The European Proceedings of
Social & Behavioural Sciences
EpSBS

ISSN: 2357-1330

https://doi.org/10.15405/epsbs.2019.07.100

PSYRGGU 2019
Psychology of subculture: Phenomenology and Contemporary Tendencies of Development

INFLUENCE OF SENSE CHARACTERISTICS ON THE ORGANIZATION OF THE STUDENTS' COGNITIVE STATES

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Abstract

The article is devoted to the study of the organization of students' cognitive states. The main objective of the study was to analyze the qualitative differences in the structure of students' cognitive states with different levels of life meaningfulness. In accordance with the goal, two independent samples were studied: students with a high and students with a low level of life meaningfulness. Cognitive states of students were actualized by performing intelligence test of R. Amthauer and were measured immediately after its implementation using the semantic differential technique. Using standardized methods, the individual psychological characteristics of students were measured: reflection, temperament, etc. The results of the empirical research confirmed our assumption that the severity of individual indicators in the structure of students' cognitive states may depend on the level of life meaningfulness. In the structure of the cognitive states of students with a high level of life meaningfulness, the central role is played by the indicator "general self-regulation ability". Cognitive states of students with a low level of life meaningfulness are characterized by the presence of leading indicators in the structure of the complex, the main indicators of which are indicators of emotional intelligence and the locus of control. The results may be of interest to researchers in the field of individual's mental states, teachers in particular.

Keywords: Students, intellectual activity, meaningfulness of life, cognitive states, structure.

https://doi.org/10.15405/epsbs.2019.07.100
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1. Introduction

Cognitive states are mental states that accompany the process of self-understanding and cognition of the surrounding reality (Prokhorov, Chernov, & Yusupov, 2016). They include interest, concentration, thoughtfulness, curiosity, etc. Cognitive states are one of the types of person's mental states integrating those mental processes and properties that are necessary for effective solving intellectual problems arising in the process of human life (Prokhorov, Yusupov, & Plokhikh, 2015).

The main characteristic of cognitive states is their integrity, which is expressed in the definite interrelation of all components of the psyche, as a result of which they characterize mental activity as a whole during a certain period of time. In this regard, the disclosure of the structural and functional organization of cognitive states is one of the problems of the methodology and theory of individual's mental states. The solution of this issue will allow to develop a conceptual approach to understanding, describing, and diagnosing cognitive states.

The analysis of literary sources indicates a rather diverse interpretation of the structure and functions of cognitive states. The structure of the cognitive state includes the purpose of the activity, personality orientation features, mental representations of the current situation, general functional level, the ratio of the dominant and passive mental components, mental processes, subject-personal characteristics, etc. (Izard, 1991; Prokhorov, 1998). At the same time, the structure of one and the same cognitive state may vary depending on the specific situation of life (Brown, Collins, & Duguid, 1989).

The question of the system-forming factor of cognitive states is central. In our opinion, this factor is relations of the individual in a broad sense, based on a diverse system of needs, motives, interests, goals, ideals, beliefs, worldviews. The latter are involved in shaping the orientation of the individual and express the socially determined attitude of the individual to the surrounding reality.

Of particular interest is the study of the influence of personal meanings on cognitive states, since they are considered as a system-forming component of mental states (Prokhorov, 1998). The necessity to study the influence of semantic structures of consciousness on the actualization and regulation of mental states is objectively related to the fundamental psychological problem - the ratio of the categories "mental state" and "consciousness". It is impossible to understand the causes of the emergence of cognitive states without reference to the value-semantic sphere of the individual.

The basis for the formation of a personal meanings' system are value formations. In a personal sense, life values and the possibilities of their realization merge together (Lazarus, 1991). At the same time personal values act simultaneously both as sources and carriers of significant meanings for a person. The personal meaning expresses the subject's attitude to cognizable phenomena, to the process and the results of his own activities. The central aspiration of human is the search and realization of the meaning of life. The presence of personal meaning gives importance to the events and is expressed in the subjective feeling of meaningfulness of life. The meaningfulness of life is defined as the meaningfulness of the past, present and future, as the existence of a goal in life, as an individual's experience of the ontological significance of life (Leontiev, 2006).

