



*95<sup>th</sup> anniversary of the birth  
of Vladimir Ivanovich Lubovskiy*

UDK 616-072.8

BBK IO97

GSNTI 14.07.03

Code VAK 13.00.03; 19.00.10

**V. I. Lubovskiy**

Moscow, Russia

**WHAT IS THE “STRUCTURE OF DEFECT”?**

**Abstract.** This article is the last work prepared by the outstanding Russian psychologist, the founder of the school of special psychology, academician V. I. Lubovsky (15.12.1923 — 08.11.2017). The material was sent to the editorial board by the scholar’s widow T. V. Lavrent’yeva and prepared for publication by his post-graduate students.

The article discusses the inability to reflect the content of the basic notion of special pedagogy — “the structure of defect” — as a set of certain quantitative indicators of psychological/psychophysiological functions, which is associated with extreme variability and coincidence between the quantitative indicators of a number of functions in some types of developmental disorders.

The analysis of the process of psycho-diagnostics of several types of developmental disorders allowed singling out the stage of differential diagnos-

tics and its object — cognitive sphere and psychophysiological abilities. And it was revealed that within each type of development, variability of the indicators of certain functions coexists with definite correlations: the function most highly developed in comparison to others, in all individual variants and dynamic changes keeps the highest position, the same as other functions stay on their original levels. This correlation represents the main components of the structure of defect.

The article is published because the theory of the new approach in diagnostics is actually based on the concept of “the structure of defect”; so this mechanism needs detailed consideration.

**Keywords:** structure of defect; defects (disorders) of development; differential psycho-diagnostics; visual-imagery thinking; zone of proximal development (teachability); standardized intellectual tests; quantitative estimation; method of cognitive interaction (or method of interaction with environment).

**About the author:** Lubovskiy Vladimir Ivanovich (1923—2017), Candidate of Pedagogy, Doctor of Psychology, Professor, Academician of the Russian Academy of Education, Institute of Special Education and Complex Rehabilitation, Moscow City Pedagogical University, Moscow, Russia.

What is the structure of defect? The term is widely used by specialists in various areas of defectology: by pedagogues-defectologists, logopedists, special psychologists, and physicians working with children with disabilities. And it is used to denote two related but not identical notions.

The first notion refers to the main characteristic of developmental disorders in a concrete subject (a child or an adult). In this case they would say, for example: “The structure of defect of the boy is typical of disorder of psychological development” or “This boy is a typical oligophrenic”. So they characterize the subject as a representative of a

certain type of developmental disorder. (We admit that there is more phenomenology than structure at the basis of such supposition. For psychiatrists, such assessment, based on experience, is treated as “general clinical impression”, i.e. primary diagnosis without specifying the structure.) As we know, all children sent to the psycho-medico-pedagogical commission (PMPC) undergo medical examination, which is the first part of the stage of differential diagnostics. Irrespective of the attributes that can be used by doctors to characterize the children, and in spite of all quantitative characteristics they might provide (this refers, first of all, to the subjects

with visual and auditory impairments), the final stage of differential diagnostics and the design of the individual educational route are the responsibilities of special psychologists. It often happens that the child diagnosed as partially sighted uses only tactile perception for spatial orientation and activity, and, vice versa, the child considered to be blind acts using visual perception. We suggest introducing the notion of “method of interaction with the environment” (or “method of cognitive interaction”) for assessment and description of such situations. The next stage of the process of diagnostics – study of individual abilities – has been described in detail by many researchers.

In another variant of usage, the term under consideration serves to denote the specificity of a type of development: “structure of defect in intellectual disability”, “structure of defect in visual impairment”, etc., i.e. in this case a set of developmental features and regularities is believed to define the essence of the whole category of individuals who could be referred to the given type irrespective of individual differences (and the latter are characterized by quite a significant variation).

