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The Positive Dependence between the Rezolutiv Style and the Creative Level

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Abstract

Following the semiological approach, we defined the general creativity, the mathematical creativity, the rezolutiv style and we accomplished the taxonomy of mathematical creativity. We structured the monadic type of mathematical creativity and we supposed that the originality of creativity learner is dependent on his rezolutiv style. We imagine an experiment what proves the addiction of the positive dependence between the creativity level and the rezolutiv style.

Keywords: creativity levels (expressive level, productive level, inventive level), rezolutiv style (empiric style, algorithmic style, euristic style).

Introduction

Following one of the modern trends in the systematic analysis of reality, namely semiological approach, we started to define the creativity on the situation hexada, structured in six poles, identified by "B"-biological structure, "I"-intellectual factors, "N"- non-intellectual factors, "E"- education, "S"-socio-economic, "C"-spiritual and material culture. We chose this model of analysis, since it has the advantage of complexity and suggestive characteristic, encompassing creative foundation dyad (B-N), triad talent (B-I-N), tetrad creative action (B-I-N-E) and pentad creative approach (B-I-N-E-S). In this paper, we define creativity[1] as a multidimensional construct teachable[2], resulting from the interaction of the six interrelated fields, which are the determinations of the creative process.

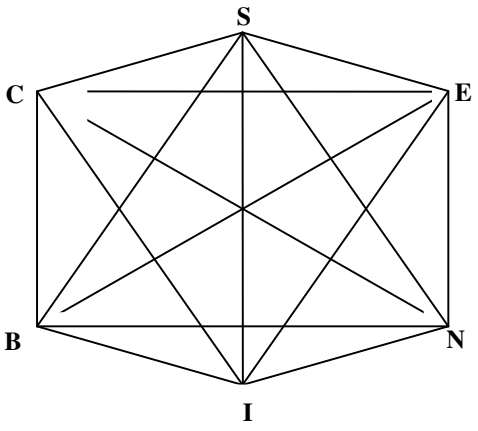

Figure-1

We believe that each interaction is time dependent, which means that they are unrepeatable, unique, resulting an occurring creative product. The vectorial analysis of biological structural dimension that occurs in determining the creative process reveals that biological factors define the primary matrix that allows only certain further developments, depending on her stored changes, which are operated by others determinations and their interactions active at a time. The vectorial analysis of the intellectual dimension of creativity process reveals that operational-cognitive factors (cognitive style factors, learning style factors[3], communication style factors[4], thinking style factors[5]) are anentropics vectors that crystallizes information received after the pattern generated by the interaction of bio- psycho-structural and socio-cultural-educational factors from the present moment. The vectorial analysis of the non-intellectual dimension of the creative process reveals that non-intellectual factors (values, attitudes, interests and beliefs, personality factors and motivational, affective or behavioral, and ability to use the full range of personality dimensions) are the engine that employs holistic the personality in the creative process. The vectorial analysis of social contextual dimension that occurs in determining the creative process reveals that environmental factors are the catalyst that promotes the escapist creative process. The vectorial analysis of the cultural dimension of contextual type that occurs in determining the creative process reveals that the cultural factors represent the generating vectors, a matrix (which is in constant metamorphosis by contextual influences and ingredients of the moment) that generates the main coordinates of the creative process. Material culture and spiritual influences decisive the creative process by designate the selection nature made in in the fields of remanent information. The vectorial analysis of the contextual dimension type that occurs in determining educational creative process reveals that educational factors are vectors modelers who finished the main coordinates of the creative process. Educational factors influence the process of creating scoring decisive nature of the selections made in the fields of present information.

Mathematical creativity is a multifactorial determined construct, which is a particular case of logical creativity whose scope is the sphere of mathematic problems.

The relatively stable nature of how a person reacts intellectually to problems[6] was deduced experimentally, and it was named *rezolutiv style*. Solving problems is a complex cognitive activity multifactorial determined by the learning style[3], the communication style[4], the thinking style[5], the cognitive style[7] and the affective-behavioral style. Corroborating these data, we detected three types of resolution styles*: empiric style, algorithmic style and heuristics style*. This classification is achieved in terms of a multidimensional criterion (the approach of each step in solving a problem[8], the creative problem solving techniques[9], the problem solving type[9]). It is noted that a person approach the most common problems using the own rezolutiv style but, depending on the strategy adopted to successfully solve the task, the predominant style can be combined with other rezolutiv styles.

