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Classification of natural specializations by priority component of the telescopic model of the natural cycle of activity

Aleksandr Ishkov[1*]
[1]Moscow State University of Civil Engineering, Moscow, Russian Federation; aishkov@gmail.com (A.I.).

Abstract: The article considers the classification of natural specializations according to the priority components of the telescopic model of the natural cycle of activity. The model reflects the structural organization of the human nervous system. The main purpose of the research was to develop a classification of natural specializations of people based on a telescopic model. The classification is structured as a hierarchical system with three levels of detail. The first, classical level classification, corresponding to the small telescopic model, identifies four natural specializations. The second, basic classification level increases the number of natural specializations from four classical to eight basics. This is due to the allocation of two subtypes (basic specializations) in each classical specialization: concrete (right-hemisphere) and abstract (left-hemisphere). The third, detailed level of specialization increases the number of natural specializations from eight basic to sixteen detailed ones. This is due to the allocation of two subtypes (detailed specializations) in each basic specialization, reflecting the orientation to the input (afference) or output (efference) of the non-priority pole of the "interocept or exterocept" dichotomy. The classification of natural specializations highlights the initial (natural, neurophysiological) characteristics of people, which will improve the accuracy of predictions of their behavior.

Keywords: *Afferent, Classification of natural specializations, Efferent, Interocept, Exterocept, Natural cycle of activity, Telescopic model.*

1. Introduction

Activity cycle models are an effective tool for analyzing and managing cyclical processes and are used in a wide variety of fields of knowledge. In the Soviet Union, the foundations of the theory of active systems were laid, on the basis of which a unified theory of complex activity and the theoretical foundations of individual types of activity were later developed [1-5]. Other countries have created their own models. The following are widely used: the Boyd's OODA loop [6-18] the Kolb's experiential learning model [19-33] the McCarthy's 4MAT model [34-46] the PDCA cycle [47-63] etc. Activity cycle models have shown their usefulness in training and managing people, especially those models that emphasize not only stages but also activity styles (personality types), in particular: Kolb's model, 4MAT model, Honey and Mumford's learning styles [64-74] Felder and Silverman's learning style model (FSLSM) [75-90] Gregorc's mind style model [91-105] and others.

The similarity of the descriptions of the four styles of Honey and Mumford [106] identified on the basis of D. Kolb's model, with the descriptions of the four classical (Hippocratic) types of temperament [107] and the four types of temperament of the classification "Priority" [108] [108, 109] allowed us to look at the classical types of temperament as the stages of the cycle of activity inherent in nature in the structure nervous system. As is known, it is the structure that determines the properties and features of the functioning of any system (including the nervous system) [110].

Based on the similarity of the descriptions of these types (styles), considered as stages of the activity cycle, and the idea of dialectical materialism that the structure of the system is the basis on which the properties and features of the system are formed, a comprehensive telescopic model of the natural cycle

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* Correspondence: aishkov@gmail.com

of activity was developed [111-115]. The term "natural" in the name of the model means that its structure corresponds to the structural organization of the human nervous system and the principle of hierarchy.

The aim of the study is to develop a classification of natural specializations (types, styles) of people based on the telescopic model of the activity cycle. The classification, repeating the structure and hierarchy of nervous system components, highlights the initial (natural, neurophysiological) characteristics of people, which will improve the accuracy of forecasts of their behavior. In the course of the research, we searched and analyzed scientific publications devoted to models of activity cycles and styles (typologies) of activity. Such methods of scientific cognition as comparative analysis, system approach, as well as analysis and synthesis procedures were used.

2. Telescopic Model of the Natural Cycle of Activity

The telescopic model includes 3 partial activity models: the small telescopic model (the "2/4" model); the middle telescopic model (the "3/8" model) and the large telescopic model (the "4/16" model). The components (stages) of the telescopic model are distinguished using the dichotomies of the classification "Priority" associated with the hierarchical structure of the nervous system. The numbers in the numerator of the model's name (2; 3; 4) indicate the number of bases (criteria, dichotomies) by which the stages (components) of activity are identified, and the numbers in the denominator of the fraction (4; 8; 16) indicate the number of components of the model.

The small telescopic model "2/4" (Figure 1) contains 4 stages: search → analysis → synthesis → realization. Identification of one of the stages, prevailing in human life, is carried out according to the priority poles of two dichotomies: "orientation on internal factors (own ideas) or orientation on external factors" and "orientation on perception (comprehension) or orientation on actions (visible activity)".