The first variant of the usage of the term – the first notion – is accepted by all and does not cause any problems. But the second meaning of the term is a subject of profes-

sional controversy. So it needs serious consideration. The definition of the structure of defect can be found neither in special pedagogy, nor in general psychological literature. Let us take the most general definition based on the unity of two notions “structure” and “defect” and corresponding to the commonly accepted application of the term: structure of defect is a system of inadequate psychological functions differentiating this particular type of defect [5; 11]. Several questions immediately arise. One of them is about the quantitative and qualitative content of the functional set (that is why a differential diagnosis subdividing children – for example, with disorders of cognitive development – into different categories is impossible without analyzing qualitative characteristics).

Our study involves a detailed description of the participation of medical workers in the first part of the process of differential diagnostics. It is only natural that in all cases they take into account the results of objective observation of the child. And these phenomenological data are expressed in some cases (hearing and vision disorders) in the form of exact quantitative indicators. Still, when the special psychologist joins in the process of differential diagnostics, he must determine the level of intellectual development in all cases, because the learning route designed for each

pupil depends on its state. And it often turns out that the psychological activity and all manifestations of interaction with the environment do not match the medical qualification of analyzer disorders. For example, a child whose diagnosis is “loss of vision” orients in space using residual vision, reading a flat printed text taking it very close to their eyes. And, vice versa, with the vision of more than 0.04, the child uses tactile spatial orientation. The same may be said about hearing indicators. Some time ago, T.A. Vlasova devoted a monograph to this issue [4].

Almost all underdeveloped or defective psychological functions are characteristic of not one but two or more types of dysontogenesis. Thus, for example, intellectual disabilities of different degrees of manifestation are characteristic of not only intellectual disability as such, but also of disorders of psychological development. In a limited form and with reference to verbal thinking only they are manifested in general speech underdevelopment [3], and even in order to differentiate a typically developing child in the process of diagnostics, it is necessary to undertake detailed evaluation of their intellectual development.

Analyzing results of diagnostic intelligence tests we can see that quantitative differences between the indicators of several types partially coincide: the range of indicators for typical children is partially over-

lapped by the indicator range of children with disorders of psychological development, and practically fully coincides with that of the children with general speech underdevelopment. It is only the indicators of children with intellectual disability that are radically different from the norm (see: last column of Table 1).

Success is a measure of the level of thinking formation, and teachability is indicated by the number reciprocal to the number of instances of help provision. But the indicators of the children of other categories partially coincide with the range of indicators of children with disorders of psychological development. Nevertheless, any specialist working with the children with these types of developmental disorders will tell you that the intellectual disabilities of different levels of manifestation constitute the basic feature (characteristic) both of children with intellectual disability and of those with disorders of psychological development. And we should keep in mind that the data shown in table 1 reflect the results obtained after rendering help to the children, i.e. are indicators of the zone of proximal development. If we look at the results of standardized intelligence tests (WJSC-R Test), the indicators of the children with disorders of psychological development coincide with those of the children with intellectual disability to an even greater degree [12].

**Table 1.** Indicators of the level of formation of visual reasoning by the Raven's Progressive Matrices Test

Children	Average result (out of 35 points)	Standard deviation	Rendering help (average number of cases)			Highest and lowest results in the group (in points)
			1 (singling out)	2 (insert)	3 (identification)	
Norm	24.6	±1.5	3.0	0.8	1.8	18.5-31.25
DPD	19.0	±1.5	5.0	2.7	1.0	14.75-21.5
ID	12.0	±3.7	7.0	4.2	0	6.25-16.5
GSU	21.1	±3.5	2.3	0.5	1.0	16.0-28.5
Deaf	23.5	±1.5	2.9	1.3	0.8	

*Note:* DPD – disorders of psychological development

ID – intellectual disability

GSU – general speech underdevelopment

Insufficiency of quantitative estimation is reported even in the cases when, dealing with visual and auditory disorders, medical workers use pre-set quantitative boundaries between such types of developmental disorders as low vision and blindness, or deafness and hearing loss.

