

# Cadets' Creative Imagination and Agency Development in Military Higher School Educational Environment\*

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**Abstract**—Using the ecopsychological approach for mental development, the authors study the problem of cadets' creative imagination in the structure of their agency not by itself but in the holistic unity within the educational environment. In doing so, cadets' creative imagination is considered as the highest level of agency development. The type and direction of military higher school educational environment have been found by experimental means. The article demonstrates the resources of military higher school educational environment for cadets' creative potential development. The paper presents the experimental research results of dependence of creative abilities development level on cadets and instructors' interaction type.

**Keywords**—creative imagination; ecopsychological approach; agency; educational environment; interaction; military higher school

## I. INTRODUCTION

Activity-oriented transition from training a specialist in a military higher school to training a professional dictates changes to military education system. It accepts its developing and pro-active character according to the prospects of development and modernization of military doctrines, modern military equipment and armament and tactical and operational art.

Among the leading professionally important qualities of a military man of any speciality V.A. Ponomarenko emphasizes professional intellect, self-sufficiency, organization, motivation for the service, independence, responsibility, calculated risk, moral component of military duty, behavior adaptability, professional health, critical thinking, purposefulness, cognitive activity, necessity in constant self-improvement, spiritual thinking and general culture. Any of these qualities reaches their maximum through the development of creative abilities.

In his psychological concept of a military officer training

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V.A. Ponomarenko does not contrast the behavior adaptability to creativity. The specific character of military service derives from danger of the professional kind of a military person activity and lies in the fact that the adaptability is the precondition for the further development of a military person in the profession — the development of the creative abilities [1].

The question is: how can one overcome the contradiction between the necessity to develop creative abilities of military higher school cadets, creative activity of a personality, able to self-development and self-education, and the demands of military regulations and educational environment to obey the superior's orders?

Does fostering the needs of a cadet to develop the creative abilities under condition of military education happen against or above this strict situation? Does the military higher school educational environment contain some potential of such development? To answer these questions we have conducted a study of military higher school cadets creative imagination using the ecopsychological approach for mental development [2].

## II. ECOPSYCHOLOGICAL APPROACH FOR AGENCY STUDY

Most scientists agreed that the defining characteristic of agency is the own activity of a subject, through which transformations in the world, within ourselves and within others are implemented. K.A. Abulkhanova-Slavskaya, B.G. Ananiev, L.I. Antsyferova, E.N. Volkova, T.V. Markelova, A.K. Osnitskiy, I.A. Seregina highlight uniqueness and creativity as the main qualities among other criterion-based characteristics.

Within ontological model of agency formation we consider the creative imagination as a precondition of proximal development zone actualization and the highest level of agency development. According to ecopsychological approach, agency is understood as an ability of an individual to be a subject of arbitrary activity in the form of motor, speech, communication, learning, professional activities etc.

High level of creative imagination development corresponds to the highest level of agency development, namely — a subject of productive development, using the learnt action as a subjective mean for self-development, including creative self-expression ("Creator"). Besides, the theoretical model of agency involves the following six stages: first, the stage of subject of motivation (possessing a need); second, the stage of development — subject of perception the model action ("Observer"); third, the stage of development — subject of imitation, reproduction without arbitrary regulation ("Apprentice"); fourth, the stage of development — subject of arbitrary performing the model action under external control, for a student mostly from an instructor ("Learner"); fifth, the stage of development — subject of arbitrary performance of the model action with independent, arbitrary regulation of the correctness of its performance ("Master"); sixth, the stage of development — subject of control exteriorization, the subject of expert appraisal of correctness of the model action performance by other individuals ("Expert"). Every other stage implies the qualitative formation of the previous one, but the 5th and 6th stages are simultaneous but not sequential [3], [4], [5].

In order to estimate the dynamics of agency development levels can be used. They are indicators of its activity resulting from the stages of agency formation. Our research goals include the question about the proper balance of the cadets agency structure, because it is necessary to consider the levels of creative imagination formation regarding other low-lying agency components: first, level of the activity manifestation; second, level of intellectual development, required for conscious and arbitrary performance of the desired action; third, level of self-appraisal development, necessary to reflect the correctness of the action; fourth, level of emotional development, allowing to react emotionally to success/failure of the performing action.