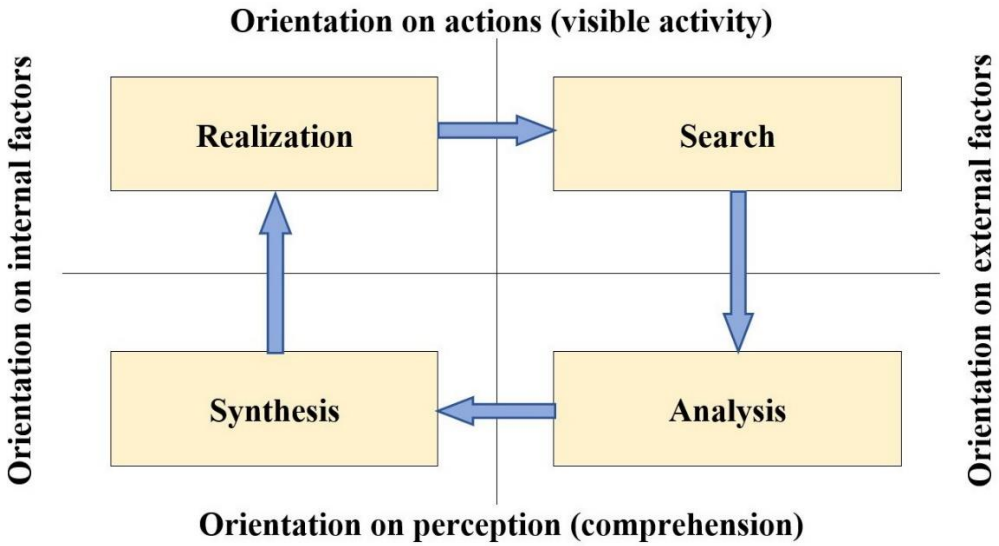

Figure 1.
Small telescopic model (model "2/4") of the natural cycle of activity.

The "2/4" model is the result of combining the four stages (activity styles) of D. Kolb's model (acquisition of experience → reflection (analysis) → conceptualization → application in practice) and the four classical temperament types of the classification "Priority" (motor, sensory, intuitive, tonic). The classical temperament types in the classification "Priority" are distinguished as a result of identifying the priority poles of two dichotomies: "visceral (internal) or somatic (external)" and "afferent (input) or efferent (output)" nervous subsystems. These dichotomies correspond to the dichotomies "orientation on own (internal) factors or orientation on external factors" and "orientation on perception (comprehension) or orientation on actions (visible activity)" of the "2/4" model.

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Priority visceral (internal) and afferent (input) nervous subsystems give in the classification "Priority" intuitive type of temperament (stage of synthesis in the model "2/4"). The dominance of visceral and efferent (output) nervous subsystems determines in the classification "Priority" tonic (tonus) type of temperament (stage of realization in the model "2/4"). Priority somatic (external) and afferent nervous subsystems give in the classification "Priority" sensory type of temperament (stage of analysis in the model "2/4"). Priority somatic and efferent nervous subsystems give in the classification "Priority" motor type of temperament (stage of search in the model "2/4"). The four listed types of temperament are called in the classification "Priority" classical, because their descriptions practically coincide with the descriptions of classical (Hippocratic) types of temperament: intuitive with phlegmatic, tonic with choleric, sensory with melancholic, and motor with sanguine.

The middle telescopic model "3/8" (Figure 2) differs from the model "2/4" in that each of the four stages of the model "2/4" has two components (half-stages), one of which prioritizes the left hemisphere of the brain and the other the right hemisphere of the brain. Involvement of both half-stages is necessary for qualitative elaboration of a stage. However, in practice, at each stage of each specific cycle of activity, the interaction of the hemispheres can be very diverse: the hemispheres may interact once or repeatedly, may not interact, or only one of the hemispheres may be involved.