Thus, for example, it is believed that in visual impairments, the borderline between blindness and low vision is the acuity of 0.04. Persons with lower acuity refer to the category of the blind, and those with higher acuity – to the category of low vision. Still it often turns out that irrespective of the vision acuity, the subject with a lower indicator should be referred to the group of low vision, because they use vision and not tactile perception to

orient in the environment and to perform all kinds of feasible activity. There are reverse cases as well: tactile perception takes the lead even when the vision acuity is higher than 0.04. Thus, the method of “cognitive interaction” with the environment turns out to be the dominant indicator for reference to a certain type of development. This specificity cannot be evaluated via any quantitative indicators.

In 1989, working on the problem of differential diagnostics of children with various types of developmental disorders having similar impairments of psychological activity, we suggested using indicators of completion of tasks addressing three kinds of reasoning, assessment of detailed peculiarities of

speech development, and teachability for their clear-cut delimitation. We suggested a table which allowed seeing salient differences between the children with a mild degree of intellectual disability (ID), disorders of psychological development (DPD) and general speech underdevelopment (GSU) via application of a certain set of procedures [6].

The table complemented in accordance with later research results

with the columns “imagery” and “verbal memory” is given below (Table 2).

If we fill in the table with the corresponding indicators for children of the same age, referring to different types of development characterized by similar defects of the same functions, we will see the differences between them. It was the first step towards understanding the structure of defect.

**Table 2.** Systemic functions

Level of function formation								
Reasoning			Speech			Teachability	Memory	
Visually enabled active	Visual	Verbal-logical	vocabulary	grammar	phonetics		visual	verbal

The chapter about the diagnostics of developmental disorders in the textbook “Foundations of Psychodiagnostics” [7] could have become *the second step*. It was the only (out of many) guide for general psychodiagnostics the editor of which decided that this chapter was needed. Those who got acquainted with the textbook may have an impression, on the basis of vague recollections of the chapter, that the given article simply reproduces something that has already been published before. But this is not so. The percentage indicators were used in the textbook for global measurement of the level of formation of three cognitive functions: thinking, speech and teachability.

And **the three levels** specified: (normal), mild, moderate and severe manifestations of defect were evaluated by randomly assigned percentage. This assessment had nothing to do with the structure of defect, and was actually a tribute to the intuitive-empirical approach, or, in fact, a step backwards. The true second step (20 years later!) was made by the creation of a new concept of developmental disorder diagnostics. It was actually the result of understanding of the opportunities of application of the differences found out as far back as 1985 for creation of a true quantitative-qualitative differential diagnostics of developmental disorders. The new concept has been published at last [8; 9].

It is clear from what has been said above that no quantitative indicator specific for a single type of development can ever exist. Especially since these indicators are subject to considerable change in the course of education and development. And at the same time, irrespective of quantitative change, the defect (i.e. the type of developmental disorder) stays. The structure of defect of each type of development must **possess something that remains unchanged. It is this element** that is the “keeper of specificity” of each type of developmental disorder.

So it becomes evident that neither exact quantitative indicators of the level of formation of psychological functions constituting the structure of defect, nor any quantitative intervals can serve as foundations for referring defect to a certain type of dysontogenesis.

Let us sum up the reasons.

1. The same psychological functions (or, rather, a set of development indicators of the functions chosen irrespective of the type of development) constitute the structure of defect of different types of development, including the “norm”. And then their statistically stable variations (in qualitative and quantitative expression) may characterize this or that type of development (*see*: Table 1 and the diagram in Fig.1). Each type has its own range of indicators, and these values

sometimes overlap each other (compare, for example, ID and DPD, in which the difference between the highest and the lowest indicators at preschool age is minimal. Naturally, if we take other function and single out the systemic indicators – for example, not visual but verbal-logical reasoning, the indicators in the correlation will be different, but the distinctions between the types will stay!).

2. Significant range of individual indicators of all functions.

3. Partial (more or less significant) coincidence of the ranges of individual indicators of the level of formation of psychological functions in the samples of different types of development.

4. The quantitative indicators of the functions increase considerably in the process of education and development coming close to the norm (with the exception of intellectual disability).

