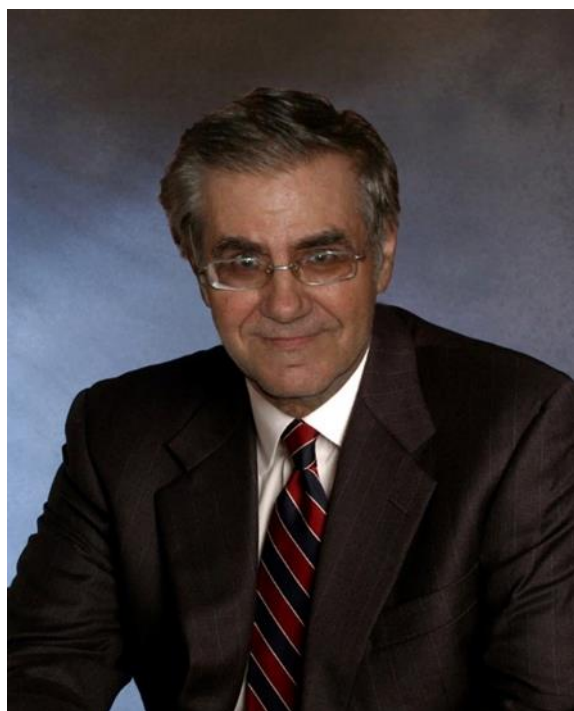


## LEARNING FROM THE PAST



Vladimir Mikhaylovich Rusalov was born 5 October 1939 in Kizlyar (Dagestan, Russia). He is a well-known Russian psychophysiological and anthropologist who was first to develop a temperament model within the activity-specific approach. He is best known for his work in differential psychophysiology, psychology of personality and intelligence, and temperament (active specific model of temperament). Differential psychophysiology reveals patterns of generation, formation and development of the classes or types of individually psychological differences that emerge and are formed because of the influence of stable biological factors of the individual. Rusalov V.M. developed the differential psychophysiological, or special theory of human individuality in order to revealed the mechanisms of transformation of the biological factors into the individually psychological features. He believes that the individually psychological in relation to the

individually biological appears as a strictly regular sequence of processes, each of which proceeds according to biological (physiological) laws, but the sequence of organization and structure within the complex of these processes is subordinate to psychical laws. The core of V.M. Rusalov's special theory of human individuality is formed on the following five proposition:

*The first* proposition states that it is possible to distinguish the formal-dynamic (also called by some authors as psycho-dynamic) and content aspects of an individual's mind.

*The second* proposition is that the formal-dynamic characteristics of the individual human mind are based on the integrated totality of all biological properties.

*The third* proposition is that formal-dynamic properties of the human mind are formed gradually, as a new systematic property of the generalized integration of biological properties optimally associated with activity: if generalization occurs due to the generality of neurophysiological, and more broadly, all structural and functional biological properties of a person, then we are dealing with temperament; if the generalization is based on the dynamic and content features of cognitive mechanisms, we are dealing with intelligence; if the dynamic and content characteristics of motives are generalized, then such a psychological formation should be attributed to character.

*The fourth* proposition concerns the relationship between the formal-dynamic formations of the mind and other, "more organized" structures of integral individuality: the formal-dynamic properties of the mind, being incorporated into "higher organized"

mental structures, in particularly into intelligence and character, are essential components of the dynamic properties of these structures.

*The fifth* proposition is that formal-dynamic features of mind not only serve as the preconditions and conditions of activity, not only affect the dynamics and style of activity, but may also determine the results of activity.

From the proposed theory V.M. Rusalov identified seven criteria which can be considered as belonging to the domain of temperament: (1) refers not to the content but to formal characteristics, (2) reflects the dynamic aspect of behavior, (3) is expressed in all kinds of behavior, (4) is present since childhood, (5) is stable across a long period of life, (6) has close relationship with biological systems, and (7) is inherited.