The empiric style is characterized by a superficial decoding, without reporting the significant relations between information who are needed to establish the solution. The solution is often abortive (evading essential information for the correct solution) or incorrect (containing incorrect information specific assumptions axiomatic system problem). The modeling of the mathematical language is deficient or wrong. Additionally, the construction of the resolution is incongruously reasoning, because the solving type is risky or impulsive, that means the process of inferring is prevailing over the process of control. Finally, the reflection is inadequately, because there are no justification for the inferences made, and no tendency to generalization of the method of finding the solution.

The algorithmic style is characterized by an information decoding broadly correct but incomplete, noticing the significant relationships between information necessary to determine the solution. The modeling of information from problem text in mathematical language is minimalistic and the rezolutiv construction is mainly algorithmic reasoning. Additionally, the solving type is inertly or prudently, because the process of control is prevailing over the process of inferring. The reflection is convergent, with standard justification of inferences made and trends to transfer settlement method in similar cases. Such rezolutiv style promotes creative solving techniques that maintain paradigms and offers solutions in the immediate vicinity of the problem, without significant changes.

The heuristic style is characterized through a correct decoding, an appreciating the significant relationships for establishing the complete solution, a modeling in mathematical language based on content problem formalization, an using abstract symbols, a construction of rezolutiv reasoning mainly heuristic, a solving balanced type. Additionally, there is a fine balance between process of inferring and process of control, reflecting divergent inferences with complex justifications made and tendencies to generalize and transfer appropriate method of resolving cases. Such rezolutiv style promotes creative solving techniques that expand or destroy paradigms and produce truly innovative ideas.

By analogy with the hexadic model of the creative situation, we have structured a model of *eurema* (derivative from the Greek: *eu+rhema* which means *utterance good*), involved in the creative mathematical situation.

In this model, "L" is the *accumulation and comprehension of information eureme* ("L" derivative from the Greek "*logomnem*", from *logos+ mneme*, which is signified *precise imagery*). "E" is the *associative combinatorial eureme* ("E" derivative from the Greek "*euritema*", from *heuriskein+rhema* which is signified *intelligent fantasy*). "C" is the *energetic-stimulation eureme* ("C" derivative from the Greek "*conatema*", which is signified *conative fiction*). "K" is the *critical eureme* ("K" derivative from the Greek "*criterion"*, which is signifies *analytical imagination*). "I" is the *perceptive ideation eureme* ("I" derivative from the Greek "*idea"*, which is signifies *ideation vision*)."P" is the *objectification image eureme* ("P" derivative from the Greek "*praxi"*, which is signifies *pragmatic innovation*).

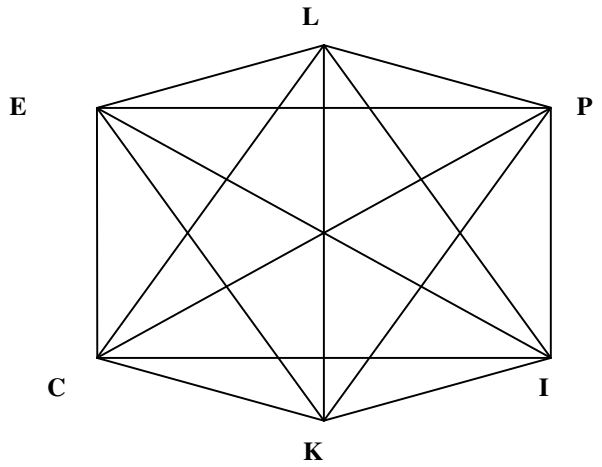

Figure-2

L-creative student (know) has a well represented cognitive background, with better capacity for understanding and retention, with the information structured on the declarative level (knowing what to do) and procedural level (knowing how to do). Functionally, his creative capacity is reduced to the sphere of accumulation and comprehension eureme, because he can solve only reproductive problems, belonging to type replicative teaching contexts.

