MOTIVATION AND ITS PSYCHOPHYSIOLOGICAL BASES

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Annotation

There are different ideas about the psychophysiological mechanisms of motivation. One of the first theories trying to explain the physiological mechanisms of drives was the theory of M. Cannon. He believed that various drives arise as a result of the specific activity of certain peripheral organs, which determined the name "peripheral theory" of motivations.

Keywords: motivation, psychophysiological foundations, character, temperament, theory, practice.

In essence, M. Cannon formulated a unitary theory of motivations. The emergence of motivation, as well as its termination, according to this theory, is associated with an effect on the same peripheral organs. At the same time, reinforcement acts in a peculiar role of a "meter" of the strength of the initial attraction.

The merit of M. Cannon is that he was the first to move from studying the purely behavioral side of motivation to studying internal mechanisms. His theory reveals one of the possible components of motivational excitation - impulses from peripheral organs.

However, the observations of S.V. Anichkov already cast doubt on the correctness of these ideas [1].

S. V. Anichkov, in experiments conducted on himself, could not find a relationship between attacks of gastric contractions and feelings of hunger.

The theory of motivation put forward by D. Hebb [2] follows directly from "drive reduction". D. Hebb, unlike M. Cannon, puts the emotional component in the center of attention. D. Hebb believes that all motivations are determined by the body's desire to avoid unpleasant, often painful, emotional sensations ("suffering") that can occur when various organs are irritated. According to this theory, the hunger drive, for example, is seen as the desire to get rid of the "hungry pains" that occur in the epigastric region during contractions of the empty stomach.

Although D. Hebb's concept also assigns an important role to impulses coming from peripheral organs, it is fundamentally different from Cannon's concept, since in it motivations are determined not by direct influences from peripheral organs, but, on the contrary, by the desire to avoid these irritations.

Based on the concept of E. Bruner on the constancy of the internal environment and M. Cannon on homeostasis, S. Richter formulated ideas according to which motivational excitation is a consequence of certain physiological needs. He pointed out that the behavior arising under the

influence of motivation is aimed at restoring the constancy of the internal environment. He attached particular importance in the formation of motivation to a change in the activity of the endocrine glands.

In the future, many authors R. Bak, B. Stellar, E. Morgan began to adhere to the point of view that motivations and their satisfaction are determined by multiple factors, some of which can be leading, others can replace the leading ones in case of damage [3; four; 5].

All these theories were devoted only to the question of trigger factors of motivation. Some authors believe that motivations are determined by the state of certain peripheral organs, others see the cause of motivational excitation in certain changes in the internal environment of the body and, in particular, in the blood. There is also a theory of multiple genesis of motivations. All these factors, of course, are involved in the formation of motivational arousal.

M. Vernon, in contrast to S. Richter and M. Cannon, suggested that motivation arises as a result of excitation of certain nerve centers by sensory and humoral factors [6]. Although he did not determine the localization of these centers, his general ideas about the participation of the CNS in the formation of motivations gave a powerful impetus to the development of central theories of motivations. These ideas were further developed by E. Morgan [7]. He formulated the concept of the central motivational state. Such a concept was put forward by the author in order to emphasize the localization of motivational excitation in the CNS and thereby slightly underestimate the significance of peripheral theories of motivations. E. Morgan believed that all specific drives can arise only at a certain level drives can only arise at a certain level of the central motivational state.

In accordance with these ideas, E. Dell put forward a theory according to which any instinctive behavior has a non-specific component - an increased level of sensory and motor excitation, which determines motivation [8]. This non-specific component of motivational reactions was associated by E. Dell with non-specific ascending activating influences of the reticular formation.

B. Stellar in 1954 put forward a hypothalamic theory that links the formation of motivation with the activity of the hypothalamic centers of the brain. According to this theory, the “central motivational state” is maintained by the excitation of special hypothalamic centers, which are influenced by cortical impulses, inhibitory hypothalamic centers, sensitive stimuli, humoral factors, etc [9].

If B. Stellar believes that motivation is based on the activity of the excitatory hypothalamic mechanism, and saturation or satisfaction depends on the hypothalamic inhibitory mechanism, then R. Peters /198/ believes that motivational excitation is determined by the mesodiencephalic circle. The basis of this circle is the mesencephalic reticular formation, the nuclei of the midline of the thalamus, the striopallidary connections through the lower legs of the thalamus, the basal field of the septum, including the diagonal Broca's bundle, the medial bundle of the forebrain, and both the starting and ending points of the activating circle - the