5. Even when exact medical indications of the sensory functions belonging to a certain type of dysontogenesis are used, they rather seldom determine the type of development.

However, there is something perceived by the specialists on the subconscious (non-verbalized) level allowing approximate quantitative estimation (“mild”, “moderate”, “severe” degree of defect manifestation) serving as a safe indicator of a certain type of development. But what is it, after all?

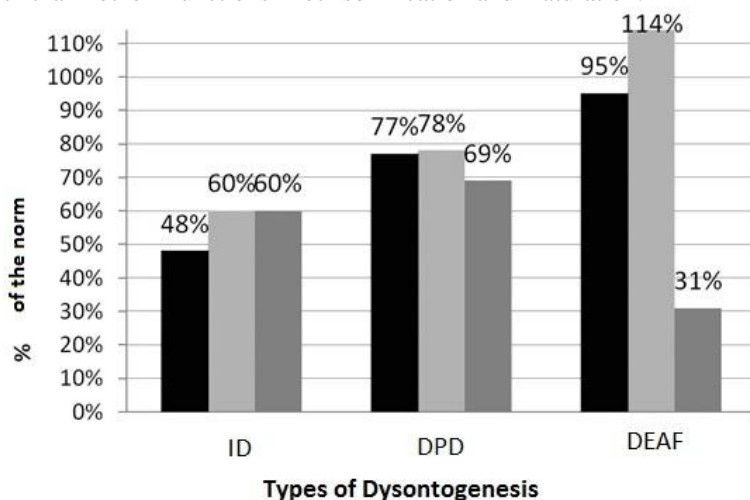
Let us look at the graphic representation of the structure of defect in Figures 1 and 2. In fact, it is a quantitative correlation of the functions that remains the same at different ages, and changes with the change of the type of development. The only thing that remains the same under the conditions of the quantitative versatility and inconsistency described above is a *certain relationship between the indicators of the functions forming the structure of defect*. This means that the functions most highly developed in comparison to others, always, both within the range of individual indicators and in the process of development, demonstrate higher values than other functions not so

highly developed at the given moment. This forms the basis of the stability of the type of development.

Our research employs the percentile scale seldom found in our home studies but widely used by Western scholars to rank the indicators (scores) of certain functions of the experiment participants [13].

The average indicator of the group of typically developing peers is considered to constitute 100%. Calculations are made for each function separately.

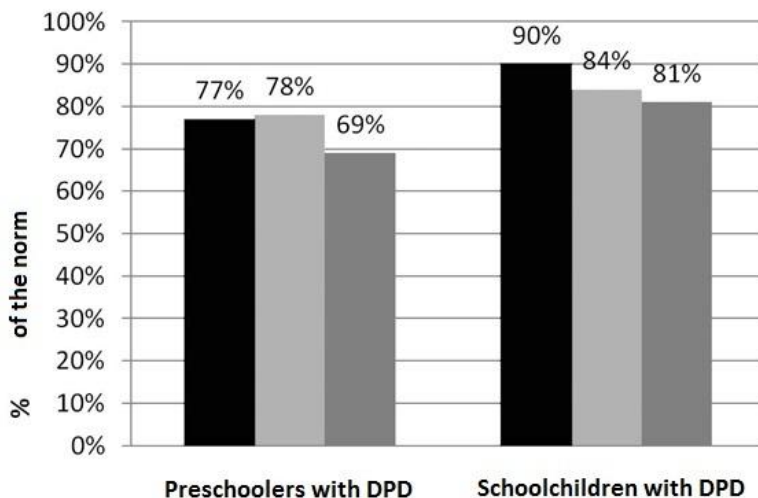
Figure 2 demonstrates the preservation of correlation between the functions with considerable increase of the indicators of the level of formation in the process of education and maturation.