E-creative student (imagine) has a smart fantasy, without extensive operator knowledge field, but he is able to imagine, anticipate, combine, to make novel connections between simple representations, ideas or concepts related; functionally, his creative capacity is reduced to associative combinatorial eureme, because he can solve heuristic problems, belonging to type associative learning contexts.

C-creative student (determined) wants to be creative and rules monitoring and self-regulating systems, that generate self-efficacy in resolution activities; functionally, his creative capacity is reduced to the creative energetic-stimulation eureme, with only motivational efficiency, based on an empirical rezolutiv style, practiced in applied learning contexts.

K-creative student (analyze) has an analytic perceptual style, appreciating relevant depths of the content, and structuring the information on strategic level; functionally, his creative capacity is reduced to critical eureme field and can solve problems demonstrative-explanatory type, having an algorithmic rezolutiv style, applied in educational contexts on replicative type, related to symbolic registry of knowledge representation.

I-creative student (view) have divergent thinking, which involves all components of perceptual or ideation, being able to make some associations between related knowledge; but functionally, his capacity creative is reduced to perceptive ideation eurema, because he can solve heuristic type problems, applied in contexts of associative learning contexts.

P-creative student (apply) is action-oriented, to the praxiological size, to the pragmatic side of problems, with type procedural knowledge that capitalizes on educational contexts applicative type; but functionally, his creative capacity is reduced to the sphere of objectification image eureme.

Hypotheses: Originality of creativity learner is dependent on his rezolutiv style, *id est*: i. A predominantly empirical rezolutiv style can develop maximum expressive level of creativity (free play of the mind). ii A predominantly algorithmic rezolutiv style can develop a maximum production level of creativity (free play of the mind limited, but the technique improves). iii A predominantly heuristic rezolutiv style can develop a maximum inventive level of creativity (it perceives new relationships between previously separate elements).

Methodology

The purpose of this investigative approach is to determine how student originality is dependent on his rezolutiv style. During that educational investigation, the *experiment* was divided into two measurements (test of general creativity, test of mathematical creativity). The experimental tools are the following: Test battery for creative thinking[11]; Creative thinking mathematics test[12]. The experimental design was conceived diachronically, since November 2010 to June 2011, and it focused on initial and final testing of experimental and control groups, and initiating the experimental group in creative activities with rezolutiv character. Mathematical creativity education program is totaled 22 lessons focused on the foster of creativity and on the managing of a creation and noologic knowledge favorable microclimate. Also in the experiment was designed and was tested a special tool, named diagnostic teaching test, which was prepared according to the methodology developed by G. Evans[13] and L. Crocker, J. Algina[14], aiming to diagnose the development level of creative thinking qualities. In context of this research, detecting the resolutiv style has achieved scoring solving problems of mathematical creativity tests battery (*Standardized educational test for diagnose the development level of creative mathematical thinking qualities*[12]). battery (time limit 90 minutes) consists of 15 problems (each solution can receive between 0 and 3 points, depending on the intuition of the elements that serve completely solve the problem).

Results and Discussion

In the statistical analysis of the proposed research hypothesis regarding the dependence between the originality and the rezolvent style, we started to consider the dispersion diagram, for detect the appropriate methods of study. Interpretation diagram for the correlation between the rezolutiv style and the creative level, both, the initial scores and the final scores, reported the existence of three directions of correlations. Pearson coefficient calculated for the correlation between the two variables is *bidirectional p-value = 0.508* for initial scores, and *bidirectional p-value = 0.588* for finals scores, which shows a moderate correlation statistically significant at the 0.01 level.

Statistical analysis was applied to the research hypotheses and found that the first research hypothesis (*Originality of creativity learner is dependent on his rezolutiv style*) is validated sequential. Thus, the investigation targeted on categories of rezolutiv style, show that empiric rezolutiv style can develop a maximum production level of creativity, with significant opportunities to achieve expressive level of creativity, which supports sequential research hypothesis. Namely, the empirical rezolutiv style increase the chances that the creativity reach the expressive level (if on the first test the expressive level rate of 68.24%, in the second test, the expressive level is present in a proportion 78.02%, so a percentage increase of about 10 percent). In other words, it appears that one of the dimensions which conditions increase creativity refers to the cognitive background, namely his amplitude, functionality and depth.