Rusalov distinguishes the four temperamental traits: ergonicity (endurance), plasticity, tempo (speed), and emotionality. Ergonicity is associated with "Wide" or "Narrow" afferent synthesis (probably due to the large or

lower energy potential of "capturing" the external world), which applies to the excitatory processes of the CNS. Plasticity refers to Anokhin's decision-making component, in that it characterizes the ease or difficulty in switching from one decision (behavioral program) to another. Tempo is associated with the degree of speed in realization of behavioral programs. Emotionality refers to the acceptor of the results of the action and their evaluation. A more complete coincidence of the acceptor and the result leads to the formation of more emotionally stable forms of behavior, while their mismatch may underlie the genesis of emotionally labile forms of behavior. Rusalov's activity-specific approach offers to differ manifestation of temperament traits in physical, intellectual, and communicative aspects of activities.

Rusalov developed a questionnaire known as the Structure of Temperament Questionnaire (STQ) aimed at measuring the twelve temperamental traits.

## Some Theoretical Problems of Constructing of a Special Theory of Human Individuality

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**Abstract.** The article attempts to propose several foundations for constructing of a special theory of individuality. Its main purpose was to identify the mechanisms of generation, formation and development of those classes or types of individual psychological differences, that are formed due to the action of individually stable biological factors within the human life activity. The starting point for the construction of a proposed theory is the concept of "systemic generalization". It is assumed that the biological components (primarily properties of the nervous system) in the process of human development through systemic generalization form a special class of properties: the so-called formal-dynamic features of human behavior, or temperament. The article proposed several objective criteria for distinguishing temperament, a topic poorly developed in modern psychology.

**Keywords:** Human Individuality, Temperament, Formal-Dynamic Characteristics

One major problem of modern science and, first and foremost, of modern psychology, is to determine the possibilities, means and methods of forming and developing a person's individuality; in this connection, the solution of this problem is of the utmost importance [1, 12-17, 23]. We understand the individuality of a person as a multidimensional and multilevel system of relations that covers all the sets of conditions and stable factors of a person's individual development [12]. This approach regards human individuality as a particular case of a self-developing and self-regulating system that consists of a hierarchical series of properties of all stages of matter development – from physical, biochemical, physiological, etc. to socio-group and socio-historical ones [1, 11, 12, 15, 16].

Due to the enormous variety of factors influencing the formation of a person's individuality, Merlin introduced a special definition for this concept – "integral individuality", thereby emphasizing that all natural and social properties of an individual are integrated in the concept of individuality [13-16]. This approach states that individuality is a special form of existence of an individual person, within the framework of which he or she lives and functions as an autonomous and unique bio-social system, that maintains the integrity and identity of himself or herself in the conditions of continuous internal and external changes [12, 14-16, 21, 23].

The mechanisms of the formation, development and regulation of a person's integral individuality require knowledge of the interaction, mediated transformation, and integration of all the levels, all the components that comprise a person. The fundamental task involves not only a thorough multilevel abstract analysis of the entire set of the determinants of the integral individuality of a person, rather than the disclosure of the nature of the interaction between them based on specific experimental studies designed to find stable

dimensional relations between the components that make up the individual behavior of a human being. Undoubtedly, that this complex task can be only solved by the joint efforts of many sciences that study humans, such as genetics, and anthropology, up to psychology, to political economy, philosophy, and so on.

Thus, the most important place in the solution of this problem must be assigned, according to the ideas of Teplov and Nebylitsyn [17, 30], to a new scientific direction – differential psychophysiology, the subject matter of which can be designated on the level of a formal scheme as an intersection zone of two circles, one of which symbolizes our knowledge about individual variations of the mind, and another one about individual variations in the biological organization of a person in the broadest sense of this word.

The latest advances of sciences that study biological aspects of man – anthropology, genetics, physiology of higher nervous activity, and etc. – convincingly demonstrate that man was able to reach such a high developmental level because he/she was born with such bodily, or rather, biological organization, that initially included, preprogrammed possibilities of his/her universal socio-societal functional development [29]. Hence it means that knowledge of the biological organization of a human being – its levels, structure, peculiarities of physiological processes, functions and states, regularities of their functioning, etc. – is the most important element in the disclosure of the development mechanisms of the human integral individuality which includes the psychological individuality level.