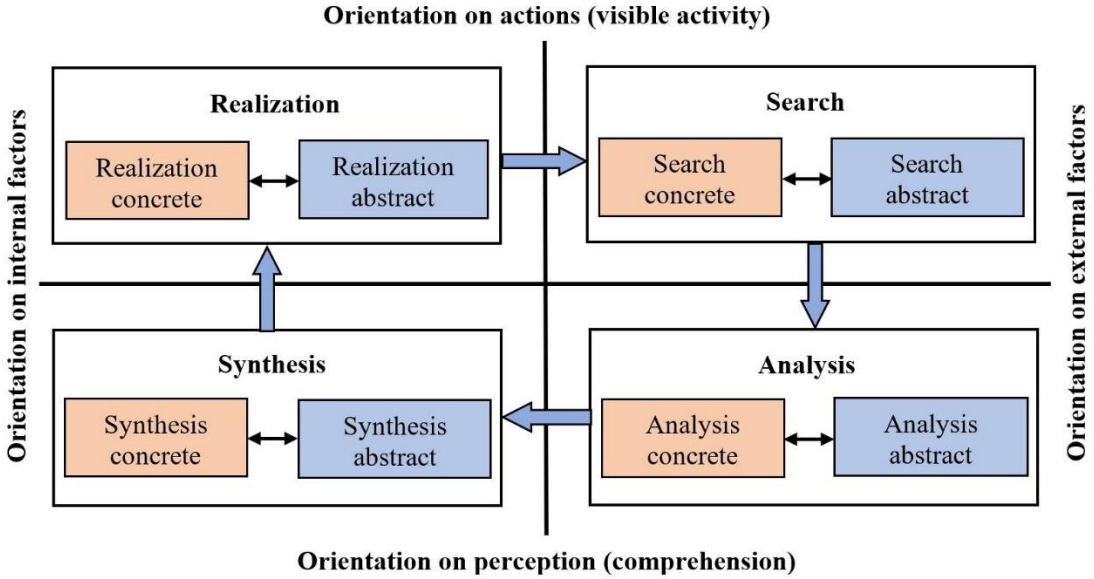

Figure 2.
Middle telescopic model (model "3/8") of the natural cycle of activity.

Identification of the prioritized component (half-stage) is done according to the dichotomy "abstract or concrete". This dichotomy corresponds to the "left brain hemisphere or right brain hemisphere" dichotomy in the classification of temperaments "Priority". The terms "abstract" and "concrete" reflect that the left cerebral hemisphere is associated with abstract thinking and the right cerebral hemisphere with concrete thinking. The identification of the priority half-stage is made for the stage that is a priority.

Thus, the middle telescopic model "3/8" contains 8 half-stages:

- Search concrete (priority of the right hemisphere) and search abstract (priority of the left hemisphere);
- Analysis concrete and analysis abstract;
- Synthesis concrete and synthesis abstract;
- Realization concrete and realization abstract.

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The large telescopic model "4/16" (Figure 3) reveals the mechanism of full elaboration of each of the four stages of the "2/4" model. The "4/16" model differs from the "3/8" model by the allocation of two quarter-stages at each of the eight half-stages, reflecting the specifics of processing information of the non-priority pole of the dichotomy "internal (visceral) or external (somatic)" information. If the stages of synthesis or realization were priority (orientation on internal factors and own ideas is a priority), then for the non-priority pole of this dichotomy (orientation on external factors and, accordingly, the stages of search or analysis), the quarter-stages can be sensory and motor (by analogy with their names in the classification "Priority"). If the stages of search or analysis were the priority (the focus on external factors is the priority), then for the non-priority pole of this dichotomy (the focus on one's own ideas and, accordingly, the stages of synthesis or realization), the quarter-stages can be sensory and motor.