Preconditions of the ecopsychological approach let study the issue of cadets' creative imagination in the structure of their agency not by itself but in the holistic unity — within the educational environment. The main subjects of the environment are a cadet and an instructor. The latter, depending on the chosen model, creates the conditions (forms the educational environment) that activate the development of cadet creative imagination or, conversely, impede its development. In this way the cadet either uses the possibilities given by the external educational environment (by the instructor), or they can not, are not ready to use them. In this case the cadet becomes an object influenced by the instructor. In order to estimate interactions in the system 'cadet — instructor' we have used six basic types of ecopsychological interaction: object — object; subject — object; object — subject; subject — standalone; subject — cooperative and subject — generative [6], [7].

The research was conducted at the base of two military higher schools of Ryazan in two stages. During the first stage we studied the potentialities of the military higher school educational environment for cadets' creative abilities development with the help of the experiment. During the second stage we studied the development of cadets' creative imagination in the structure of their agency depending on the

type of interaction in the system "cadet — instructor". In total, 102 instructors of humanitarian and military disciplines with the experience in a military higher school from 1 to 44 years and 559 cadets of 1-5 years at the age of 17-24 participated in the research.

According to the goals of the research the following methods were chosen:

- Method of vector modeling of educational environment by V.A. Yasvin;
- Method of pedagogical communication diagnostics by I. M. Yusupov;
- Questionnaire for motivation measuring by A. Mekhrabyan;
- Method 'SBSR-98' by V.I. Morosanova, E.M. Konoz;
- Test by Eysenck and achievements tests in the discipline 'Foreign Language';
- Questionnaire of subjective control localization by S.R. Panteleev and V.V. Stolin;
- Method 'Unsolvable task' by A.V. Bykov, T.I. Shulga;
- Method of creative imagination development level detection by T.I. Pashukova, A.I. Dopira, G.V. Diakonov [8], [9].

### III. EDUCATIONAL ENVIRONMENT OF A MILITARY HIGHER SCHOOL

S.D. Deryabo and V.A. Yasvin noted that environment influences human's behavior so significantly that reactions of different individuals on the same environmental impact have more in common than different [10]. In this regard, military environment including military higher school educational environment as well as any other traditional one, promotes unification more than the rise of individuality.

During the experiment we determined the type and direction of the military higher school educational environment. It is a career-oriented environment of active dependence. It means that the educational environment possesses certain possibilities for manifesting the activity of its subjects (cadets, instructors). Besides, it is characterized by the high degree of subjects' dependence from itself. 'Activity' is understood here as an ability to goal-setting and possessing such qualities as initiative, aspiration to something, perseverance in this aspiration, personality's combat for personal interests, promoting personal interests and so forth. 'Dependence' means lack or limitation in freedom of choice, behavior adaptability and external locus of control.

It was found on the experimental basis that 4% of instructors consider the military higher school educational environment to be serene (only civilian instructors of humanitarian disciplines with teaching experience up to 3 years), 13% — dogmatic, 56% — career-oriented and 27% — creative. It is quite understandable that a creative educational environment is associated with maximum

possibilities for developing both a teacher and a learner, learners' freedom of choosing an educational trajectory, democratic communication style, active subject position, and encouragement of creative activity manifestations.

Statistical analysis of the experiment results with the help of Fisher's criterion  $\phi^*$  demonstrated the lack of statistically valid differences concerning the appraisal of the type of the military higher school educational environment by civilian instructors ( $n_1=25$ ) and military instructors ( $n_2=20$ ). In doing so, we were guided by the values of educational environment modality factor, calculated by V.A. Yasvin [11].

If to observe the dynamics of the educational environment types representation in judgments of cadets' from the 1st to 5th years of study, it is possible to notice the following. There is almost equal number of learners in every year from the 1st to 4th who consider military higher school educational environment to be serene. These are so-called 'useless', who entered the military higher school by haphazard and do not understand completely the purpose of staying there. Among the fifth-year cadets there is no one who would consider the military higher school educational environment to be creative.

Among the 1st year cadets there is no one who would consider the military higher school educational environment creative. The explanation can be found in the adaptation period of the first year cadets that lasts differently for different people but in average it takes the first semester. Adaptive behavior does not suppose stepping out of the limits of the underlying situation, of the person themselves, i.e. creative component. The first year cadets adaptation has 'double' character — it is the adaptation for both the study in the military higher school and to the military service.

Besides, the lack of the educational environment of creative type in the first year cadets' understanding is the result of extreme level of emotional and mental stress that, according to the psycho-physiological study of professional selection group, decreases only by the beginning of the 2nd semester, but still never reaches the level previously achieved at school.

