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CREATIVITY AS A FACTOR OF STUDENTS' SOCIAL INTELLIGENCE. SUMMARY OF RESEARCH FINDINGS

INTRODUCTION

Since the ancient times scientists and philosophers have been asking the question what makes one person great and the other average or even unnoticeable. Scientists were trying to study the phenomenon of brilliance with the help of scientific methods. During that time, some psychologists thought that a person needs deep intellectual knowledge, others stood up for the necessity of creativity in the realisation of one's personality, yet pedagogues claimed that thorough all-round knowledge is necessary. However, it is stated nowadays that all these theories may be partially true due to the fact that each of the aforementioned trait is salient in achieving success. Psychological studies of the late XX century prove that these traits are not decisive, and show that there are particular personal traits that determine life's success. In the late 1990s psychologists began saying that the ability to cooperate effectively with others is the most important thing for successful activity (Савенков, 2009). This problem is very contemporary due to the fact that a young person in today's world has to have comprehensive knowledge as well as high level of creative thinking in order to react to the requirements of contemporary society.

The term social intelligence has been recently introduced in the scientific world. This phenomenon got popular thanks to its extremely important practical possibilities. New special features of social intelligence have been explored since the beginning of scientific studies. Giving the definition of social intelligence Edward Thorndike has determined it as wisdom in cooperation with people. The further studies on this topic not only proved this definition, but also enriched it.

By understanding the meaning of social intelligence and creativity it is possible to observe their influence on modern person due to the fact that a new society imposes a number of requirements, adaptation to which anticipates the success in particular field or growth in general terms. Special features of creativity are the following: irresponsibility, spontaneity, inability to control by will and mind (Березина, 2008, p. 92-101).

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The subject of the study is theoretical and empirical analysis of phenomena of social intelligence and creativity mentioned in the article. Moreover, the detailed analysis of the results of the research conducted among young people at the Ukrainian Catholic University in 2009 in Ukraine is presented. The interdependence between social intelligence and creativity is also mentioned.

UNDERSTANDING AND DEFINING SOCIAL INTELLIGENCE AND CREATIVITY

In our times the phenomenon of social intelligence is perceived as something new despite the fact that the term “social intelligence” was introduced in 1920 by Edward Lee Thorndike. He was the first to define the phenomenon of social intelligence as an independent psychological category. Thorndike stated that social intelligence is an ability to act wisely during interpersonal communication. However, his definition was too broad which was the reason for multiple different interpretations (Шалаева, 2009). Thorndike differentiated three types of social intelligence:

- abstract intelligence as an ability to understand abstract verbal and mathematical symbols as well as to carry out any functions with them;
- concrete intelligence as an ability to understand things and objects of the material world as well as to make any activities with them;
- social intelligence as an ability to understand people and to cooperate with them.

It is possible to formulate the following definition of social intelligence: social intelligence is a cognitive basis of communicative competence; it anticipates the human's ability to understand and foresee the behaviour of people in different life situations, taking into consideration their verbal and nonverbal signs, as well as to understand and adequately assess oneself, one's actions and doings towards other people (Ушаков, 2004).

Summarising the abovementioned, it is possible to formulate the following (Ушаков, 2004):

- social intelligence is a cognitive ability, that is why it is one of the types of intelligence and is subordinate to its rules;
- conditions of social intelligence formation are largely impacted by communicative special features of people;
- representative system, common verbal and nonverbal representation make social intelligence special.

It is impossible to analyse the phenomenon of social intelligence without general intelligence. The problem of correlation between social and general intelligence aroused great interest among researchers. It is worth mentioning Hans Eysenck and Joy Guilford among scientists who presented special features of social intelligence in their works.