reticular formation of the trunk . The destruction of this circle at any point causes, according to these authors, a violation of attraction and the ability to learn.
S. Smith believes that motivational excitation is provided by two systems that determine its two different aspects: intensity and direction [10]. The first aspect of motivational arousal is determined by the ascending reticular activating system. The second aspect is determined by the extrathalamic system, which activates the cortex through the basal diencephalon.
All these theories show that the nature of motivational arousal is still not clear enough. These theories treat the problem of motivation too generally and do not take into account the fact that each motivation has special internal stimuli.
The immediate physiological condition of motives is the activity of the central nervous system. I.M. Paley and A.V. Penskaya tried to answer the question: is there any special mechanism that directs the actions and deeds of a person? To do this, they studied conditioned reflex processes under such conditions when the actions and movement of the subject remained the same, but due to a new motive, the satisfaction from their performance changed [11].
After the experiment, I.M. Paley and A.V. Penskaya suggested that the change in the conditional functional state is associated with the satisfaction of the active motive. Consequently, the functional state of the nervous system is the physiological basis for satisfying or dissatisfying the motive.
Such functional states are, according to V.S. Merlin, a special kind of reflexes, since they are always caused by some external influence [12]. These reflexes can be unconditioned and conditional. So, if the functional state of the nervous system of a preschooler changes due to the display of a new picture (the motive of curiosity), then this is an unconditioned reflex. If an adult's functional state changes because he is told that they are testing the strength of his will (the motive of social assessment), then this is a conditional functional state, since such a reaction to social assessment is the result of education. At the same time, in contrast to the conditional functional state in animals, in experiments on humans it is caused by instructions, that is, it has a second signal origin.
To explain the physiological basis of the orientation of the motive B.C. Merlin considers the "dominant" mechanism. This is a physiological mechanism, first studied by A.A. Ukhtomsky and his collaborators. It lies in the fact that a certain constellation of nerve cells becomes the dominant focus [13]. The excitation arising in other subordinate nerve centers is summed up in the dominant ones, and causes a reaction corresponding to them. The reactions of the subordinate centers are inhibited.
The mechanical dominant determines the direction of actions and movements in two ways. First, such movements and actions are inhibited, which are not related to the satisfaction of this motive. Secondly, the actions necessary to satisfy the motive are intensified and become more stable and prolonged.
Further research revealed the electrical processes in the nervous system, due to which the

mechanical dominant is carried out.
The dominant principle in the form in which it was first proposed by A.A. Ukhtomsky makes it possible to understand why a motivated action has a directed character. Thanks to the dominant, a wide variety of external and internal stimuli cause movements that perform the same function.
However, the adaptive effect of motivated action is explained by another physiological mechanism.
In the dynamic organization of any functional system of the body, a useful adaptive effect acts as a central link. According to P.K. Anokhin, each such functional system works on the principle of self-regulation.
The cyclic self-regulating organization of each functional system, according to P.K. Anokhin, is always built not on the anatomical principle, but on the basis of realizing the best, fastest, most economical provision of one or another adaptive function of the body. The involvement of various executive components in the activity of a functional system is not severely determined. In each case, P.K. Anokhin believes, these can be various combinations of organs and central-peripheral devices of the nervous system, but, as a rule, all these components are united by a selective relationship based on their selective tonic tension and plastically support each other on ways to obtain the final adaptive result.
Functional systems acquire a particularly complex organization when behavioral acts are included in them to ensure the final vital result. According to K.V. Sudakov, a holistic behavioral act, therefore, can act as a component of a particular functional system that maintains a certain internal constant [13]. At the same time, it can form independent dynamic functional systems that ensure the implementation of certain stages on the way to satisfying the basic initial need of the body.
In order to understand how the state that determines the goal for action is formed in the central nervous system, it is necessary to consider the mechanism of the central architecture of the functional systems of the body.
The central apparatuses of functional systems, according to PK Anokhin, also have a fundamentally common architecture for each of them.
The first and most important stage of the central architecture of a functional system of any complexity is the stage of afferent synthesis. Any deviation of one or another internal constant of the body from the level that ensures normal vital activity, which is its internal need, immediately, through the excitation of special receptors, sends powerful streams of afferent impulses to the central nervous system. These impulses often, together with direct humoral action, excite special central sensitive apparatuses, corresponding functional system. On this basis, according to P.K. Anokhin, motivational excitation is formed.
The stage of afferent synthesis ends with an important moment - the decision to act. This stage limits the organism from numerous "degrees of freedom" and forces it to perform only one,