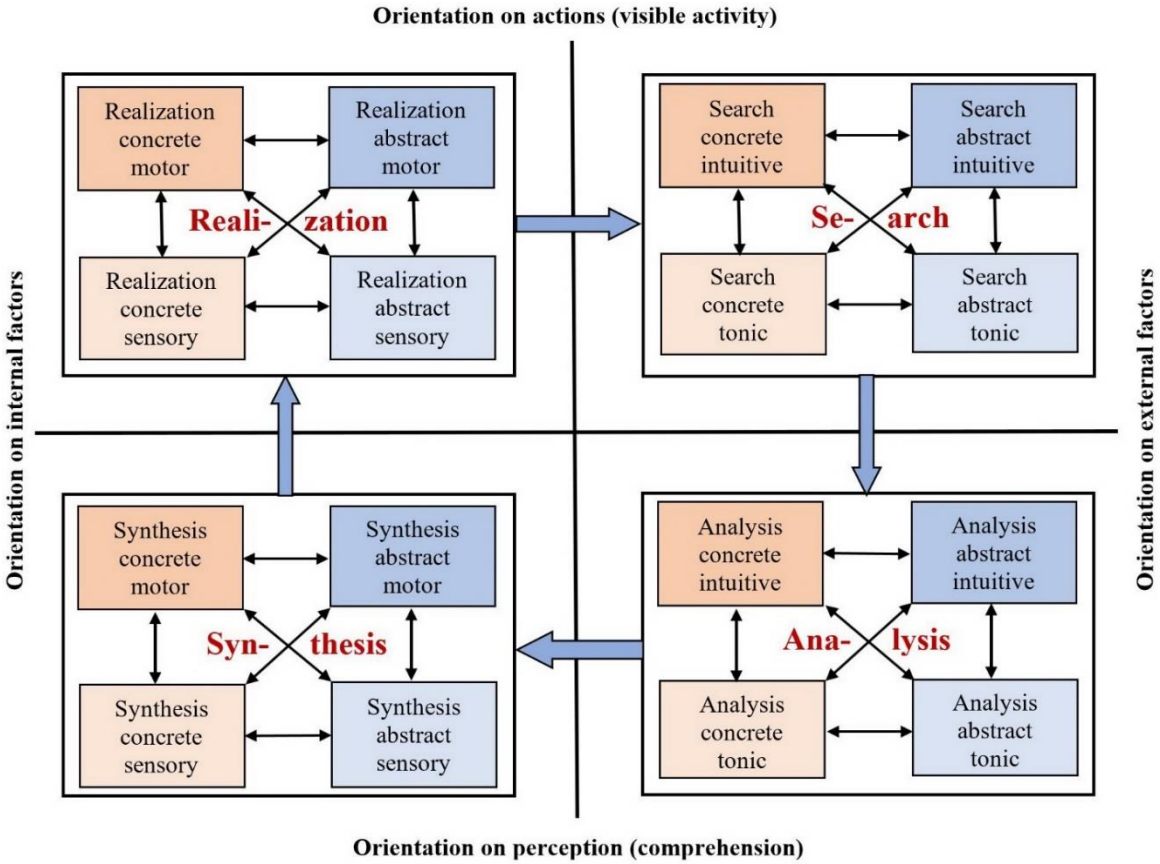

Figure 3.
Large telescopic model (model "4/16") of the natural cycle of activity.

Thus, the large telescopic model "4/16" contains 16 quarter-stages:

- At The Search Stage:
- 1) intuitive quarter-stage and 2) tonic quarter-stage, which are part of a concrete half-stage, and
- 3) intuitive quarter-stage and 4) tonic quarter-stage, which are part of a abstract half-stage;
- At The Analysis Stage:
- 5) intuitive quarter-stage and 6) tonic quarter-stage, which are part of a concrete half-stage, and
- 7) intuitive quarter-stage and 8) tonic quarter-stage, which are part of a abstract half-stage;

- At The Synthesis Stage:

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- 9) motor quarter-stage and 10) sensory quarter-stage, which are part of a concrete half-stage, and
- 11) motor quarter-stage and 12) sensory quarter-stage, which are part of a abstract half-stage;

- At The Realization Stage:
- 13) motor quarter-stage and 14) sensory quarter-stage, which are part of a concrete half-stage, and
- 15) motor quarter-stage and 16) sensory quarter-stage, which are part of a abstract half-stage.

As in the case of the "3/8" model, in a particular situation, at each stage of the activity cycle of the "4/16" model, the interaction of the quarter-stages can be very diverse: quarter-stages can interact with each other once or repeatedly, all quarter-stages can be involved, some of them can be involved, or only one of the quarter-stages can be involved.

The presence in the telescopic model of the natural cycle of activities of three private models (small "2/4", middle "3/8" and large "4/16"), containing a different number of components (stages, half-stages, quarter-stages), allows to adapt it flexibly depending on the specifics of tasks or specific conditions.

3. Classification of Natural Specializations

Activity cycle models, as already noted, are often used as bases for typologies (activity styles) of people, highlighting as types certain stages of activity to which these people have a predisposition [116]. Since the telescopic model of the natural cycle of activity was created as a result of the merger of D. Kolb's model, which has its own typology, and the classification of temperaments "Priority", which is itself a typology, the telescopic model can also be considered as the basis of typology - the classification of natural specializations of the nervous system (psyche, people, workers).