Assumption of research on algorithmic rezolutiv style would be reconsidered from the following perspective: algorithmic rezolutiv style can develop a maximum inventive level of creativity, with significant opportunities to achieve the productive level of creativity. Histogram analysis shows again the direct dependence of the background and creativity level, meaning that a background better represented has results in restructuring the configuration in which are proportionate the levels of creativity. Namely, the algorithmic rezolutiv style increase the chances that the creativity reach the productive level (if on the first test the productive level is represented in proportion of 16.96%, in the second test, the productive level is currently at a rate of 29.68%, so a percentage increase of about 10 percent).

The research hypothesis concerning heuristic rezolutiv style is confirmed. Both, the first test and the second, shows that for a heuristic rezolutiv style the peak of creativity is the inventive level (the percentages being 45.45%, respectively 52.63%), suggesting that next level of creativity is unlikely to be attained on schooling level, much less at the secondary schooling, because it required context and psychological structure much more restrictive.

Conclusion

It is worth noting that heuristics rezolutiv style is always generating creativity, even if only at the expressive level, but can never lead to non-creativity. On the other hand, if the rezolutiv style is not the heuristic one, but is chaotic, without a balanced structure of its components, then the creativity level is random reached, that means the rezolutiv style can generate both non-creativity and creativity, mainly on the expressive level.

References

1. Allport G., Personality: A psychological interpretation, New York: *Holt, Rinehart*, Winston **(1937)**

2. Odobleja Şt., Psihologia consonantistă, *Editura Didactică şi Pedagogică*, Bucureşti, 554-575 **(1982)**

3. Zlate M., (coord.), Psihologia la raspintia mileniilor, *Editura Polirom*, Bucureşti **(2001)**

4. Gardner H., Les formes d'intelligence, în Pour la science, **254,** 142 **(1998)**

5. Klein, The personal world through perception, in Perception: An Approach to Personality, *Ronald Press*, New York, **(1951)**

6. Golu M., Bazele psihologiei generale, *Editura Universitară*, Bucureşti **(2002)**

7. Ball S., Davitz, J.R., Psihologia procesului educaţional, *Editura Didactică şi Pedagogică*, Bucureşti **(1978)**

8. Mînzat I., Raportul dintre euristic şi algoritmic în gândire, *Revista de psihologie*, Bucureşti, **3 (1973)**

9. McFadzean E.S., Enhancing creative thinking within organizations, *Management Decision*, **36(2) (1998)**

10. Bruner J.S., On Knowing, Cambridge, *Belknap Press*, Massachusetts **(1962)**

11. Stoica-Constantin, A., Caluschi, M., Evaluarea creativităţii, *Editura Performantica*, Iaşi **(2005)**

12. Havârneanu G., Standardized educational test for diagnose the development level of creative mathematical thinking qualities, *International Research Journal Social Sciences,* **1(2),** 25-33 **(2012)**

13. Evans G., Pronouns, quantifiers, and relative clauses (I), in Collected Papers, *Clarendon Press*, Oxford, 76-153 **(1985)**

14. Crocker L. and Algina. J., Introduction to Classical and Modern Test Theory, Holt, *Rinehart and Winston*, New York **(1986)**