specific form of behavior that corresponds to its internal needs and the environment.
It is at this stage of a complex adaptive act that a goal for action is formed.
As a result of all these processes, an appropriate purposeful behavior is formed, which is accompanied by special vegetative reactions.
This goal-directed behavior is built on the basis of a constant assessment by the body of the results performed in the external environment of actions, comparison
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them with the properties of the acceptor of the results of the action.
Pointing to the role of the action acceptor in explaining many mental phenomena, P.K. Anokhin noted that "all learning issues come with the obligatory corrective role of reverse afferentations, and only on this basis is self-learning possible. Any correction of errors is the inevitable result of a mismatch between the excitations of the action acceptor and the back afferentations from the wrong action. Outside of this mechanism, it is impossible both to detect an error and to correct it» [8].
From all of the above, it follows: there is a special physiological mechanism for the directing function of the motive, the mechanism of the dominant, while the physiological mechanism of the emotional side of the motive is the functional state of the nervous system.
Motives and emotions are organically connected with each other. Therefore, it is natural that the dominant and the general functional state of the nervous system are also organically connected.
The state of optimal lability of a particular system of nerve centers, necessary for the emergence of a dominant, depends on the general functional state of the nervous system underlying emotions.
On the other hand, the general functional state arises and changes depending on the degree of need or lack of something necessary for the body and personality. And the satisfaction or dissatisfaction of human needs is determined by directed adaptive activity, conditioned by motives.
The general functional state and the dominant are carried out with the help of various nervous formations. The first is regulated by non-specific, the second - by specific nerve formations.
Since any motive is always accompanied by a change in the emotional state - satisfaction or dissatisfaction, it follows from this that not some limited and specific areas participate in motives, but the entire nervous system as a whole.
If we compare those parts of the nervous system where non-specific nerve formations are located, on which emotional states depend, with those on which motivated, directed actions depend, we can see that in both cases these are almost the same parts of the brain - the hypothalamus, thalamus, limbic region. In addition, in each of these areas, specific and non-specific nuclei are in such close proximity that with a displacement of electrical stimulation by just a few millimeters, one can get either an awakening reaction or an imaginary emotional

rage, or directed and motivated actions and movements.

Thus, the nervous apparatuses of emotions and motives are not spatially demarcated. This facilitates their functional connection and unity. Two different nervous apparatus - directing action and accumulating energy - function as a single whole.

One of the most widespread theory of motives abroad is the theory of reduction by J. Hull [13]. It lies in the fact that the guiding effect of the motive depends on the degree of satisfaction or dissatisfaction of the motive. According to this theory, an increase in dissatisfaction and a decrease in the satisfaction of needs increases the activity of the motive, and, conversely, a decrease in dissatisfaction and an increase in satisfaction lowers it. The decrease in satisfaction, first of all, determines the emotional state - displeasure, suffering. But since the emotional state is carried out with the help of a different nervous apparatus than the motive, it may not proceed in parallel with a change in the degree of its influence on the direction of behavior.

It follows from this that the active directing action of the motive is not determined by the emotional state, since it is carried out with the help of another nervous apparatus.

The study of the psychological mechanisms of motivation has shown that they are inherent in generality, they reflect the interconnection of many links of the mental system that provides human activity and behavior. In a generalized form, we can say that the motivational mechanism is a system of psychophysiological, mental and social prerequisites for motivations as a directed motivation of human behavior and activity.

Since any activity is polymotivated, and its motivational composition is hierarchical, the mechanisms of motivation are also hierarchical and subordinate in a certain way. Taken together, they constitute a system of mechanisms that actually provides the necessary motivation for activity. Among these mechanisms there are congenital and acquired, developed in individual and social practice, psychophysical and mental, the most generalized and less generalized, narrow, capable of generating and realizing motivation only in specific conditions and situations, etc.

V.G.Leontiev refers various predispositions, dispositions, imitations, etc. to innate mechanisms [14]. They, in his opinion, often become the leading conditions for the emergence of unconscious motivation.

Based on his own data, as well as data obtained by other researchers, VG Leontiev identifies several types of psychological mechanisms of motivation, which manifest themselves in various specific conditions. These mechanisms differ in varying degrees of generalization and specificity of action.

1. Homeostatic mechanism of motivation. It is based on the rule of self-regulation by I.P. Pavlov - the very deviation from the norm is the reason for the return to the norm. Otherwise, any deviations from the level of vital activity of the organism given by nature give rise to the need to restore this level.

Therefore, this type of mechanism provides motivational excitation in the form of needs, drives, drives at the level of the organism. Its main link is the balancing of the organism with the environment.

Not everyone accepts this mechanism as the leading mechanism of motivation. This can be explained by the fact that balancing the organism with the environment excludes its creative relationship to the outside world. In reality, a person does not so much adapt to the environment as he adapts it to himself, that is, he creatively transforms it. This point of view is defended by VG Aseev /11/. He opposes the metaphysical understanding of human motivation, believing that a person by nature is an active being, while his activity is creative. Hence, the leading mechanism of motivation, according to V.G. Aseev, should not be homeostatic, but different, based on the principle of primordial human activity.