In this case, the description of specialization types (i.e. specificity of people's behavior) will be based on the deep natural (neurophysiological, innate and unchangeable) features of the human nervous system. This is a fundamental difference between the Classification of Natural Specializations (CNS) and the currently widespread empirical typologies that distinguish types of people by a set of external (behavioral, psychological) characteristics.

Classification of natural specializations at the level of a small telescopic model ("2/4") of the activity cycle (Figure 4) includes 4 specializations corresponding to a certain stage of the cycle:

- Searcher (priority is given to the search stage of the telescopic model);
- Analyst (priority is given to the analysis stage);
- Synthetic (priority is given to the synthesis stage);
- Realizator (priority is given to the implementation stage).

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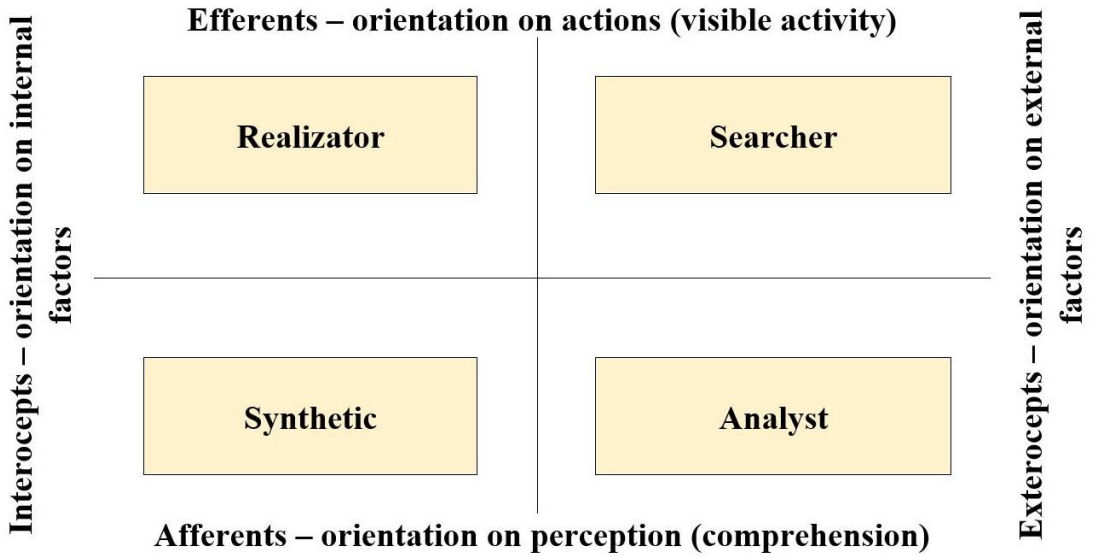

Figure 4.
Classical natural specializations at the level of the small telescopic model ("2/4") of the natural cycle of activity.

Searchers and Analysts are exterocepts (priority of the somatic nervous subsystem), i.e., they have a predominant orientation to external factors [114]. Synthetics and Realizators are interocepts (priority of the visceral nervous subsystem) – they have a predominant orientation to their own ideas and states predominates [114]. Exterocepts and interocepts should not be confused with Jungian extroverts and introverts, which C.G. Jung associates [117] respectively, with concrete and abstract thinking, that is, with the dichotomy "right or left hemisphere of the brain" of the temperament classification "Priority".

Analysts and Synthetics have predominant orientation to perception (comprehension), i.e., priority is given to the afferent (input) nervous subsystem, therefore they are referred to afferents. Realizators and Searchers have predominant orientation to action (external activity), i.e., the priority is the efferent (output) nervous subsystem, so they are referred to efferents.

Because of the coincidence of the descriptions of the four natural specializations with the descriptions of the classical (Hippocratic) temperament types, they (as well as the types of the classification "Priority") are named classical.

Classification of natural specializations at the level of the middle telescopic model ("3/8") of the activity cycle (Figure 5) includes 8 basic specializations associated with the half-stages of the telescopic model:

- Searcher concrete (right-hemispheric) and Searcher abstract (left-hemispheric);
- Analyst concrete and Analyst abstract;
- Synthetic concrete and Synthetic abstract;
- Realizator concrete and Realizator abstract.

The eight basic specializations are segregate by adding to the two dichotomies ("interocept or exterocept" and "afferent or efferent") used in the step of distinguishing the four classical specializations a third dichotomy: "concrete (right-hemispheric) or abstract (left-hemispheric)" type.