The cadets of different years of study develop their ideas about the types of educational environment heterochronically. The second year cadets particularly stand out in estimating dogmatic (29%) and career-oriented (59.1%) types of educational environment. It is explained by the fact of signing contracts for the military service as an officer at the second year of study. Entering into a contract is a serious, responsible, mature step in the cadet's professional formation. Before signing the contract the cadet, as if it were a year ago when being an enrollee makes the choice and prepares to be completely responsible for it. But if during the admission time some candidates made their choice under the influence of the reference-group (parents, relatives, friends), now they have to do it independently and consciously.

Before the signing of the contract a personal adaptation conflict looms in a group of cadets. It is reflected in an emergence of significant subjective difficulties when the cadet, as a rule, does not find any acknowledgement to the

meanings, values and motives dominating at the moment of choosing the profession [12].

Dogmatic and career-oriented types in cadets' appraisal of the environment are connected with diligence and stereotyping in the learning content (in the terms of V.A. Ponomarenko), creative type — with the development of creative abilities [13].

Maximum of creative activity according to cadets' appraisal of the educational environment is at the 2nd and 4th years. At the 2nd year cadets start studying special courses. It adds certain difficulties into the academic process but at the same time it increases interest and motivation for learning. Cadets become familiar with scientific, inventive and rationalizing activities within military and scientific circles and societies. It can explain the increase of the educational environment appraisals among the second year cadets — 9, 6%.

Cadets of the pre-graduate 4<sup>th</sup> year that have had some practice in the army and in military institutions dealing with scientific research feel adopted into military-professional community. They actively and consciously work over the increasing professional knowledge and skills, start solving professional tasks with some enthusiasm. It explains the peak of creative activity in appraisals of the educational environment by the cadets of the 4<sup>th</sup> year — 10%.

Dogmatic environment is characterized by prohibitions, punishment, control, unfair demands, discipline, authoritarianism, insults, and strict regime. How does a person feel under such conditions? V.N. Karandashev, describing his first army feelings after university freedom, answers this question this way: "It's good if you are ready to accept its norms and rules. It's good, if you are ready to command and to obey. It's good, if you are ready to dilute your 'I' in 'We'" [14]. This type of educational environment requires from a cadet an objective, i.e. obeying position towards the educational environment.

Creative educational environment is a developing kind of environment; it offers a maximal complex of possibilities for personal development at the professional, intellectual and social levels. In the creative educational environment of a military higher school consciousness of obedience is contrasted to reflex diligence. The fact of obedience acts as a volitional activity, a natural part of the future officer's spiritual and moral life-style, i.e. as a manifestation of the officer's subject position towards the educational environment. This is the uniqueness of the personality psychological self-sufficiency and its identification as a warrior [15].

In order to check if there are statistically significant differences between the appraisal of the educational environment type by instructors ( $n_1=45$ ) and by cadets ( $n_2=194$ ), for the maximal accurate result the criterion  $\phi^*$  in combination with the criterion  $\lambda$  by Kolmogorov-Smirnov was used. During the statistical checking it was found that the point of maximal divergence when comparing the two empirical distributions is the creative type of the educational environment. According to 27 % of the instructors the

military higher school educational environment is of creative character, i.e. it contains maximal complex of potentialities for cadets' agency development. Only 5% of the cadets agree with the instructors' opinion.

In the further checking the statistical hypothesis  $H_1$  was proved: the differences in the appraisal of the educational environment type by the instructors and the cadets are statistically significant ( $\phi^*=3,65$  at  $p \leq 0,01$ ). It means that the instructors believe that they design a creative type of educational environment, assisting not only in getting knowledge and skills, but in the creative development of the cadets as well. But these ideas do not completely correspond to the reality [16], [17].

#### IV. EXPERIMENT IN STUDYING CADETS' AGENCY

In studying the cadets' agency we correlated the data obtained with the help of the chosen methods with the levels of agency and asked a question: which particular level can be considered as achieved, proving the complete formation of a certain stage of agency? We found that the military higher school educational environment is a career-oriented environment of active dependence. According to the definition by V.A. Yasvin it means "average level of a subject's activity under external control" [18]. So we a priori supposed that all the cadets possess the level of activity which is not less than average, i.e. they have the formed stage of agency.