The task of the study of the psychophysiological aspects of human individuality may be formulated as following: to reveal the objective biological foundations of the psychological level of human individuality, or, in other words, to discover the underlying biological elements (and their characteristics) that,

when organized into a particular system, form the level of individual-psychological differences. Based on Ponomarev's ideas about structural levels of matter development [20], we can assume that the individually psychological in relation to the individually biological appears as a strictly regular sequence of processes, each of which proceeds according to biological (physiological) laws, but the sequence of organization and structure within the complex of these processes is subordinate to psychical laws.

Therefore, differential psychophysiology, due to the specifics of the study's subject matter, reveals patterns of generation, formation and development of the classes or types of individually psychological differences that emerge and are formed because of the influence of stable biological factors of the individual.

It is important to construct a differential psychophysiological, or special, theory of human individuality in order to understand the mechanisms of transformation of the biological factors into the individually psychological features. In my opinion, such a special theory of individuality, unlike the general theory, must contain propositions that reveal the regularities and specifics of the formation of the individual-psychological differences under the influence of stable biological factors.

The present work attempts to generalize several known propositions and formulate new ones, that can form the foundations for constructing a special theory of individuality. The essence of the first preposition, which is basic for differential psychophysiology, is present practically in any empirical research, is as follows. It is stated that at a certain level of scientific research, it is possible to distinguish the formal-dynamic (also called by some authors as psychodynamic [5, 13-17, 23, 30]) and content aspects of an individual's mind. The content aspect appears through the subject-meaning psychological structures-knowledge, motives, goals, and so on. The content aspect represents a set of properties,

attributes, and traits of the individual mind, that are formed because of human interaction with the subject world and its social environment. On the contrary, the formal-dynamic aspect covers a set of other traits and properties in the human mind, namely those features which emerge as a result of systemic generalization of psychophysiological characteristics regardless of their specific motives, goals, ways, behavior programs, etc. due to innate individually stable neurophysiological (or more precisely, all biological) components involved in individual-specific types of the human activity.

From the first preposition it follows that only formal-dynamic properties of the human mind are connected with human biological properties. In the most general form, the correlation between the biological characteristics of man and the formal-dynamic properties of his/her mind can be represented as follows: biological characteristics are components of a system of a higher order, the system of formal-dynamic properties of the human mind.

The second preposition of the special theory of individuality is that the formal-dynamic characteristics of the individual human mind are based not on a separate biological subsystem, but on the integrated totality of all biological properties. I will illustrate this statement by the example of studying the history of the change of the biological basis of temperament as the most general characteristic of the formal-dynamic aspect of the human mind [26].

At different times, different biological subsystems of the human body were proposed as the basis of temperament: (a) humoral theory (Hippocrates) associated temperament with different ratios of blood, bile, black bile, and mucus; (b) somatic (E. Kretschmer, W. Sheldon, S. Stevens) and nervous theories associated human temperament with features of the central nervous system, types of higher nervous activity or, in recent years, with a different ratio of the brain structures properties [27].



According to the second position of the special theory of individuality, at the base of temperament are the properties not of a partial biological subsystem, and the general constitution of the human body, which I consider as the set of all private constitutions, that is, the totality of all the physical and physiological properties of the individual, fixed in his genetic apparatus [23].

However, the foregoing does not imply that all the elements of the human biological system are equivalent and equally contribute to determining the formal-dynamic properties of the human mind.

In present it has been firmly established that the human biological system is characterized not only by multidimensional self-organizing subsystems (biochemical, somatic, neurophysiological), but above all by the fact that these subsystems have unequal importance in the general hierarchy of the body's functional systems, differ in structural complexity (including unequal number of leading links in determining their activity), different possibilities of autonomous activity, special peculiarities. Based on the hierarchical structure of biological properties, it can be assumed that the significance of structural and functional properties of a higher level (such, for example, properties of the central nervous system as the level of activation, interhemispheric relationships, mobility, lability of the nervous processes of the brain and its individual "blocks" etc.) will apparently be more significant in the formation of formal-dynamic properties, including temperament, in comparison with the properties of other subsystems of the body.