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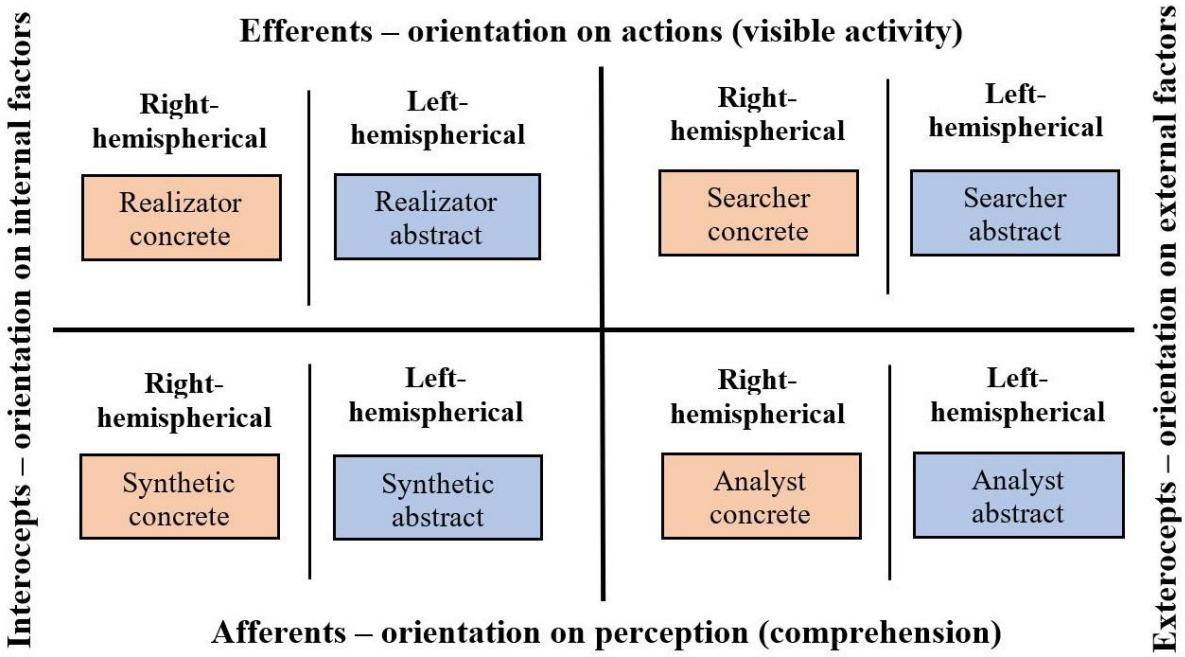

Figure 5.
Basic natural specializations at the level of the middle telescopic model ("3/8") of the natural cycle of activity.

Classification of natural specializations at the level of the large telescopic model ("4/16") of the activity cycle (Figure 6) includes sixteen detailed (full) specializations associated with sixteen corresponding quarter-stages of the telescopic model:

1. Searcher concrete intuitive.
2. Searcher concrete tonic.
3. Searcher abstract intuitive.
4. Searcher abstract tonic.
5. Analyst concrete intuitive.
6. Analyst concrete tonic.
7. Analyst abstract intuitive.
8. Analyst abstract tonic.
9. Synthetic concrete motor.
10. Synthetic concrete sensory.
11. Synthetic abstract motor.
12. Synthetic abstract sensory.
13. Realizator concrete motor.
14. Realizator concrete sensory.
15. Realizator abstract motor.
16. Realizator abstract sensory.