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2. Problem Statement

In the context of the study of the persons' mental states, the problem of determining their structure and functions by the consciousness and self-consciousness of the individual is fundamental. The personal meaning, being a component of consciousness, determines the organization of states. Therefore, an urgent task is to study the qualitative and quantitative differences in the mental states of students with different semantic characteristics.

3. Research Questions

What are the differences in the structural organization of the students' cognitive states with high and low life meaningfulness?

4. Purpose of the Study

The purpose of the study is to identify qualitative differences in the structural organization of the cognitive states of students with different levels of life meaningfulness.

5. Research Methods

The cognitive states of students were actualized by performing an intelligence test (Amthauer, 1970). The parameters of the states were measured immediately after its implementation using the semantic differential technique (Snider & Osgood, 1969).

The study also used the following diagnostic methods:

1) Questionnaire of metacognitive involvement in activities (Schraw & Dennison, 1994);
2) Methods of diagnosing the level of reflexivity (Karpov & Skityaeva, 2005);
3) Personal questionnaire EPI (Eysenck & Eysenck, 1975);
4) Methods of self-esteem of learning (Anastasi & Urbina, 1997);
5) Verbal creativity test (Mednick & Mednick, 1967);
6) The method of "ability to self-management" (Morosanova, 1995);
7) Personality Trait 16 PF Questionnaire (Cattell & Mead, 2008);
8) Interpersonal Relationship Test (Leary, 1957);
9) The level of subjective control (Rotter, 1990);
10) Methods of diagnosis of emotional intelligence (Goleman, 1995).

In total, 79 indicators were measured for each test subject.

5.1. Date analysis

Processing of the research results was carried out using the Pearson correlation analysis, parametric statistics (Student's t-test), and a qualitative analysis of the organization of students' cognitive states with different levels of life meaningfulness.

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5.2. Participants

The sample of the study consisted of 86 students, with an average age of 19.6 years. Study participants were divided into two groups: students with a high (sample 1) and low (sample 2) levels of life meaningfulness. The separation was carried out on the basis of the results of the "Life Sense Orientations Test" method (Leontiev, 2006).

6. Findings

Comparison of averages by the Student's statistical criterion made it possible to identify significant differences in the samples of students with high and low life meaningfulness (see Table 1). The strongest differences relate to the indicators of learning and life meaningfulness: they are much higher among the representatives of sample 1. It is interesting to note the higher estimates of the clarity of mental images of students with a low level of life meaningfulness. This is due to the fact that this group of subjects is characterized by higher scores in the M factor "practicality - daydreaming", which is focused on measuring the characteristics of the imagination in person's real behavior. In particular, they are characterized by a romantic attitude to life ("soaring in the clouds"). Another significant difference in the Q4 factor indicates that students with a low level of life meaningfulness are characterized by greater intensity of emotional experiences.

Table 01. Statistical comparisons of indicators by Student's t-criterion

Name of indicator	Sample 1	Sample 2	Values of t-test
Learnability	52.53	45.74	4.739 ($p \leq 0.001$)
Factor M according to R. Cattel	4.35	5.63	– 2,685 ($p \leq 0.01$)
Factor Q4 by R. Kattel	4.09	5.88	– 3.356 ($p \leq 0.01$)
Goals in life	33.98	25.88	8.536 ($p \leq 0.001$)
Process of life	33.42	25.93	8.059 ($p \leq 0.001$)
Result of life	26.58	20.95	7.009 ($p \leq 0.001$)
Locus of Control - Me	22.77	17.47	7.317 ($p \leq 0.001$)
Locus of control - life	32.81	24.00	8.543 ($p \leq 0.001$)
Meaningfulness of life	149.56	114.23	14.511 ($p \leq 0.001$)
Clarity of images	7.37	8.33	– 2.723 ($p \leq 0.01$)

Analysis of leading indicators in the structures of states. Correlation matrices of students with different levels of life meaningfulness were analyzed using the method of statistical weights. Each indicator was assigned a number that was calculated according to the following rule: a correlation at the level of $p \leq 0.05$ accrued 1 point, at the level of $p \leq 0.05$ - 2 points and at the level of $p \leq 0.001$ - 3 points. Based on the magnitude of the statistical weight we identified leading indicators of cognitive states in each of the two samples.