The experimental evidence supports this hypothesis. For instance, the correlation coefficients between the characteristics of temperament and properties of the nervous system in general are higher than those between temperament and properties of somatic (bodily) organization [23].

The third preposition of the special theory of human individuality refers to the possible mechanisms that would explain the process of "inclusion" of biological properties of different levels in the formation of formal-dynamic characteristics of the human mind. The main idea of the third preposition is that formal-dynamic properties of the human mind are formed gradually, as a new systematic property of the generalized integration of biological properties optimally associated with activity. We introduce the concept of systemic generalization to clarify how the development of the formal-dynamic properties of the mind unfolds. From this principle, we can trace the formation of all those properties of the mind that can be characterized as formal-dynamics.

Unfortunately, despite the fact that the concept of generalization, which denotes one of the fundamental mechanisms of formation of stable psychological qualities and attributes, has been used in psychological science, no consistent analysis has been performed so far to identify the formal-dynamic aspects of the mind. Piaget widely applied the concept of generalization as one of the most valuable mechanisms of formation of skills and intelligence. Generalization was defined as "extending the schema" to new objects through inclusion of new elements, formation of a higher-order schema that is deeply rooted in a lower-order schema, "strengthening", "transferring", "forming a new structure", "transpositive", and "generalizable assimilation" [19]. Rubinstein also used the concept of generalization. Specifically, he defined a person's character as a system of generalized motives in the personality [22].

The notion of generalization is apparently applicable beyond the content characteristics of the mind. The dynamic characteristics are also generalized, but we assume that the logic and mechanisms of generalization for dynamic and content characteristics are different. Whereas formal-dynamic characteristics are

generalized predominantly by logic of the "biological", i.e., by the logic of the "body" (under the influence of the general human constitution), the generalization of the content properties of the psyche is mainly based on "social" logic, or the logic of the "object" of socially determined human activity.

According to the third preposition, the basis for differentiating a psychological formation in the individual mind, as we see it, should be the specificity and level of generalization: if generalization occurs due to the generality of neurophysiological, and more broadly, all structural and functional biological properties of a person, then we are dealing with temperament; if the generalization is based on the dynamic and content features of cognitive mechanisms, we are dealing with intelligence; if the dynamic and content characteristics of motives are generalized, then such a psychological formation should be attributed to character.

Hence, the systems principle of hierarchy within the framework of the special theory of individuality is implemented in relation to the specific complexly organized object of reality, as human individuality is, through a sequence of transition from lower structural and functional levels of order to multiple elements (meaning biological properties, above all properties of the nervous system) to higher formations – formal-dynamic properties. New integral systems qualities of a person are formed as a product of this progressive motion: temperament as the first psychological level of formal-dynamic properties, followed by dynamic aspects of intelligence and character.

Assuming the proposed understanding of the nature and mechanisms of formation of formal-dynamic properties of the individual mind, it becomes quite evident that only formal-dynamic characteristics can be the subject of direct comparison with biological properties and characteristics of a person. The attempts to detect the correlations between biological properties and cognitive

characteristics of personality, intelligence, or character, that are frequently undertaken in a series of foreign studies, appear to be totally groundless in this regard [33].

It is important to emphasize that formal-dynamic properties do not form a system that is strictly fixed once and for all, but rather are formed, restructured, and "generalized" as the individual develops. Development of the formal-dynamic properties of an individual can occur for two reasons: (1) as a result of biological age development as well as (2) as a result of successive socially organized types of activity (play, learning, work, etc.), i.e. in the process of upbringing and training. The sources of development of cognitive characteristics can be found in the structure of the subject of activity, or rather, in the succession of some socially organized forms of activity with others.

The existence of stable generalized formal-dynamic characteristics in the human mind – for example, temperament, formed in the process of activity influenced by biological factors – enables a person, as we see it, the most optimal use of his or her formal-energy-dynamic capabilities. The individual level of energy-dynamic capabilities (a certain level of metabolism or hormonal activity as well as peculiarities of nervous processes, etc.) that is set from birth (i.e. genetically determined), being constantly involved in functioning regardless of motives, goals, etc., inevitably leads to an optimally connected with activity generalized integration of all biological properties of an individual. Having emerged as a new systems quality, the generalized integration of biological (or in other words, the system of formal-dynamic) properties begins to act as a regulator of human energy-dynamic capabilities in the process of new types of activity.

