COGNITIVE ABILITIES FROM A PSYCHOLOGICAL AND PEDAGOGICAL PERSPECTIVE

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Abstract: *The study of human abilities in psychology remains underdeveloped due to its historically "closed" nature. Abilities are psychological characteristics shaped through activity, influenced by innate aptitudes. Key approaches include psychophysiological foundations, emphasizing general abilities and cerebral hemisphere dominance, and the operational-functional approach, highlighting the integration of functional and operational components. Intellectual attributes such as creativity, learnability, cognitive style, and execution style reflect individual differences. Understanding these abilities is crucial for supporting gifted children and adapting educational strategies to enhance cognitive and creative potential.*

Keywords:*Human abilities, Aptitudes,Giftedness, General and special abilities, Psychophysiology, Operational-functional approach, Creativity, Learnability, Cognitive development, Intellectual style,Educational strategies*

The problem of abilities in psychology is one of the least developed areas due to its unique "closed" nature. Its "closure," as with psychology as a whole, occurred in 1936. The reason for this decision was that, at that time, extensive intelligence and other ability tests were being conducted, and as a result, psychological issues of abilities disappeared from the psychologists' field of view for a long time.

For many years, there were two generally accepted definitions of aptitudes and abilities. Aptitudes are the anatomical and physiological characteristics of a person that form the basis for the development of abilities. Abilities are psychological characteristics of a person that are formed through activity based on tendencies. These characteristics determine the possibility of performing and succeeding in activities.

From these definitions, derivative concepts emerge: the definitions of special and general giftedness. Some internal conditions, especially in the form of activity, are difficult to consider effective in trying to determine prerequisites for competence. Activity, along with genotype and the environment, is one of the general factors in the development of human psyche; therefore, the psychological nature of abilities remains unclear[1].

Regarding giftedness, as D.B. Bogoyavlenskaya emphasizes, today there is general recognition of the absence of a single scientifically grounded concept of giftedness.

This does not mean that psychologists have made no progress in studying the psychological mechanisms of abilities. However, this progress primarily concerns specific abilities. For example, B.M. Teplov was able to determine the content of musical abilities; F.N. Gonobolin, N.D. Levitov, and N.V. Kuzmina revealed the content of pedagogical abilities; and V.I. Kirienko studied artistic abilities[2-3].

Nevertheless, the category of abilities is one of the most important psychological concepts. Therefore, it is necessary to understand their psychology. Today, two main

traditions have formed in psychology regarding the study and understanding of human abilities.

The first is associated with the psychophysiological foundations of research abilities, developed by B.M. Teplov and V.D. Nebylitsin, and further developed in the works of E.A. Golubeva and V.M. Rusalov.

General abilities are understood as a set of potential (genetic, innate) psychodynamic properties that determine a person's readiness for activity. General ability manifests in overall work capacity, self-regulation of direct and indirect activities, and derivative and non-derivative types of psychological activity. In other words, the prerequisites for carrying out activities are general efficiency, activity, and self-control. This conclusion is confirmed, on the one hand, by the close relationship between the level of activity and success in activities, especially mental activities, and on the other hand, by the relationship between achievement levels and the method of regulating activity[4].

V.M. Rusalov considers activity as a parameter of general abilities based on the variability of the speed of the prognostic process and the speed of the mental process. Self-control, in turn, can be characterized by the role of three factors: individual sensitivity, plasticity, and a certain rhythm of disposition.

E.A. Golubeva attributed various types of activity to the dominance of a cerebral hemisphere, presenting in detail the psychophysiological basis of general abilities. According to her, the right hemisphere is characterized by a strong, active, and unstable nervous system, the development of non-verbal cognitive functions, and activity of the involuntary sphere. Such individuals learn better, solve problems efficiently under time constraints, and prefer intensive forms of learning. The left hemisphere, on the other hand, is characterized by a weak, low-activated, inert nervous system. These individuals grasp subjects better, plan their activities more effectively, and possess a body capable of self-regulation[5].

The operational mechanism ensures not only the realization of functional potential but also necessary changes to compensate for its weakening. They act as functional stabilizing factors. Operational mechanisms are related to the fact that "they are not contained in the brain itself; they are acquired by the individual during growth, education, and general socialization," and they characterize a person as an agent of activity.