Hans Jurgen Eysenck claimed that intelligence is the same scientific term as electricity, gravitation and chemical bonds, and due to the fact that they are *not material*, their great scientific value is not lost. He indicated three relatively independent theories of intelligence and possibilities of their combination. The fundamental element in the three-component theory of intelligence is biological intelligence. It serves physiological, neurological, biochemical and hormonal basis of cognitive behaviour. The genetic factor, inborn abilities for data processing, plays an important role. In this case, the attention is concentrated on the functionality and structure of the cerebral cortex.

The second element is a psychometrical intelligence. It can be perceived as a connection between the first and third element of the three-component theory of intelligence. It can be measured by standard IQ tests. It is 70% dependent on the biological factor and 30% dependent on the environment. The third element is the social intelligence under which Eysenck understands intelligence which is being formed during individual's socialization, so it is a result of the general intelligence development. The scientist considers social intelligence as a broader phenomenon in comparison with biological and psychometrical intelligence. In literature, biological intelligence is marked by letter A, social by B, whereas intelligence B is wider than intelligence A and includes IQ in itself. IQ is wider than intelligence A and includes it in itself. One of three components of intelligence that concerns biological intelligence may be truly called fundamental.

It is important to mention a special role of sociocultural factors that influence on the level of development of both biological and psychometrical intelligences. Under these factors culture is considered in general: education, upbringing, status and so on. The uniqueness of the Eysenck's three-component theory of intelligence is concentration on sociocultural aspect of cognitive development as well as the fact that the scientist does not try to put in one line social intelligence with general one while proving the connection between general intelligence with social one (Савенков, 2009; Наймен, 2009).

The Joy Guilford's concept of social intelligence takes a salient place while considering the question of social intelligence. He was the first to create the reliable test for social intelligence measurement. He analysed social intelligence as a system of intellectual abilities that are not dependent on the factor of general intelligence. The system is connected with the knowledge of behavioural information. He created a famous multifactorial (cubic) model of intelligence SOI (structure of intellect), in which he devoted special place to social intelligence. It distinguishes 120 factors of intelligence, so this model describes (5x4x6) intellectual factors. To each intellectual ability corresponds a particular cube which is created by three coordinate axes.

Guilford together with a group of scientists tried to make a test which would have not only understand and interpret behaviour of others, but also manage difficulties in interpersonal communication. Such an ability was called *basic skills of problems solution of interpersonal interaction*. It anticipated the production of big amount of

ideas on how to behave oneself in a particular situation. Having a look at every sphere of human's life, it becomes clear that there would not have been a great discovery or some nonstandard problem solution if people had not have creative abilities (Воронин, 1999, p. 162-163).

The term creativity (creative work) is used to mark thinking processes that lead to the creation of unique, earlier unknown solutions, thoughts and actions. It is extremely hard to measure creativity due to the fact that it has a big amount of different forms and is famous for its instability (Капреп, 2005, p. 164).

Thomas Michael Stein generalised the features of creative people in the 1960s (Попек, 2004, p. 10-11):

- Decisive, dominant take over leadership of a team, they are full of initiative, active and self-sufficient.
- Less slow, less formal and less stereotypical, they do not curb their feelings.
- They have strong motivation, they like working and are eager to work, they distinguish themselves by strong inner discipline, persistence, boundless energy and assiduity.
- Independent.
- Constructively critical, less satisfied with half-solutions.
- They have great interest and considerable knowledge, are distinguished by flexibility.
- Sensual and emotional, subjective, full of life energy and enthusiasm.
- They have aesthetic attitude towards world, aesthetic type of intelligence and feelings.
- They have very little interest in household activities.
- They have woman's interests and do not have man's aggressiveness.
- Show a little interest in problems of people's relations, are distinguished by introversion, not big sociability, considerable reserve.
- Emotionally imbalanced, but can effectively use their changeability; badly adapted in terms of psychological determination, but are well adapted to work and are socially useful.