**Figure 1.** Basic components of the structure of defect of preschoolers with intellectual disability, disorders of psychological development and hearing loss

Legend: ■ — visual reasoning; ■ — teachability; ■ — speech





**Figure 2.** Correlation between the basic components of the structure of defect in DPD at different stages of development

*Legend:* ■ — visual reasoning; ■ — teachability; ■ — speech

In all cases, we used the procedures from the diagnostic set by T. V. Rozanova [10]. In addition, some tasks from the children's variant of the Wechsler Adult Intelligence Scale were also used. Unfortunately, we can hardly speak about the correctness of application of the method, because just a few highly qualified experts-psychologists of the VNIID – leading specialists in the corresponding areas – carried out such enormous work.

The average indicator of the group of typically developing peers is considered to constitute 100%. For the sake of uniformity of indicator representation, teachability is calculated as a value inverse to the

sum total of the cases when help with task completion was rendered to the child.

Why was this regularity not discovered by home or foreign psychologists earlier? The matter is that it was revealed only due to the analysis of the results of heterogeneous fundamental comparative research which provided data about the completion of the same tasks by respondents with different types of behavior. Such research has not been actually conducted anywhere till the 1970s. Fortunately enough, we have such material accumulated by the team of psychologists of the Institute of Defectology (now Institute of Special Pedagogy) over the

period from the 1970s to the turn of the 21<sup>st</sup> century.

Meanwhile, the understanding of the structure of defect at least explains the intuitive-empirical approach to the diagnostics of developmental disorders existing now in our country and abroad.

It is quite clear that the structure of defect is made up of not only cognitive and sensory functions but also emotional-volitional ones. But their identification needs material of multilateral studies of the corresponding functions, and, first and foremost, detection of the systemic elements of many manifestations of the emotional-volitional sphere.

Such an attempt was made in the work by I. A. Korobeynikov who suggested a scheme of qualitative-quantitative analysis of psychological activity in the process of experimental psychological investigation of children with DPD and mild ID [6]. Alongside the traditional parameters of analysis of the intellectual-mnemonic activity of children, the author has introduced assessment scales allowing the experimenter to reflect manifestations of the emotional-volitional and partly behavioral spheres which should be taken into consideration in the process of analysis and interpretation of all the formal achievements of the child. Such approach has turned out to be rather effective within the model of differential “express diagnostics”, but the principles laid at its basis are

quite suitable for the study of the structure of defect in various categories of children with developmental disorders. The study by S. M. Vallyavko states the specificity of personal development in different types of speech dysontogenesis [1; 2]. Moreover, diagnostics of the cognitive sphere is vitally important for the differential diagnostics in childhood, especially at the senior preschool and junior school ages.

Formation of the scientific concepts about the structure of defect opens up vast horizons for further research in this area, the potential topics of which suit dissertation research and are important for specification of a number of problems. Here is one example: it is necessary to figure out the degree to which a particular structure of defect embraces the population of which it is typical. To this end, it is essential to investigate the “periphery” of the area of the same-age population. We could not do it, because we have only aggregate figures. A similar problem is associated with dynamic change. It was far from easy to organize such research at all times, and today it seems to be practically impossible.

We have acquainted the reader with the outcomes of research which is an attempt to create a new theory. Keeping in mind the aphorism of the famous German chemist Kirchoff, “There is nothing more practical than a good theory”, and

without claiming a high quality of the suggested material, we argue that the theory presented is quite demonstrative and convincing as a hypothesis. And it has wonderfully proved its effectiveness: 1) a new concept of diagnostics of developmental disorders has been created on its basis, which has, at last, realized the dream of L. S. Vygotskiy about “qualitative diagnostics instead of quantitative one [see: 4; 11]; 2) a truly qualitative description of each type of developmental disorder is possible (which has turned out to be a foundation of the new approach to differential diagnostics); 3) there opens a possibility of a search for a new approach to the ever disputable question about the method of measuring the level of typical (normal) development. It becomes evident that constant stable quantitative indicators are impossible, which was also stated by L. S. Vygotskiy: there is no one single norm; there are a hundred norms [11].