For sample 1, the leading indicators are: "self-management", "neuroticism", factor O (R. Cattell), "locus of control - Me", "self-motivation", "logical thinking", "decision making", "subordination", "emotions regulation","externality". Further we will indicate only the most stable ($p \leq 0.01$ and $p \leq 0.001$) interrelations of the leading indicators in the structure of cognitive states.

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The indicator “ability for self-management” positively correlates with the indicators “authoritarian”, “meaningfulness of life”, “self-motivation”, “thoughtfulness of behavior”, “coordination of movements” and “average intensity of cognitive states”. It should also be noted that there is a strong ($p \leq 0.001$) feedback between the indicators “ability to self-control” and “neuroticism”.

The “neuroticism” indicator is positively related to the “subordination” indicators ($p \leq 0.001$) and the O factor (R. Cattell). There are feedbacks with indicators “emotion regulation”, “planning”, “decision making”.

The indicator "locus of control - Me" is positively associated with the indicators "emotions regulation", "self-motivation", "empathy". In addition, there is a feedback with the indicator "neuroticism".

The indicator “self-motivation” positively correlates with the indicators “learnability”, “goal-setting”, “self-management” and “locus of control - Me”.

The indicator “logical thinking” has a positive relationship with the indicator “average intensity of mental states” and a negative one with the indicator “locus of control - Me”.

The “decision making” indicator is positively related to the “meaningfulness of life” indicators, and negatively to the “neuroticism” indicators, factors Q3 and O (R. Cattell).

The indicator “subordinate” has a positive relationship with the indicators “neuroticism”, the factor O (R. Cattell) and a negative one with the indicator “internality”.

The indicator “emotions regulation” positively correlates with the indicator “locus of control - Me”.

Leading indicators of sample 2: “internality”, “emotions regulation”, “self-motivation”, “neuroticism”, “suspiciousness”, “learning ability”, “contradiction analysis”, “level of subjective control”, “metacognitive involvement in activity”, “emotions recognition”, “planning”, “altruism”, and B Factor (R. Cattell).

The indicator "internality" is positively associated with the indicators "altruism", "recognition of emotions", "planning", "dependence on the group - self-sufficiency", "self-motivation", "optimism", "fervor", "average intensity of mental states" and negatively - with an indicator of "neuroticism."

The “emotion management” indicator has direct correlations with the indicators “metacognitive involvement in activity”, “extraversion - introversion”, “learning”, “self-control”, “self-management”, “dominance”. There are also inverse relationships with the indicators of "neuroticism", "suspiciousness" and the factor O (R. Cattell).

The “self-motivation” indicator is positively related to the indicators of “dominance”, “metacognitive involvement in activity”, “learnability”, “externality”, “level of subjective control”, factor G (R. Cattell).

The indicator “neuroticism” is positively associated with the indicator “suspiciousness” and negatively with the indicators “externality”, “emotions regulation” and “average intensity of mental states”.

The indicator “suspiciousness” back correlates with the indicators “self-management” and “emotions regulation”.

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The indicator "learnability" positively correlates with the indicators "planning", "self-management", "dominance", factor G (R. Cattell), "emotions regulation" and "self-motivation".

The "analysis of contradictions" indicator is positively related to the "depth of breathing", "cardiac activity", "sadness - gaiety of experiences", factor A (R. Cattell) and "high self-esteem - low self-esteem", negatively - with the indicator "locus of control - life".

The indicator "subjective control" positively correlates with the indicators "altruism", "recognition of emotions", "planning", factors G and H (R. Cattell), and "self-motivation".

The indicator "metacognitive involvement in activity" is positively associated with indicators "recognition of emotions", "learnability", "planning", "self-management", "authoritarianism", "self-motivation", "adequacy".

The "emotion recognition" indicator has a positive relationship with the indicators "metacognitive involvement in activity", "externality", "level of subjective control", "authoritarianism", "altruism".

The "planning" indicator is positively related to the indicators of "learnability", factor Q3 (R. Cattell), "metacognitive involvement in activity", "externality", and "level of subjective control".

The indicator " altruism" is positively related to the indicators "externality", "level of subjective control", "decision making", factor G (R. Cattell), "result of life" and "recognition of emotions".

The factor B (R. Cattell) indicator positively correlates with the indicators of "awareness of perception", "clarity of mental images", "acumen", "thoughtfulness of behavior", and "coordination of movements".

