etc. In this case, most of the creative features called imagination, curiosity, speed of response, activity, high intellectual ability. The most pronounced uncreative signs include shyness, lack of confidence, conformism. The study also collected data to argue that teachers treat some of the characteristics of creative students socially undesirable.

1. The components of the creative potential of the individual in some way are connected with each other and with those features that do not directly affect the efficiency of creative activity.

It is quite natural to begin consideration of the relationship between individual creativity and intelligence. The study authors [65] found that IQ and the number and uniqueness of ideas faintly correlated with performance and unique ideas tend to vary in the same direction. Intellect has virtually no effect on non-academic achievements of individuals, but the number of ideas and their uniqueness are closely associated with non-academic achievements of the subjects involved in the study.

Divergent thinking, as well as other components of creativity, having an affair with the personal characteristics, to a certain extent determines their specificity and level of development. The study [66] examines the relationship between divergent thinking and interpersonal and

ethical reasoning. The results led to the following conclusions: the general skills of divergent thinking are positively related to internal assessment of the uniqueness, the general skills of divergent thinking are negatively related to internal assessment of the originality, originality component of divergent thinking is negatively associated with the internal assessment of the uniqueness, the underestimation of unique ideas is more important in interpersonal evaluation, especially in the case of high divergent thinking.

Y. - C. Yeh [67] concludes that the seventh graders may lack the ability to integrate knowledge and to make links between education and life experience, but reflection, learning and creative thinking use the same abilities.

According to a study [68] it is concluded that the IQ-scores predict academic, but not creative, ability in mathematics. Indicators of creative thinking predict creative, but not academic, ability in mathematics.

There is undeniable connection between creative potential and self-esteem. However, it remains an open answer to the question what kind of communication (stochastic or determinant) is this? If this connection is the determinant, then what is cause and effect? The study [69] becomes clear link between creativity, indecisiveness and self-esteem in children of preschool age. According to the results is ascertained positive relationship between self-esteem and creativity, and a negative relationship between indecisiveness and creativity.

Some researchers describe the creative individual as a socially adapted. Others note that children with imperfect behavior can also be creative. E. Hoff and I. Carlsson [70] study the relationship between self-image and creativity with younger students. It should be noted that the results showed no difference in self-esteem among children with high and low levels of creativity. One possible explanation for this is the fact that the Creative Functioning Test measures a slightly different aspect of creativity.

In [71] is studied creative self-sufficiency (judgments about their own creative abilities) high school students. The results show that the belief in their own skills and performance of the approach with an objective assessment of creative abilities of students by teachers are positively related to their creative self-sufficiency. Creative self-sufficiency of students is also associated with their partial ignoring by teachers to deny them. The results obtained show that students with higher levels of creative self-sufficiency are more often characterized by positive beliefs about their academic abilities.

A number of studies devoted to creativity and behavior of the individual. Thus, in [72] the role of affective regulation of the relationship between aggressive behavior and creativity is turned. The results showed that higher levels of aggressive behavior were associated with a lower level of creativity. Affective regulation mediates such a link. The results are not confirm the link between negative affective expression and creativity. But higher levels of negative affective expression are associated with higher levels of aggressive behavior.

In the study [73] college students who enroll in the course of jazz, listen to a record of this genre of saxophone improvisation and express their emotions in relation to listen. It was found that the average score of anger (based on diagnostic test) for listeners, who appreciated music

as angry, was significantly higher than the average of the state for those who rated it as convenient. In other words, a statistically significant correlation is between the perception of anger in the music and the audience scores on the test of anger. Overall, the results show that personality can influence the perception of emotions of music, and jazz improvisation in particular can not be trusted to convey emotions in relation to individual differences in how its emotional content is perceived.

The study authors [74] test the relationship between divergent thinking, motivation for creativity and perfect behavior. Participants in the study worked with a battery of tests on divergent thinking, and also with Runco Ideational Behavior Scale (RIBS). The time spent on the job, used as a measure of motivation for creativity. In addition, the study used questionnaires performed relationship, and evaluation of divergent thinking is considered as the main precursor of RIBS-points. Statistical analysis of the data showed that the relationship between motivation for creativity, the level of divergent thinking and ideal behavior was curvilinear. In general, it is received little evidence of a relationship between motivation for creativity and ideal behavior or level of divergent thinking.

The creative potential of the individual, which is expressed in the number and quality of ideas, has been investigated [75] in terms of predicting the effectiveness of educational activities. The participants of this study were college professors. The correlation between the creative thinking of teachers and the effectiveness of their teaching activities, as determined in the solution of real problems, was: $r = 0,64$, $p < 0.0001$.

It became a popular thesis that the high level of creative potential is necessarily accompanied by certain mental disorders. But this is not always the case. The study [76] investigates the link between creativity, ADHD-symptoms, temperament, and psychosocial functioning. For this purpose, four groups of children aged 10 - 12 years were compared: with ADHD and a low level of creativity, with a high level of creativity and ADHD-symptoms, with a high level of creativity without ADHD-symptoms and normal children of the control group. The results show that the presence of ADHD-symptoms in creative children is due to their temperamental characteristics, levels of anxiety and depression. In this case, a family environment and maternal authority, perhaps, are not related to the presence of ADHD-symptoms in creative children.

In general, it is appropriate to conclude that research efforts have led to progress in the understanding of the nature of creativity and its application [77]. New methodologies and research paradigms [78] have made it possible to study the specific processes that are important for creativity. As a result, cognitive and affective processes are better understood and differentiated. Now it is possible to determine the characteristics of creativity in different profiles in different domains. In this study creativity has moved beyond the stage of development of the primary hypotheses. However, the challenge remains to implement the integration, while doing research on various domains, processes and personality. There is a need for comparative tests, contrasting the benefits of the various theories and methods, evaluation and dissemination of traditional measurements, development of integration models. Innovative practical demands,

nature of the differences of creative thought in different domains, impact of creativity on human and social systems require a more thorough study [79].

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