Creativity is a main feature of a creative person. It is an integrative quality of psychology which ensures productive transformations in various fields. It is determined by its creative attitude towards world. It is an ability to react on the necessity in new approaches and products (Истратова, 2005, p. 270)

Creative functions are controlled by right hemisphere of brain. In most people, it works weaker than the left one which is responsible for thinking processes that are consecutive and logical. From the outside hemispheres are similar and they are connected by a bridge called a corpus callosum which consists of millions of nerves

fibres. Each hemisphere receives input data, then the data are processed with further information exchange through the corpus callosum between two hemispheres. At the beginning of 1960s an American psychologist Roger Sperry conducted a range of experiments firstly on animals with damaged corpus callosum, and then on people who had disrupted connection between the hemispheres because of epilepsy. It turned out that each hemisphere produced specialised functions, feelings, ideas and thoughts that were different from the other hemisphere.

The left hemisphere performs analytical functions and is responsible for consecutive logical actions, especially languages learning, theoretical disciplines, an ability to think. The right hemisphere is responsible for creative and intuitive functions, especially an ability to create a work of art and musical works. The interaction of two hemispheres plays an important role; therefore, little children are creative from nature due to instinctive equivalent usage of two hemispheres (Картер, 2005, p. 164).

Concerning thinking, there are two ways to find solution of a problem: finding solution with the help of logic and acquired knowledge, whereby all efforts are concentrated on the search of one problem solution (convergent thinking) as well as finding solution in all possible directions. Only this type of thinking may result in new and original solution (divergent thinking).

Creative thinking is notable for flexibility due to the fact that when an ordinary person can find one or two solutions, a person with creative thinking can find several solutions. It is also movable; this type of thinking is not limited by one point of view and it analyses a problem from multiple perspectives. It is original, it produces non-banal, unexpected and original solutions (Герриг and Зимбардо, 2004). A certain level of intelligence is required in order for creativity to manifest itself. It is observed that people with *medium level of intelligence* have the same medium level of creativity, and starting from the level of intelligence, IQ near 120, the ability of creative thinking increases (Герриг and Зимбардо, 2004, p. 436-437).

If creative work is perceived as a process that has its special features and results in creation of something new, then creativity is rather perceived as an ability to creative work, non-standard thinking, as an internal resource which is a prerequisite for creative work. The question of creativity is ambiguous. It is known that there is a connection between creativity and creative achievements. However, the sense of this quality is not clear. It is impossible to completely separate creativity from general intelligence. Reliable ways of creativity measurement have not been invented yet.

EMPIRICAL STUDY OF INTERCONNECTION BETWEEN CREATIVITY AND SOCIAL INTELLIGENCE

The assumption about the existence of connection between the level of creativity and social intelligence served the basis of the study. In other words, the thesis that the higher the level of creativity of students, the higher the level of their social intel-

ligence is the hypothesis. The subject of the presented study is dependence between the social intelligence and creativity. The aim of this work is to determine the interdependence between creativity and social intelligence. For the abovementioned aim were used: J. Guilford's and M. Sullivan's methodology of social intelligence study as well as Stanislaw Popek's creative behaviour questionnaire KANH. The level of social intelligence and creativity of students was studied in the work. 37 respondents aged from 18 to 25 years took part in the study (full-time study students, faculty of humanity). The study was conducted in 2009.

The methodology of social intelligence study plays an intermediate role between tests of intelligence and personality. It gives a possibility to diagnose such a psychological phenomenon as social intelligence, both its general level and its each separate component, such as an ability to foresee the outcomes of person's behaviour, tendency to logical generalisation, recognition of common important features in various nonverbal reactions, an ability to understand the meaning of verbal human's reactions depending on the context of the situation, as well as to understand the logic of the events sequence and the meaning of human's behaviour in concrete situations.