7. Conclusion

We hypothesized that the structural and functional organization of students' cognitive mental states may depend on the level of life meaningfulness. The results of empirical studies have confirmed our assumption.

The leading indicators of the cognitive states' structure of students with a high level of life meaningfulness are: "self-management", "neuroticism", factor O (R. Cattell), "locus of control - Me", "self-motivation", "logical thinking", "decision making" , "subordination", " emotions regulation ", "externality". Students with a low level of life meaningfulness have the following leading indicators: "internality", "emotions management", "self-motivation", "neuroticism", "suspiciousness", "learning ability", "contradiction analysis", "level of subjective control", "metacognitive involvement in activity "," recognition of emotions "," planning "," altruism "and factor B (R. Cattell).

In the structure of the cognitive states of students with a high level of life meaningfulness the central role is played by the indicator "general self-management ability". Cognitive states of students with a low level of life meaningfulness have a qualitatively different organization. It is characterized by the presence of a whole set of leading indicators, the main of which are indicators of emotional intelligence ("emotions regulation", "self-motivation") and the locus of control ("internality").

Invariant to the level of life meaningfulness is the indicator "emotional stability / instability" ("neuroticism"); it performs the structure-forming function in both samples.

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Acknowledgments

The research was carried out with the financial support of the RFBR; project No.19-013-00325.

References

Amthauer, R. (1970). *Intelligenz-Struktur-Test. I-S-T 70*. Gottingen: Hogrefe.

Anastasi, A., & Urbina, S. (1997). *Psychological Testing* (7th Ed.). New York: Prentice Hall, Upper Saddle River.

Brown, J.S., Collins, A., & Duguid, S. (1989). Situated Cognition and the Culture of Learning. *Educational Researcher, 18*(1), 32-42.

Cattell, H.P., & Mead, A.D. (2008). The sixteen-personality factor questionnaire (16PF). In G. Boyle, G. Matthews, & D.H. Saklofske (Eds.), *The SAGE handbook of personality theory and assessment (Vol. 2, Personality measurement and testing* (pp. 135-178). Los Angeles, CA: Sage.

Eysenck, H.J., & Eysenck, S.B.G. (1975). *Manual of the Eysenck Personality Questionnaire*. London: Hodder and Stoughton.

Goleman, D. (1995). *Emotional Intelligence*. New York: Bantam Books.

Izard, C.E. (1991). *The Psychology of Emotions*. New York: Plenum Press.

Karpov, A.V., & Skityaeva, I.M. (2005). *Psychology of Metacognitive Processes of Personality*. Moscow: Institute of Psychology RAS.

Lazarus, R.S. (1991). *Emotion and Adaptation*. New York: Oxford Univ. Press.

Leary, T. (1957). *Interpersonal Diagnosis of Personality*. New York: Ronald.

Leontiev, D.A. (2006). *Life Sense Orientations Test*. Moscow: Smysl.

Mednick, S.A., & Mednick, M.T. (1967). *Examiner's manual: Remote Associates Test*. Boston, MA: Houghton Mifflin.

Morosanova, V.I. (1995). Individual Style of Self-regulation in the Arbitrary Activity of a Person. *Psikhologicheskiy zhurnal, 16*(4), 26-35.

Prokhorov, A.O. (1998). *The Psychology of Non-Equilibrium States*. Moscow: The Institute of Psychology of the Russian Academy of Sciences.

Prokhorov, A.O., Chernov, A.V., & Yusupov, M.G. (2016). The Relationships of Mental States and Intellectual Processes in the Learning Activities of Student. *International Journal of Environmental and Science Education, 11*(6), 1031-1037.

Prokhorov, A.O., Yusupov, M.G., & Plokhikh, V.V. (2015). Cognitive States in the Process of Students Intellectual Activity. *The New Education Review, 41*(3), 263-274.

Rotter, J.B. (1990). Internal Versus External Control of Reinforcement: A Case History of a Variable. *American Psychologist, 45*, 489-493.

Schraw, G., & Dennison, R.S. (1994). Assessing Metacognitive Awareness. *Contemporary Educational Psychology, 19*, 460-475.

Snider, J.G., & Osgood, C.E. (1969). *Semantic Differential Technique: A Sourcebook*. Chicago: Aldine.