The fourth preposition of the special theory of human individuality concerns the relationship between the formal-dynamic formations of the mind and other, "more organized" structures of integral individuality. The meaning of the

fourth preposition is that the formal-dynamic properties of the mind, being incorporated into "higher organized" mental structures, in particular into intelligence and character, are essential components of the dynamic properties of these structures. Integration of formal-dynamic characteristics into the structure of both intelligence and character does not mean that the latter are the only more generalized and more complex dynamic formations of the mind: both intelligence and character, alongside with generalized dynamic properties, also have specific generalized substantial content (subject-meaningful) characteristics.

A distinctive feature of the formation of intelligence, or general abilities, is, by all accounts, the emergence of so-called balanced cognitive patterns due to the generalization of mechanisms of cognitive structuring. Differential psychophysiology considers this systems quality of intelligence, that reflects its formal-dynamic aspect, similar to the notion of intellectual self-regulation [9, 10].

Our study identified specific neurophysiological factors that also act as natural prerequisites of general abilities [24]. The conducted research resulted in a new understanding of many indicators used in practice of differential-psychological research. For example, the speed or plasticity can be viewed as formal-dynamic indicators of temperament, assuming that the neurophysiological side of their genesis is generalized, independent of the content of activity, and as indicators of intelligence, when we understand both speed and plasticity as dynamic indicators of the deployment and restructuring of generalized cognitive structures in the performance of a particular mental activity. Moreover, the dynamic indicators of intelligence are not limited to the formal-dynamic characteristics, i.e., temperament [38].

A distinctive feature of character formation in our view is the generalization of the most diverse forms of motivation – ranging from needs,

motives to interests and ideals. This is exactly how Rubinstein interpreted character [22]. Character includes not only the essential, subject-meaningful characteristics of the motivational sphere, but also the dynamic features that include, as mandatory components, the formal-dynamic characteristics of emotionality. The generalized emotional characteristics, in Piaget's opinion, give "to action the necessary energy" and thus serve as a source of behavior [19]. The emotional (affective, dynamic, energetic) characteristics always serve as a necessary component of all motivations, but they do not exhaust, according to Aseev [4], the entire structure of motivation.

Thus, formal-dynamic mental formations, for example, temperament, can be regarded as an independent level of integral individuality, that corresponds to the Merlin's views [14], as well as a required component for more organized structures of personality, for example, intelligence & character.

The fifth preposition of the special theory of individuality, in its turn, addresses the role of formal-dynamic characteristics of the mind in a person's activity. The essence of this preposition is that formal-dynamic features of mind not only serve as the preconditions and conditions of activity, not only affect the dynamics and style of activity, but may also determine the results of activity.

The effect of formal-dynamic characteristics on the end result of activity until now has practically not been the subject of special research. One of the possible reasons for this is that such influence is difficult to trace in the individual activity. One of the reasons for this is that in individual activity, the content characteristics of the mind at certain stages of activity (the structure of motives, relations, goals, etc.) can suppress the formal-dynamic characteristics (individual tempo, plasticity, etc.), leading to the fact that activity efficiency became almost unambiguously associated with the content characteristics, rather than with

the formal-dynamic characteristics of the mind.

The solution of the problem of the relationships of the formal and dynamic properties of activity is important not only from a practical point of view, it allows us to substantiate the selection for joint activity of the mind as well as because (for example, operators, other things being equal in their temperamental characteristics), it is important above all theoretically as enables us to explore the complex relationship between the formal-dynamic and content characteristics of the mind at different levels of human individuality.

In a special study [25] it was found that the effectiveness of probabilistic prediction in joint activity is somewhat higher when the formal-dynamic properties of the partners in the dyad are opposite in structure (the properties of extraversion-introversion and emotional stability were evaluated according to Eysenck).