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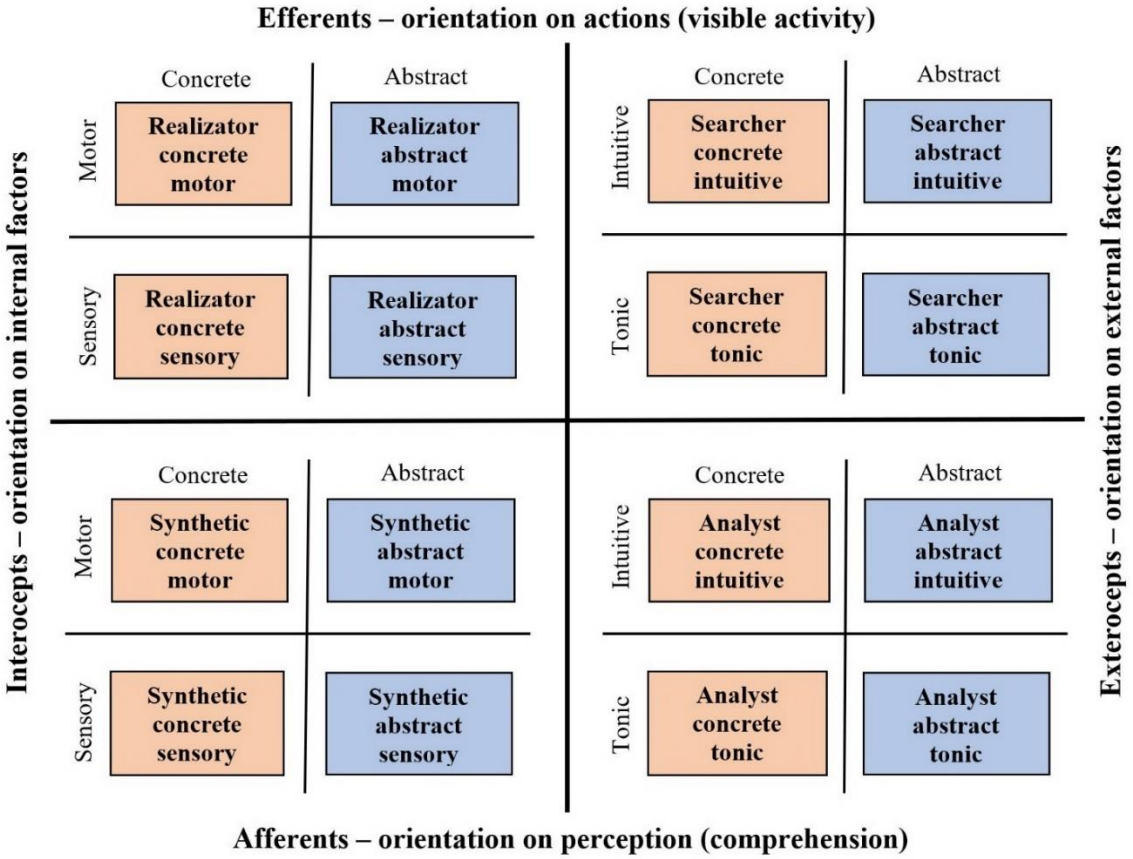

Figure 6.
Detailed natural specializations at the level of the large telescopic model ("4/16") of the natural cycle of activity.

Sixteen detailed natural specializations are identified by adding to the three dichotomies used at the stage of identification of eight basic specializations a fourth dichotomy reflecting orientation to input (afferent) or to output (efferent) of the non-priority pole of the dichotomy "interocept or exterocept". If a person's priority is interoception (in classical specialization it is Synthetic or Realizator), then for the non-priority pole of this dichotomy (exteroception) the detailed specialization can be sensory or motor. If the priority is exteroception (in classical specialization it is Searcher or Analyst), then for the non-priority pole of this dichotomy (interoception) the detailed specialization can be intuitive or tonic.

Thus, the classification of natural specializations (as well as the telescopic model of the activity cycle, which is its structural and functional basis) contains 3 levels: classical, basic and detailed. At the first level of classification on the basis of dichotomies "interocept or exterocept" and "afferent or efferent" 4 classical specializations are distinguished: Searcher, Analyst, Synthetic and Realizator. At the second level of classification due to the third dichotomy "concrete (right-hemispheric) or abstract (left-hemispheric)" each of the four classical specializations is subdivided into two basic specializations: concrete and abstract. At the third level of classification, the fourth dichotomy determines the afferent or efferent of the non-priority pole of the dichotomy "interocept or exterocept".

Based on the innate characteristics (structure) of the nervous system, which remain unchanged throughout a person's life, the classification of natural specializations allows increasing the accuracy of forecasts of employee behavior and the efficiency of personnel management. The presence of three levels in the classification makes it possible to regulate the depth of personalized approach to employees depending on the specific situation.

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4. Classification of Natural Specializations and Typology of C.G. Jung

Comparison of theoretical classification of natural specializations with empirical psychological typology of C.G. Jung allows us to assume that behind the four basic functions of C.G. Jung there are the same classical types of temperament (or 4 classical natural specializations): Sensation - sanguine (Searcher); Intuition- melancholic (Analyst); Thinking - phlegmatic (Synthetic); Feeling - choleric (Realizator). C.G. Jung's dichotomy "introversion or extraversion" correlates with the dichotomy "abstract or concrete" ("right or left hemisphere of the brain") of the classification of natural specializations.

