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Influence of individual cognitive characteristics of operators of aerospace systems on activities under conditions of uncertainty

A new approach to determining the features of the formation of an individual professional thesaurus and the role of cognitive styles in this process is presented. A hypothesis was put forward about the influence of the cognitive style of a personality on professionally important qualities

The activity of operators of aerospace systems has a pronounced intellectual character, it implies the rapid adoption of adequate decisions, often in conditions of uncertainty. Assessment of the situation, the ability to make an error-free and timely decision are the most important characteristics of the quality of the operator's training. Errors in decision-making by operators lead to catastrophic consequences in more than 50% of cases of complication of the situation in the functioning of the system [1,2].

When making a decision, the operator must evaluate several sources of information while trying to understand the current state of the system "operator (crew) - vehicle - environment". At the same time, the information available to the operator is of a probabilistic nature. The data used to assess the situation may be unreliable, and thus the consequences of planned actions may be questionable.

Significant restrictions impede the correct decision-making [3]:

- the fundamental impossibility to select all the necessary information;
- the limited amount of human operative memory, therefore, at each moment of time, the operator pays attention to a limited number of objects (strategy of searching for the dominant structure);
- changing management strategies in the course of solving problems, with a priority choice requiring less mental effort;
- using the least complex cognitive operations;
- functioning often with a lack of time;
- failures in the functioning of long-term memory.

Research has found that people looking for information and decision-making are largely guided by a hypothesis that was most likely tested in practice. This reinforcement of experience leads to a tendency to find those sources of information that confirm what a person believes or knows well [4,5]. That is, the operator uses a part of his systematized and mastered knowledge that is essential for him as a means of orientation in a control situation, and beyond that also knowledge that is not directly related to the orientation function, but expands the subject's understanding of the situation, his place in it, and its possible vectors. development, give impetus for action. Thus, the study of the operator's decision-making actions under conditions of uncertainty is possible within the framework of the thesaurus approach [6,7].

The concept of "thesaurus" is correlated with the information-semantic model of operator training, which has its own conceptual thesaurus - a personality thesaurus,

an individual configuration of nominal and associative information that is created and expanded in a manner unique to a given personality. At the same time, the expansion and restructuring of the thesaurus should be considered as a learning process, in the process of which a hierarchical interconnected system of specific formations is established: images and operations that underlie the management of the "operator - machine - environment" system.

At the same time, the procedures for assimilating and processing information about the current situation for each operator are individually specific and unique. Moreover, the implementation by the operator of a personal thesaurus, expressed in the originality of the personal conceptual sphere, its key concepts, which are activated in the process of a person's participation in practical activities, is considered by some researchers as a substyle of the cognitive style of a person, reflecting the essential aspects of the operator's mental activity, his intellectual and emotional activity [8].

It is obvious that the formation, filling and structuring of a personal thesaurus occurs in certain ways, implemented by means of cognitive personality styles, which, being a characteristic of the cognitive sphere, are at the same time a manifestation of the personal organization as a whole, since individual ways of processing information are closely related to needs, motives, affects etc. In addition, cognitive styles are higher-order forms of intellectual activity, since their main function is to coordinate and regulate basic cognitive processes. At the same time, they characterize the effectiveness of individual intellectual adaptation [9].

The available data indicate that cognitive styles characterize two aspects of intellectual activity: the originality of mental representations of what is happening and the ability to control mental activity. Thus, style differences are manifested in the characteristics of mental representations of what is happening: the expansion of the boundaries of the mental image of the situation, the degree of its permeability, the articulation of this mental image, the separation of differently generalized categorical levels in it, the integration of various modalities of experience in its mental fabric [10].

In addition, stylistic differences indicate the formation of mechanisms of involuntary intellectual control, which manifests itself in two main forms: control of information processing processes; control of motor and affective activity, which is decisive in conditions of information deficit and the uncertainty caused by it. Undoubtedly, the important role of the cognitive and stylistic features of the operator of the aerospace system in the implementation of activities that involve independence and responsibility in decision-making, especially in situations with a high degree of uncertainty, while cognitive styles act as backbone (integrating, nodal) factors in the process of making a choice

Considering the above, it is appropriate to say that cognitive styles are the tools with which an individual “picture of the world” is built. Thus, cognitive styles act as a kind of mediators between the “mental world” of the subject and the “world of reality”, ultimately ensuring the uniqueness of the intellectual capabilities of people with different mindsets [9]. And, given the existence of a stable connection between cognitive styles of intellectual activity with personal characteristics and professionally important qualities of an individual, through their use it is possible to determine the success of vocational training and further activities. Studying the personality traits of the main cognitive styles can help to more accurately assign candidates to certain

categories of professional aptitude. This can increase the reliability of the procedures for the professional psychological selection of future specialists for professional activities.

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