We were able to demonstrate an influence of formal-dynamic characteristics on content characteristics becomes more distinct and significant in joint activity: the motivation strengthens, the general knowledge stock grows, and the purpose of activity is specified, that is reflected in the effectiveness of activity. We can assume that in joint activity different mechanisms of regulation are formed based on the temperamental characteristics of partners. The dynamics of mental processes and states changes in different ways, mutual adjustment, correction and control over the activity occurs in different ways.

In order to explain the higher performance of people with opposite formal-dynamic characteristics, the following assumption can provide the basis for future detailed studies. Based on the P.K. Anokhin and his colleagues' theory of the functional system [2, 31] on integral mechanisms of holistic behavior, we can suggest that such a temperamental trait as extraversion-introversion (by Eysenck) is formed as a result of generalization of the neurophysiological

characteristics of that part of functional systems which is connected with the primary phases of behavior, namely with afferent synthesis. "Wide" afferent synthesis (probably due to the large energy potential of "capturing" the external world) appears to be one of the main reasons for the formation of extroverted behavior. On the contrary, "narrow" afferent synthesis (lower energy potential of "capturing" the outside world) can be the basis of a new introverted type of temperament.

The scale of neuroticism probably reflects the individual mental characteristics that are associated with the final phases of the behavioral cycle. These characteristics are formed due to the neurophysiological generalization of that part of the functional system that is associated with the acceptor of the results of the action and their evaluation. It can be assumed that a more complete coincidence of the acceptor and the result leads to the formation of more emotionally stable forms of behavior, while different degrees of their mismatch may underlie the genesis of emotionally labile forms of behavior.

Based on the proposed genesis of extraversion and neuroticism, it becomes clear why under conditions of joint activity, when the formal-dynamic properties of partners complement each other (i.e., are opposite to each other), the most favorable conditions for activity arise: in this case, not only a more complete and adequate reflection of the external environment, but also a more complete informational and emotional analysis of current activities.

The five prepositions of the special theory of individuality stated above represent only a first attempt to establish the foundations of a differential psychological-physiological approach to the study of human individuality. Nevertheless, despite such a raw form, the proposed special theory of individuality makes it possible to consider in a new way several problems concerning the features of formation and functioning of individual-psychological differences.



As an illustration, let us consider a possible mechanism of formation, the distinctive features and role in the behavior of one of the most important formal-dynamic formations – temperament.

According to the theory that I develop, temperament is mainly formed under the influence of the general constitution. The properties of higher-order biological subsystems such as properties of the nervous system contribute more to the determination of temperament than lower-order biological subsystems (e.g., properties of the corporeal or humoral subsystems). The formation of temperament does not occur out of activity or prior to activity, but in the process of the activity itself, from the simplest forms to complex socially organized forms. However, it is important to point out once again that while the decisive role in the formation of temperament belongs to the general constitution (i.e. biological factors), in the formation of other formations of individuality and such as intelligence, character, etc. – the first place, of course, belongs to social factors (subject activities, social relations, cultural and historical conditions).

The formation of temperament is influenced by two reasons: (1) the general constitution and (2) those specific activities in which the person is included in early childhood. The process of temperament formation, as I understand it, may proceed as follows. Each individual receives from nature (due to his/her general constitution) a strictly defined range of "reaction norms" of biochemical, biomechanical, somatic, neurophysiological, and other properties. As a result of biological development, an individual level of metabolism, muscular development, certain properties of the nervous system, etc. are formed. From early childhood, these individually stable biological components are included in various kinds of activities from the earliest childhood – from sucking and grasping reflexes to play, learning, and

work. During the early stages of development of the person (even as a child), there are evidently different rates of activities, different plasticity, different emotional reactions, and so on. Of course, these ideas must be experimentally proven in special studies. I believe, however, that as a person matures and develops through the genetic stability of biological components, each individual gradually develops a certain inherent generalized speed, generalized plasticity, generalized emotionality and other generalized characteristics of temperament.