Based on B.G. Ananyev's views, V.D. Shadrikov was the first to distinguish functional and operational parts in the structure of abilities.

Such an understanding of the structure of abilities helps, on the one hand, to resolve the relationship between the biological and social foundations of mental activity, and, on the other hand, to better understand the psychophysiological basis of abilities.

Shadrikov's characterization of giftedness as a general indicator of operational ability is the general characteristic of the set of abilities embedded in activity. The intensity of talent is determined by the intensity of personal abilities and the degree of integration of these abilities[6].

Summarizing the analysis of abilities, we focus on a brief operational description of general human abilities. General abilities are the psychological foundation of successful cognitive activity.

According to M.A. Kholodnaya, the ability to approach is manifested in the accuracy and speed of finding the only possible answer according to the conditions of the question. These can be represented by the following intellectual attributes:

1. Level attribute characterizes the development of cognitive (verbal and non-verbal) functions. As a rule, it is intended for Wechsler diagnostics and uses R. Amthauer's intelligence measure.

2. Combined attributes of intelligence characterize various connections, relationships, and the ability to identify patterns. They are diagnosed using Crow's progressive matrices.

3. Procedural nature of intelligence characterizes the main processes of information processing, transformation, technologies, and strategies of intellectual activity. Assessment of these attributes is based on the influence of motivation on the success of psychological skills, the formation of basic cognitive behavior, and the analysis, synthesis, and generalization of conditions and requirements of the task.

Creativity is the ability to generate many original ideas and use non-standard methods of intellectual activity under unregulated conditions. In a broad sense, creativity is a creative mental ability. In a narrow sense, creativity is expressed as the diversity of thinking the intellectual capacity to generate multiple correct ideas about the same object.Criteria of creativity include: fluency (the number of ideas generated per unit of time), originality (the ability to generate unusual ideas differing from conventional ones), and sensitivity (awareness of unusual details, contradictions, and inaccuracies)[7].

Learnability is a general ability (in a broad sense) to master new methods of cognition and activity; it is an indicator of the speed and quality of acquiring knowledge, skills, and abilities (in a narrow sense). In a broad sense, the main criterion of learning is "economy of thinking," i.e., the simplicity of independently identifying and forming patterns in new material. In a narrow sense, learning criteria include the amount of measurable assistance required by the learner and the ability to transfer acquired knowledge or methods to perform similar tasks.

Field dependence/independence – in assessing the position of objects in space, field-dependent individuals rely more on previous visual impressions, while field-independent individuals rely more on internal proprioceptive impressions, quickly and accurately distinguishing any detail from the overall spatial context.

Impulsivity/reflectivity – impulsive individuals quickly generate hypotheses without multiple-choice analysis but make more errors, whereas reflective individuals respond more slowly but make fewer mistakes due to careful preliminary analysis.

Analytic/synthetic – analysts focus on differences and details in objects, while synthetic individuals control for similarities and classify objects based on broader categories.

Intellectual style – a unique method of problem-solving, with differences in administrative, legislative, and assessment methods.

Execution style – representatives adhere to accepted norms, act according to rules, and are prepared to solve pre-formulated and clearly defined problems.

An important issue in the context of competence according to Vygotsky's theory is children's giftedness. Differences in ability levels allow for differentiated preschool education strategies. However, ambiguous theoretical development of giftedness often hinders the effective and rational use of various educational technologies, especially when working with intellectually gifted preschoolers. For such children, accelerated learning in line with school curricula becomes common practice, while general development laws applying to ordinary children are often ignored for gifted children.

L.S. Vygotsky wrote: The upbringing of abnormal, disabled, and gifted individuals was long considered extraterritorial in pedagogy, meaning general laws do not apply. I must say that this view is very erroneous. Extraterritorial jurisdiction in this field does not belong to pedagogy; it is rightly or wrongly assumed due to natural misunderstanding of unexplored phenomena. General laws of pedagogy can become scientific laws only if they continue to apply to the same field of education as a whole[7].

In describing the psychological characteristics of children with early intellectual development, N.S. Leys concluded that the combination of various age-related factors in childhood enhances prerequisites for psychological development. However, the author notes that successful psychological development in real life depends on many factors: children's cognitive activity, hypersensitivity, and normal conditions for personality development.

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