Further we supposed that the group of cadets with the 2nd level of agency include the learners with intellect level not less than average and/or with good academic results (rated as 'good') in the tests. In our research we calculated the level of self-appraisal development as the reflexive attitude towards themselves well-formed in cadets with internal locus of control (7-0 stens) according to the method by S.R. Panteleev, V.V. Stolin. For the group of cadets with the 4th level of agency we charged those learners who, when being tested by the method 'Unsolvable task', showed the maximal timing in a task solving, pointed out the objective reason of the impossibility of finding the solution. During the test they were working independently, calmly, without any remarks, refinements of the task and so forth. We have supposed that the cadets obtained 6 balls according to the scale of creativity qualitative characteristic by T.I. Pashukova and A.I. Dopir and the total 7 in productivity of creative activity have the highest formed level of agency. Below we will detail the course of the experimental research of cadets' creative imagination with the help of this model.

In total 365 cadet of the 2nd year participated in the research. At the beginning of the experiment the cadets got the blanks with some words printed on them (products, walrus, town) and an instruction to make up as many sentences containing these three words as possible. The sentences were to be simple and may contain homogenous members. Creative imagination supposes the creation of an unprecedented image, an item or a sign, in this very case — to make up a sentence without a precedent model. The work was to take 10 minutes.

The authors of the method offer to take into consideration qualitative and quantitative characteristics of creativity in the analysis of the results. In the research the indicators of creativity are the number of balls for the most witty and unique sentence and the sum of the balls for all the sentences made up by the testee. The qualitative characteristic of creativity corresponds to the maximal ball in appraisal of one the wittiest and original sentence made up by the testee. It does not exceed 6 and indicates the well-developed creativity and originality. If the appraisal of this indicator is 5 or 4, the manifestation of creativity should be considered average. And, finally, if the appraisal is only 2 or 1, it is a low level of creativity, when the cadets did not understand the instruction; either broke it or demonstrated the intention to act by analogy and, doing so, puzzled the researcher [19].

The most original sentences were made up by the cadets taking into account the polysemy of the word 'walrus' in Russian (meaning transfer): "Walruses have bought products and went uptown to swim in the ice hole."

Besides, creative imagination of some cadets let them imagine a situation when a walrus was considered as a toy or a costume. Some cadets remembered some information obtained when reading an original text in English where the word 'walrus' was used as a reality — a name of a Polish car designed to transport frozen food within a town.

During the research we obtained the following data:

- 6% of cadets possess high level of creative imagination and, respectively, the highest 5th level of agency. They are on the stage of development of the subject of expert appraisal of correctness of the model action performance by other individuals (expert position). Creative imagination lets them 'overcome personal limits' and to manifest above-situation activity;
- 34% of the cadets possess the average level of creative imagination;
- 60% of the cadets are characterized by the low level of creative imagination.

The study of the cadets' agency demonstrated the following distribution according to the levels:

- 36% of the cadets with the 1st level of agency, i.e. the subject of perception (the stage "Observer"). They are active, but the insufficient level of intellectual abilities development does not let them overcome the limits of situational activity;
- 25% of the cadets with the 2nd level of agency are on the stage of conscious imitation (stage 'Apprentice'). They also possess situational character of activity and are ready to perform academic and professional activity, but only according to a model, an algorithm. In case of changing the conditions of the activity they cannot monitor the result of the action performance as they are characterized by the external locus of control;
- 10% of the cadets with the 4th level of agency (stage 'Learner') are able to perform arbitrary the necessary



action but only under the external locus of control carried out by the instructor;

- 23% of the cadets with the 4th agency level (stage 'Master') are ready to perform actions arbitrary with the internal locus of control. They have well-developed reflective abilities.

Distribution of the cadets according to the levels of agency brightly reflects the type and the direction of the military higher school educational environment: it is a career-oriented environment of active dependence. Thus, a low share of learners with adequate self-appraisal and internal locus of control (the 3rd level) is connected with high degree of dependence. At the same time the presence of rather a high share of the cadets with high level of emotional and emotional-volitional regulation (4th level) can be explained by the peculiarities of the military higher school cadet enrolment, by professional and psychological selection. The cadets reached the 4th level of agency possess a high level of volitional qualities development. In case of unsuccessful implementation of an action they point out a real reason rather than accuse themselves or the conditions of the environment (an instructor, the difficulty of the academic task, rigors of military service).