It is obvious that formed generalized characteristics of temperament, do not only "color" activity, and set limits, protect the body from an extremely large or, on the contrary, extremely small expenditure of energy. "Survival" of the human' organism in the first case will be threatened by excessive exhaustion, and in the second - by a weak passive assimilation of the world. This is what is, in my view, the adaptive role of temperament.

From the proposed theory of temperament and the mechanisms of its formation, I can identify at least seven of its features from other features of individuality. Only such psychological property should be attributed to the temperament, that:

(1) does not depend on the content of activity and behavior, i.e. is independent of the content aspect of activity, its meanings, motives, purposes, etc.;

(2) characterizes a typical for concrete individual degree of dynamic (energetic) tension toward the world, people, oneself, and activity as a whole;

(3) is universal and manifests itself in all spheres of activity;

(4) can be manifested as early as in childhood;

(5) is rather stable during long periods of human life;

(6) correlates with the properties of the nervous system and other biological subsystems (humoral, somatic, etc.);

(7) is inherited.

It is easy to see that the first three distinctive features, or criteria of temperament – (1) independence of the content, (2) the dynamic-energetic aspect of the tension, and (3) universality – are derived from the manifestations due to mechanisms of generalization. The last four criteria – (4) stability, (5) early manifestation, (6) dependence on the biological properties of the organism and (7) inheritance are directly related to the notion of a general constitution as the biological basis of temperament. It should be noted that in recent years more and more data on the heritability of mental characteristics related to the category of formal-dynamic properties of the human mind, i.e. temperament, have been accumulated [7, 35].

Considering the mentioned above seven criteria, I must reconsider the generally accepted "register" of the initial characteristics of temperament. Some parameters will be preserved, while others will likely have to be dropped.

The most fundamental formal-dynamic feature, formed in the presence of constantly same biological components (i.e. individual genetic factors, level of metabolism, peculiarities of physique, peculiarities of central nervous system functioning), as we believe, would be the one that in the generalized form characterizes the extent of human-subject interaction with the environment and other people from the perspective of its dynamic-energetic tension. In differential psychophysiology, this basic formal-dynamic trait is called general mental activity [6, 8, 17]. The basic indicators of general activity, also including motor and speech activity, are tempo, rhythm, speed, intensity, plasticity, endurance, etc.

In our laboratory it was found that many of the mentioned above mental characteristics revealed significant correlations with the person's biological properties. For example, the individual tempo (velocity) positively correlates with the level of spatiotemporal EEG-synchronization. Behavioral plasticity positively relates to the variability of the evoked potential. The mental endurance

is negatively associated with the energetic manifestation of the EEG slow rhythm. The correlations that have been revealed provide an important justification in favor of the fact that these psychological characteristics of activity, i.e., individual tempo, plasticity, and mental endurance belong to the temperament category [23].

The significant statistical correlations between the individual variations of the indicated formal-dynamic and neurodynamic properties, which were obtained in my laboratory, clearly testify to the fact that the heterogeneous and multilevel characteristics of a human being belong to one common and genetically primary factor, i.e. to the general constitution, while being its diverse specific forms, that enter into different natural correlations at different stages of the individuality's development.

Other important formal-dynamic characteristics of temperament, according to Nebylytsyn [17], is the emotionality, that includes a set of individual stable human affects and moods: impressiveness, emotional excitability, lability, as well as the predominance of a leading mood of joy, anger, fear or sadness [18]. The formal-dynamic properties of emotionality express the person's attitudes to the objective world, society and the self in the most generalized form. It should be noted that in emotionality, in particular in the modality (sign) of emotion it is already possible to detect generalized cognitive characteristics of the mind. Despite this, I would assume that these characteristics of emotionality reflect stable formal-dynamic properties of the mind, generalized under the influence of, first of all, human natural factors: hormonal and bodily spheres, properties of the nervous system, specific properties of the limbic system, brain hemispheres, etc.

Thus, the search for the basic "elements" of temperament must be accompanied a detailed analysis of the formal-dynamic aspects of general mental activity and emotionality.