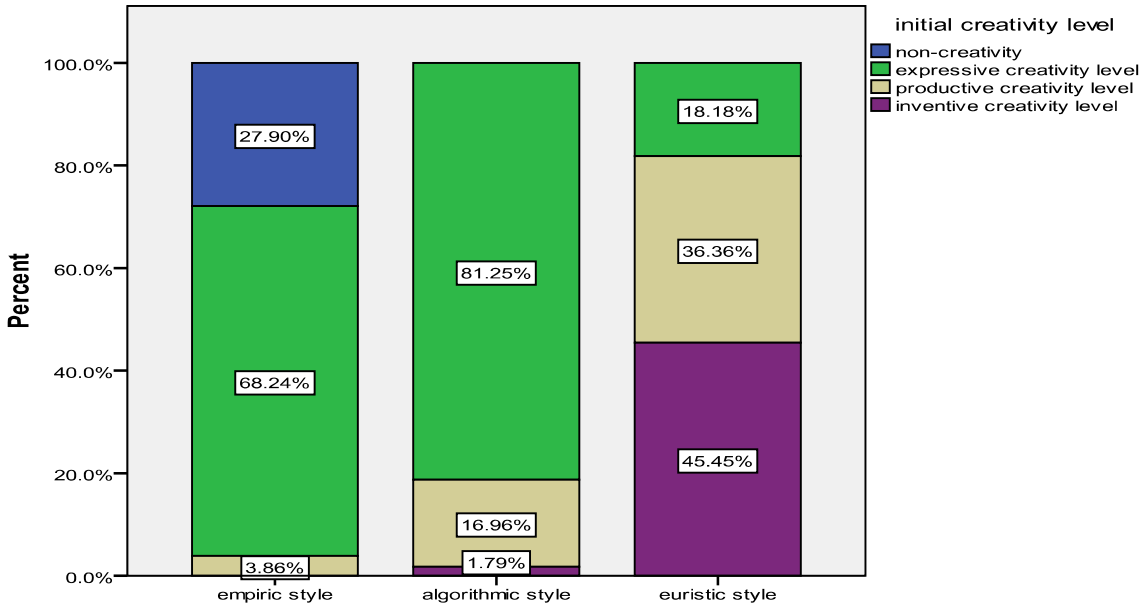

Figure-3
Initial Rezolutiv Type

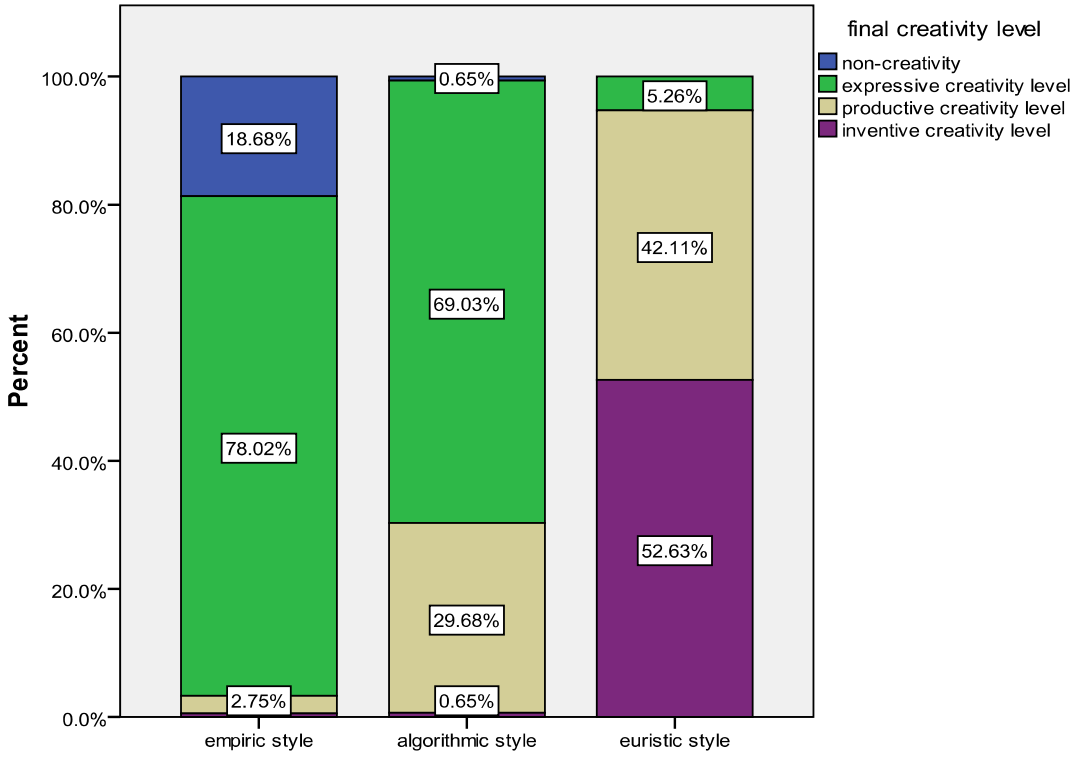

Figure-4
Final Rezolutiv Style