C.G. Jung considers Thinking (phlegmatic, Synthetic) and Feeling (choleric, Realizator) to be rational functions, probably because they are connected with the somatic (external) nervous subsystem. Accordingly, the reaction to external factors appears to outside observers as reasonable, rational. Sensation (sanguine, Searcher) and Intuition (melancholic, Analyst) are considered by C.G. Jung to be irrational functions, probably because they are connected with the visceral (internal) nervous subsystem. Accordingly, the reaction to internal factors (states, perceptions) often looks unreasonable and irrational to an external observer.

The dichotomies "Thinking or Feeling" and "Intuition or Sensation" of C.G. Jung are special cases of the dichotomy "afferent or efferent" of the classification of natural specializations, respectively, for interocepts (orientation to internal factors) and exterocepts (orientation to external factors).

From the position of the telescopic model of the natural cycle of activity, the 4 main functions of C.G. Jung's typology represent 4 stages of the small model "2/4": search (Sensation) → analysis (Intuition) → synthesis (Thinking) → realization (Feeling).

5. Conclusion

Classification of natural specializations of people is developed on the basis of the telescopic model of the natural cycle of activity. The model, built in accordance with the structural organization of the human nervous system, is complex and consists of three private models: small model "2/4", middle model "3/8" and large model "4/16", each of which successively increases the detail of activity stages.

The classification of natural specializations, structured hierarchically like the human nervous system, includes three levels of detail:

- The classical level of specialization, corresponding to the small telescopic model ("2/4") of the natural cycle of activity;
- The basic level of specialization corresponding to the middle telescopic model ("3/8") of the natural cycle of activity;
- The detailed level of specialization corresponding to the large telescopic model ("4/16") of the natural cycle of activity.

The classification reflects the innate neurophysiological characteristics of a person, which determine his preferences in activity and, accordingly, behavior in professional and social environment.

At the first (classical) level, the classification distinguishes four natural specializations, which correspond to the stages of the small telescopic model ("2/4") of the natural cycle of activity and Hippocratic types of temperament:

- Searcher (sanguine), focused on searching and experimenting with new information.
- Analyst (melancholic), focused on analyzing information in depth and identifying patterns.
- Synthetic (phlegmatic), specializing in building systems and concepts.
- Realizator (choleric), focused on turning ideas and concepts into reality.

At the second (basic) level of classification, the number of natural specializations increases from four classical to eight basic specializations. This is due to the allocation of two subtypes (basic specializations) in each classical specialization: concrete (right-hemispheric) and abstract (left-hemispheric). This expansion of the number of specializations allows for a more accurate reflection of the diversity of people's cognitive and behavioral preferences.

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At the third (detailed) level of classification, the number of natural specializations increases from eight basic to sixteen detailed specializations. This is due to the allocation in each basic specialization of two subtypes (detailed specializations), reflecting the orientation to the input (afferent) or output (efferent) of the non-priority pole of the dichotomy "interocept or exterocept". This approach makes it possible to take into account more subtle differences in human perception and response to internal and external stimuli.

The classification of natural specializations is a theoretical classification, highlighting, in comparison with empirical classifications, more profound and bases, which opens new perspectives for explaining the available factual material. The key advantage of the proposed classification is its reliance on the natural, unchangeable characteristics of the human nervous system, which makes it possible to significantly improve the accuracy of behavior prediction and the efficiency of personnel management. The classification of natural specializations can be used, for example, to identify professional aptitudes of employees, to optimize the distribution of roles in the team and to build individual career trajectories. It can provide an individualized approach to training adapted to the natural characteristics of trainees, and so on.

The comparison of the developed classification with C.G. Jung's typology allowed us to identify the correspondence between C.G. Jung's four main functions and classical natural specializations: Sensation - Searcher; Intuition - Analyst; Thinking - Synthetic; Feeling - Realizator. This confirms the universality and theoretical validity of the developed model.

Thus, the classification of natural specializations by priority components of the telescopic model of the natural cycle of activity has a significant potential for application in education, personnel management and professional orientation as a tool for analysis and support of individual development.

Transparency: The author confirms that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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