In Merlin's school [13], in which the temperament is most thoroughly studied,

nine basic parameters of temperament are identified: (1) emotional excitability, (2) excitability of attention, (3) strength of emotions, (4) anxiety, (5) reactive involuntary movements (impulsiveness), (6) volitional activity, goal-directed activity, (7) plasticity - rigidity, (8) resistance, and (9) subjectivity. I think that not all of the indicators mentioned above are directly related to the category of temperament. For instance, excitability of attention is rather a dynamic characteristic of intelligence than of temperament. Such parameters as volitional activity and subjectivation seem to be related to dynamic characteristics of character.

Belous, follower of Merlin [5], using a special mathematical invariant model, identified two types of temperament A and B. Type A persons are characterized by strong arousal, high or low dynamism of inhibition, extraversion, carelessness, plasticity, high or low emotionality. Type B persons are characterized by weak arousal, high or low dynamic of inhibition, introversion, rigidity, and anxiety. Yet again, among the indicators of temperament there are both indicators of nervous system properties (strong and weak arousal, dynamism of inhibition) and some features of character, such as carelessness; however, many important characteristics of emotionality are missing, and there are no indicators of activity at all.

The concept of temperament by the Polish researcher Strelau [28] also lacks emotional characteristics. The main fundamental dimensions of temperament in the system are reactivity and activity. Reactivity reflects the magnitude of the human body's response to influences, while activity describes the intensity and duration of behavioral acts. I believe, the measurements of temperament proposed by Strelau dimensions of temperament represent different aspects of "general activity", according to the Nebylntsin's terminology, as they reflect different dynamic-energetic characteristics of individual behavior.

The Strelau's separation of temporal reaction characteristics as a special independent parameter of temperament in the context of a special theory of individuality appears inappropriate because temporal parameters (for example, speed), as shown by our studies, are included in the syndrome of general activity [23].

The absence of a unified understanding of the nature of temperament as the main block of formal-dynamic characteristics of the human mind has led several authors to the fact that the concept of temperament has ceased to be used at all or is often used as a synonym of character and personality [32, 33, 37].

The special theory of individuality allows me to resolve the long-standing debate whether or not temperament is an independent concept or not, and how it is related to intelligence, character, and personality. First, temperament, as shown above, is one of the self-sufficient, independent basal and stable dynamic formation of the psyche. Second, the concept of temperament and character are not equivalent because they have different mechanisms and levels of generalization, as well as different correlations with the other properties of the mind. Third, temperament is not identical to personality, since the latter is primarily a set of all forms of human social relations [3].

Vague understanding of the essence and the structure of temperament as the most general dynamic characteristic of the mind has led psychologists to the fact that temperament "dropped out" of many studies aimed at developing methods for diagnosing individual psychological differences. Especially unstudied was the role of temperament in activity. It is believed that temperament manifests itself in a variety of areas of activity and "colors" a variety of behavioral acts, creating one or another individual typological style of activity. Yet, at present, from the perspective of a special

theory of individuality such a statement is not sufficient.

As shown above, temperament does not exist before or beyond activity in the broad sense of the word. It is formed in the process of the activity itself as a result of the generalization of its dynamic psychological characteristics due to individually stable neurophysiological (or, more broadly, biological) components that are included in it.

Consequently, the properties of temperament not only act as general prerequisites, conditions of activity and influence the dynamics and style of activity, but are also related to its final results.

Thus, the special theory of individuality explains the origin of that aspect of individual variations in the mind which are determined by the biological properties of the human organism. The biological properties (especially the properties of the higher, neurodynamic level) serve as the most important necessary components of a system of a higher order, namely the system of individual formal-dynamic features of human mind or temperament.

Formal dynamic features of the psyche, in its turn, are included in more complex systems of individuality - intelligence, character, and other formations of personality. However, a crucial role in the formation of the latter belongs not to biological, but to social causes and factors.

The proposed theory of the special (differential-psychophysiological) theory of individuality is the first attempt to construct a system of views that explain the mechanisms of formation and functioning of the "lower" level of individual-psychological differences, i.e. the level of the individuality that is determined mainly by natural, biological factors.

Revealing the mechanisms of formation and functioning of this basic level of individuality is a most important step on the way to understanding human individuality as a holistic system.

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