During the study the idea about the unevenness of cadets' agency development stages, about their overlapping was justified. Thus, from 86 cadets with the 4th level of agency the intellectual development of 16 people did not reach the level necessary for conscious and arbitrary performance of the required action. It means, they are not completely subjects of imitating reproduction. Thus, the received data confirms the theory about the correlation of intellect and volition: high intellect level does not justify the possession of high level of volition, just like the developed volition does not justify the possession of high intellect.

As for balancing the agency structure of cadets with highest level of creative imagination, according to the obtained data the level of emotional and volition development of a third of them has not formed completely and does not let them react adequately to successfulness/unsuccessfulness of the performed action [20].

#### V. EDUCATIONAL ENVIRONMENT SUBJECTS' INTERACTION AS A CONDITION OF CADETS' AGENCY DEVELOPMENT

Further according to the plan of the experiment we identified five models of pedagogical communication common for humanitarian disciplines instructors. These models were correlated with the ecopsychological interaction types.

The most wide-spread group of instructors — practicing the model of differentiated attention 'Locator' — use subject-standalone type of interaction with the learners (54%). These instructors are oriented not on the whole group of learners but on the particular cadets, mostly well-performing. 5% of instructors use the model of inflexible reaction 'Robot' (also subject-standalone interaction type). The best model of pedagogical interaction — model of active interaction

'Union' — is used by 27% of instructors. In doing so between the cadets and instructors there appear subject-cooperative and even subject-generative type of interaction. 8% of instructors practice the less effective dictatorial model of pedagogical interaction 'Mont blanc', acting mostly as translators of knowledge. They have object-object relations with the cadets because of the lack of psychological contact. 6% of instructors use the authoritative model 'I myself', interacting with the cadets on object-subject basis.

In order to check the declaratory hypotheses about the influence of ecopsychological interaction between cadets and instructors on the cadets' agency development the data obtained during the experiment were analyzed statistically. As both variables (models of pedagogical interaction — interaction types and levels of the cadets' agency) are presented in the nominative scale, for statistical data processing the method of contingency table analysis was chosen. Statistical analysis was performed in the package IBM SPSS Statistics 24.

Using the criterion  $\chi^2$  by Pearson it was proved that the interaction type has statistically significant influence the cadets' agency development, or cadets' agency has statistically significant dependence on the interaction type between cadets and instructors ( $\chi^2=34,591$  при  $p=0,005$ ). High level of statistic significance and the fact that the expected frequency less than 5 presented only in 28, 0 % cells justify the high degree of the results validity. Standardized residual lets establish the character of interaction types of educational environment subjects influence on the cadets' agency development: developing or restricting [21], [22].

Interaction types least influence the highest agency level — creative imagination. This positive connection was identified on the level of statistical significance  $p<0,05$  only for the group of the instructors with the model of differentiated attention 'Locator' (subject-standalone type of interaction), who practice individually-differentiated approach in the educational process and who are oriented on excellently-performed learners, standing in the group out with special linguistic and other abilities, unordinary cadets. The confirmation to the found positive correlation we can find in the concept of gifted children by D.B. Bogoyavlenskaya, N.C. Leites, V.I. Panov, E.I. Shcheblanova, German psychologist K.A. Heller, who write about the gifted children and youth tendency for individualism. As gifted children, as a rule, demonstrate high level of abilities for self-teaching since early age, they need less purposeful educational impacts than creation of variable, enriched and individualized educational environment [23].

The cadets with the highest agency level behave and understand themselves as subjects of educational activity, they are not only ready to learn and assimilate social and cultural experience (process of interiorization), but, like an instructor, to transfer it to their peers (process of exteriorization). Building up the relations of instructors with this group of cadets according to subject-standalone interaction type has developing effect and serves as the optimal [24].

## VI. CONCLUSION

The need to develop creative abilities is the most important professional quality of a future officer. This need in combination with the leading motive "To defend homeland", intellect, spirituality and culture of a military higher school educational environment is the main psychologically-pedagogical condition of cadets' creativity development.

Development of cadets' creative abilities in a military higher school educational environment does not happen against the demands of military regulations and superiors but through the conditions of the educational environment itself. These conditions include adaptation of instructors — cadets' interaction types to subject qualities of a particular learner, to educational and professional tasks.

The creative component of cadets' educational and professional activity is in its executive part which unlike reflex and stereotype is full of consciousness of obedience and emotional-volitional activity.

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