Creative behaviour questionnaire KANH is based on the idea that creative behaviour consists of cognitive and characterological spheres. The cognitive sphere derives from intellectual abilities, but it is considered wider than during intelligence measurement tests. It is analysed as an ability to observe, a tendency to remember, hypersensitivity, as well as an ability to process and create new information with the help of divergent thinking, imagination and intuition. This cognitive sphere was called heuristic behaviour. Due to the fact that the questionnaire's area of study goes beyond the limits of divergent thinking, the sphere of convergent thinking got launched. It got the name of algorithmic behaviour.

The second questionnaire's sphere is characterological and it manifests during active self-fulfilment of potential cognitive possibilities. Effective self-fulfilment is possible under cooperation with other personality traits which are conventionally defined as conformism and non-conformism (Попек, 2004, p. 10-11). The results of J. Guilford's methodology on defining social intelligence are presented in Table 1.

Table 1. The social intelligence level

Subtest	The social intelligence level, % of respondents		
	High	Medium	Low
1	48,65%	43,24%	8,11%
2	27,03%	64,86%	8,11%
3	18,92%	64,86%	16,22%

4	13,51%	67,57%	18,92%
Overall grade	21,62%	59,46%	18,92%

Source: study of authors.

As the results show, the majority of respondents according to subtests 2, 3 and 4, as well as the overall grade showed the medium level of social intelligence, with the exception of subtest 1 in which the majority of the respondents showed high performance. Concerning tasks for respondents provided by methodology, subtest 1 defined an ability to foresee outcomes of behaviour, subtest 2 defined an ability to make logical generalization, subtest 3 defined an ability to understand verbal reactions depending on the context of situation that caused them, subtest 4 defined an ability to understand the logic of events sequence and the meaning of human's behaviour in concrete situations.

Concerning Stanislaw Popek's (2004) methodology *KANH*, the given results were converted into sthènes with the help of standardised table of questionnaire, and the number of respondents was converted into percentages. The Table 2 shows percentage of respondents and their correlation with sthènes in each field of study. Thus, it is possible to observe the difference in scores for each criterion and an overall tendency of respondents to certain type of behaviour which is divided into:

- K (conformism): compliance, weakness, subordination, dependence, excessive inhibition, focus on protection.
- A (algorithmic behaviour): mechanical memory, reproduction imagination, intellectual inflexibility, lack of technical and artistic inventiveness.
- N (non-conformism): independence, activity, adaptive flexibility, spontaneity, expressiveness, perseverance.
- H (heuristic behaviour): divergent thinking, intellectual flexibility, constructive and verbal creativity as well as potential gifts of creativity.

Thus, subtests (N) and (H) counter values that are attributed to creative people. Scales (K) and (A) indicate opposite rates (Попек, 2004, p. 10-11).

Table 2. Correlation of algorithmic, conformist, non-conformist and heuristic behaviour

Test's name <i>sn</i>	Types of behaviour			
	K	A	N	H
1	0%	0%	18,92%	8,11%
2	0%	2,70%	10,81%	10,81%
3	8,11%	13,51%	13,51%	10,81%
4	13,51%	18,92%	24,32%	18,92%

5	18,92%	18,92%	5,41%	10,81%
6	24,32%	27,03%	10,81%	5,41%
7	13,51%	16,22%	10,81%	10,81%
8	18,92%	0%	2,70%	8,11%
9	2,70%	2,70%	2,70%	10,81%
10	0%	0%	0%	5,41%

Source: study of authors.

According to the Table 2 respondents showed the largest number of sthènes, 9 and 10, in heuristic behaviour scale in comparison with other scales. In other words, 10 sthènes got people in heuristic scale 10,81%, other scales showed 0 points. Thus, it is possible to note the high level of creativity of respondents.

Thanks to correlation of social intelligence and creativity interview data, it becomes possible to see that medium and high social intelligence correlates with high scores in creativity scale. Interconnection of creativity and social intelligence can be measured by correlation.