2. Mechanism of spontaneous activity. The theory of spontaneous activity proceeds from the fact that activity is inherent in all living systems, it is their essential property, the deepest need of the organism. Motivation provides only a search for the necessary conditions for the manifestation of an already existing activity. "With this understanding of the nature of activity, motivation appears as a problem of regulation of activity, and not of its creation. And the main parameters of activity are strength, intensity, as well as direction in certain areas of activity.

N.A. Bernshtein, while developing the problem of the physiology of activity, the main link of which he recognized the model of the required future, also believed that the body is characterized by activity, not reactivity [16].

This position on spontaneous activity as the basis of the mechanism of motivation does not answer the question of what is the causal conditionality of spontaneity, what is the reason that generates activity, including cognitive activity?

This question was raised by G.I. Shchukina in 1963. Her analysis of causality in the field of physiology and psychology of behavior helped to outline a productive direction in the development of psychological mechanisms of motivation,

Based on the leading concepts of the doctrine of the nature of motive and motivation, VG Leontiev formed new ideas about motivation, its mechanisms and forms of manifestation. These ideas are based on the concept of the initial generalized mechanism, which is an important link in all other motivational mechanisms. It was called by V.G. Leontiev the mechanism of dynamic balance.

Developing this mechanism, VG Leontiev proceeded from the fact that the concept of the mechanism of spontaneous activity and the homeostatic mechanism have significant contradictions. In the model of motivation associated with spontaneous activity, it is difficult to explain the causality of motivation, since activity cannot arise by itself.

It is also difficult to explain the motivation of a person to creative, cognitive and any other activity with a homeostatic model of motivation. Since, according to this model, he should only strive to restore balance, the constancy of the parameters of the body and personality, that

is, to restore what was, and not create something new. In addition, the homeostatic mechanism does not explain the reason for the deviation from the norm, that is, the reason for the violation of the balance of the organism with the environment.

These contradictions prompted V. G. Leontiev to search for those motives that could explain how and under the influence of what factors an imbalance arises in the systems of the body and personality. The observations and analyzes of intraorganismal (metabolic) processes carried out by V.G. Leontiev and his collaborators showed that imbalance in any system will always arise after equilibrium is reached in another system associated with it. Balance breeds imbalance. This pattern is also observed at the level of the organism, at the level of the individual, at the level of the "man-environment" system, etc.

On this basis, V.G. Leontiev suggested that balancing in one system of an organism or personality leads to an imbalance in another, and equilibrium in this one leads to its violation in a third, and so on endlessly. Hence, equilibrium, as the achievement of a result, a certain level of some parameters, the elimination of disproportion, the stability of some property, etc. is, according to V. G. Leontiev, the true cause of activity in connected systems. Equilibrium is a dynamic balancing process. This process takes place not only within one system, but also goes to other systems and systems of the external environment. In addition, balancing, according to V.G. Leontiev, cannot occur within an isolated system at the expense of its own resources - connected systems are needed to be able to transfer these resources from one system to another, etc. This is the interaction that ultimately ensures the constancy of the balancing process. Hence, spontaneous activity can be explained by materialistic causes. This activity is the result of equilibrium in connected systems, that is, activity is generated by activity.

Emerging activity on the basis of a consistent violation and restoration of the level of some parameters of the body, personality, "man-environment" system, etc. consistent with the phenomenon of causation. The emerging causal chain (a cause gives rise to an effect, which itself becomes the cause of another effect) and, according to V.G. Leontiev, is ultimately a source of motivation, an energy element of motivation. Therefore, such a mechanism of motivation was called by V. G. Leontiev the mechanism of dynamic equilibrium, in which balance-unbalance in connected systems are dialectically connected. This provision means that the incentive function of motivation is determined by the possibility of transition, its implementation into an action or an act of behavior, which in turn will cause another act of behavior. VG Leontiev explains the fact that the process of activity, as a process of balancing, becomes a source of motivation for a person to it, as soon as he starts the implementation of this activity.

This can explain another mechanism of motivation, namely motivation by the result of activity. The result, he believes, is an important psychological mechanism that is directly related to the mechanism of dynamic balance and is its derivative. The result is the effect of a cause (dynamic equilibrium), which itself becomes the cause of another motivational action.

Thus, the mechanism, which is based on the dialectical unity of balance and imbalance of some aspects, properties, attributes, processes in related systems, is, according to V.G. Leontiev, the initial source of motivational excitation at the level of the organism and personality .

Summarizing the data of the analysis of the main directions in the study of the nature of motivation, its structure, factors, it should be noted that the motive and motivational systems are the product of the development of all the motivating forces of a person, his activity, life practice, socialization and his transformation into a personality.

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