We have given detailed proof (reasons) of this impossibility. And at the same time we have discovered such a quantitative indicator which, dynamically changing with reference to the size of population and the age and education of the subjects, still remains unchanged. It is the correlation between the systemic functions. As it has been shown above, it is relatively constant for each type of developmental

disorder. And the so-called “typically (or normally) developing person” is also a type of development, just like any disorder, and, therefore, has its specific and unique correlation of systemic functions.

#### References

1. Valyavko, S. M. O tipologii lichnostnogo razvitiya doshkol'nikov v norme i s narusheniyami rechevogo razvitiya / S. M. Valyavko // *Osobyete deti v obshchestve* : sb. nauch. dokladov i tezisov vystupleniy uchastnikov I Vseros. s"ezda defektologov / pod redaktsiyey O. G. Prikhod'ko, I. L. Solov'evoy. — 2015. — S. 24—29.
2. Valyavko, S. M. Sravnitel'no-sopostavitel'nyy analiz razvitiya motivatsionnoy sfery starshikh doshkol'nikov v norme i s narusheniyami rechevogo razvitiya / S. M. Valyavko // *Sistemnaya psikhologiya i sotsiologiya*. — 2014. — № 4 (12). — S. 65—73.
3. Vlasenko, I. T. Osobennosti slovesnogo myshleniya vzroslykh i detey s narusheniyami rechi / I. T. Vlasenko. — M. : Pedagogika, 1990.
4. Vlasova, T. A. O vliyaniy narusheniy slukha na razvitie rebenka / T. A. Vlasova // *K voprosu komplektovaniya vspomogatel'nykh shkol*. — M., 1956.
5. Vygotskiy, L. S. *Sobr. soch.* V 6 t. T. 5 / L. S. Vygotskiy. — M., 1983.
6. Korobeynikov, I. A. Psikhologicheskaya differentsiatsiya narusheniy razvitiya u starshikh doshkol'nikov : metod. rekomendatsii / I. A. Korobeynikov ; MZ RSFSR. — M., 1982. — 33 s.
7. Lubovskiy, V. I. Psikhologicheskie problemy diagnostiki anomal'nogo razvitiya detey / V. I. Lubovskiy. — M. : Pedagogika, 1989.
8. Lubovskiy, V. I. Diagnostika narusheniy razvitiya / V. I. Lubovskiy // *Osnovy psikhodiagnostiki* / pod red. A. G. Shmeleva. — Rostov n/ D. : Feniks, 1996. — S. 231—257.
9. Lubovskiy, V. I. Zadachi, printsipy i vozmozhnosti rekonstruirovaniya sistemy psikhologicheskoy diagnostiki narusheniy razvitiya / V. I. Lubovskiy, I. A. Korobeynikov, S. M. Valyavko // *Defektologiya*. — 2015. — № 6. — S. 47—56.

10. Lubovskiy, V. I. Novaya kontsepsiya psikhologicheskoy diagnostiki narusheniy razvitiya / V. I. Lubovskiy, I. A. Korobeynikov, S. M. Valyavko // *Psikhologicheskaya nauka i obrazovanie*. — 2016. — T. 21. — № 4. — S. 50—60.
11. Rozanova, T. V. Metody psikhologicheskogo obsledovaniya glukhih detey, ispytyvayushchikh povyshennye trudnosti v obuchenii / T. V. Rozanova, N. V. Yashkova // *Kliniko-psikhologicheskie issledovaniya glukhih detey so slozhnym defektom*. — M., 1980.
12. Slovar' L. S. Vygotskogo / pod red. D. A. Leont'eva. — M. : Smysl, 2007.
13. Shaumarov, G. B. K otsenke znacheniya intellektual'nykh testov v diagnostike i izuchenii detey s intellektual'noy nedostatochnost'yu / G. B. Shaumarov // *Defektologiya*. — 1979. — № 6. — S. 16—24.
14. Mahan, T. *Assessing Children with special Needs* / Thomas Mahan, Aline Mahan. — New York ; London : Holt, Rinehart & Winstone, 1981.