Table 3. Correlation of social intelligence and creativity figures

		Social intelligence				Creativity			
		CI-1	CI-2	CI-3	CI-4	K	A	N	H
Social intelligence	CI-1	1,00							
	CI-2	0,16	1,00						
	CI-3	0,55	0,19	1,00					
	CI-4	0,25	0,54	0,37	1,00				
Creativity	K	-0,32	-0,32	0,11	-0,27	1,00			
	A	-0,18	-0,34	0,09	-0,34	0,42	1,00		
	N	0,09	-0,20	-0,23	-0,28	-0,22	0,00	1,00	
	H	0,21	0,07	-0,14	0,00	-0,27	-0,31	0,71	1,00

Source: study of authors.

Table 3 presents the interconnection of each scale of creativity and social intelligence. The most important are figures of correlation of algorithmic behaviour with subtest 2 and 4. Figures of these correlations are negative, it means that if one of them is increased, the other is decreased. This means that if the social intelligence figures are increased, the decrease of algorithmic behaviour should be observed. If social intelligence increases, the heuristic behaviour should increase due to the fact

that heuristic behaviour is the opposite to algorithmic. Thus, the conducted study of interconnection between creativity and social intelligence showed positive correlation between figures of social intelligence and creative behaviour.

CONCLUSIONS

Summarising all abovementioned, it is worth mentioning that human's ability to effectively communicate with others is widely understood under social intelligence. It is a human's ability to understand and correctly interpreter interpersonal relations. Thanks to the conducted research, it is possible to make a conclusion that the hypothesis of the study was proven. There is a connection between creativity and social intelligence due to the fact that the majority of respondents had medium level of social intelligence. Respondents got the largest number of sthènes, 10, in heuristic (creative) behaviour scale.

Correlation showed that there is a positive correlation between social intelligence and creativity which was anticipated in the hypothesis. The studies also showed positive correlation between figures inside the test, especially between figures K and A, N and H in the questionnaire KANH, as well as between figures CI – 1 and CI – 3, CI – 2 and CI – 4, CI – 3 and CI – 4 in methodology of social intelligence study.

Thus, thanks to the conducted study of interconnection between creativity and social intelligence it is possible to make a conclusion that creativity and social intelligence among students has positive correlation. In other words, if one figure is increased, the other also increases.

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CREATIVITY AS A FACTOR OF STUDENTS' SOCIAL INTELLIGENCE. SUMMARY OF RESEARCH FINDINGS

Keywords: creativity, social intelligence, students.

Abstract: Due to human's vital activity, it is possible to determine two types of behaviour: adaptive and creative. Adaptive behaviour manifests in actions connected with resources that a person already has, whereas creative behaviour is a creation of new reality. The next analysed term is a phenomenon of social intelligence that in not scientific terms was called wisdom of life. The question of creativity and social intellect is discussed in the article. Moreover, the results of the empirical study conducted by the authors on the interconnection between creativity and social intelligence among Ukrainian students are described.

KREATYWNOŚĆ JAKO CZYNNIK INTELIGENCJI SPOŁECZNEJ. KOMUNIKAT Z BADAŃ

Słowa kluczowe: kreatywność, inteligencja społeczna, młodzież akademicka

Streszczenie: Rozważając funkcjonowanie człowieka, wyróżnić można dwa typy jego zachowań: adaptacyjne i kreatywne. Zachowanie adaptacyjne przejawia się w działaniach związanych z zasobami, które człowiek już posiada, natomiast zachowanie kreatywne utożsamiane jest z tworzeniem nowej rzeczywistości. Kolejnym analizowanym zjawiskiem jest inteligencja społeczna, która w potocznym rozumieniu określana bywa mianem mądrości życiowej. W niniejszym artykule skoncentrowano się na zagadnieniu kreatywności i inteligencji społecznej oraz zaprezentowano wyniki własnych badań empirycznych dotyczących współzależności pomiędzy kreatywnością i inteligencją społeczną, przeprowadzonych wśród ukraińskiej młodzieży akademickiej.