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## Objectivization of probable variability of the personality of teenagers living in ecologically unfavourable environment of life activity

*In the article it is shown the opportunity of psychodiagnostics of variability and objectivisation of probable abnormal variability of personality on an example of the teenagers with cycloid and hysteroid structures of personal psychotype living in ecologically unfavourable life activity environment. The revealed intercombinations of psychological markers participating in discrimination of compared groups reflect expressiveness of personal decompensation and behavioural disadoption confirming the decrease of mechanisms of constitutional protection of personality in unfavourable ecological well-being conditions of life activity environment.*

**Key words:** *psychodiagnostics, differentiation, abnormal variability, personal decompensation, behavioural disadoption, ecological conditions of life activity environment, psychological and mathematical analysis.*

Diagnostics is the fundamental concept of practical psychology and of sphere of public health and it includes all-round understanding of what occurs in mental activity of the person, of how personal and psychological experiences change, at last, how they are interconnected with change of behavioural reactions and a stereotype of behaviour as a whole. For the present research the purpose of any diagnostic system is, first of all, differentiation of such categories as norm, personal variability inside of norm, abnormal variability beyond the frameworks of norm, in ranges of abnormal variability closer to borders of norm or closer to borders of more rough anomaly, psychopathy. The leading purpose of psychodiagnostics is to correctly estimate the subject not in statics, but in dynamics, in its constantly varying subject-subject and subject-object relations. The more precisely and carefully the information is selected and used psychological parameters are adequate to tasks and purposes, the more effective there will be results of the analysis.

**The purpose of the present psychodiagnostics** is maintenance of the reliable forecast of natural modification of personal and psychological experiences, behavioural stereotypes in conditions of the concrete in ecological well-being life activity.

Using mathematical model we get rid of the necessity of expensive, large-scale experiments which often sin, at times by rough mistakes. Advantage of mathematical model is the opportunity to formulate a real psychological problem as mathematical, using for the analysis the universal and powerful mathematical apparatus



not dependent on natural essence of the object. The mathematical model carries out the quantitative and qualitative analysis, the combinatory analysis in various planes of three-dimensional space that helps to predict probability of variability, behaviour of the subject in various conditions. Use of modern nonparametric mathematical methods of statistics allows to research not direct cause and effect relations, but to examine variability of individual and typological properties of the personality in their many-sided nature of subject-subject and subject-object mutual relations.

**Material and techniques of research.** The psychological and mathematical analysis of pathocharacterological parameters of diagnostic questionnaire (PDQ – A.E. Lichko, 1978), clinical questionnaire for revealing and estimation of the neurotic status (Yakhin K.K., Mendelevich D.M., 1978), techniques “the Level of neurotization and psychopathization, LNP” (Bazhin E.V., 1976; Lasko I.B., 1980), personal questionnaire of G.J. Aizenk (1963), and also “Taylor” techniques (1953) with subsequent use of nonparametric mathematical statistics, cluster analysis with t-test (Aivazyan S.A., Bukhshtaber B.M., 1989; Zagoruiko N.G., 1999; Zhuravlev Y.I., Ryazanov V.V., Senko O.V., 2006; Hastie T., Tibshirani R., Friedman J., 2001) in combination with descriptive statistics has confirmed presence of groups of the examinees mainly corresponding to the structure of concrete personal psychotype. On the basis of the psychological and mathematical cluster analysis by results of intercombinations of psychological parameters from all studied empirical population of 2300 teenagers of male and female sex in the age of from 14 till 16 years of Stavropol Territory living in unfavourable ecological conditions of life activity environment, it has been distinguished 5 groups (clusters) with various structure of personal psychotypes: hysteroid, schizoid, epileptoid, cycloid and mixed structures. On an example of group of teenagers with **cycloid and hysteroid structures of personal** psychotype we'll show the opportunities of psychodiagnostics of variability and objectivization of probable abnormal variability of personality.

The group of teenagers with **cycloid** structure of psychotype (Tab. 1 and 2) was characterized by a high level of neurotization on LNP (high emotional excitability,  $p < 0,00009$ ) with a low level of psychopathization ( $p < 0,8$ ) when orientation on opinion of associates is absent or minimal. The received results indirectly confirm the characteristic of teenagers with cycloid psychotype from unfavourable life activity environment, in particular, differences of mood depending on influence of environment, and high parameters on the neurotization scale: inadequate emotional reactions, inclination to conflictness in cause of own neurotization. Also at this group the tendency to higher parameters of anxiety is observed (scale T in clinical questionnaire  $p < 0,0004$ ), confirming probability of variability on the vector “health-illness”.

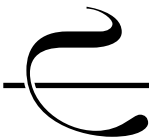


Table 1

**The psychological and mathematical analysis (cluster) of the population of teenagers from unfavourable ecological life activity environment**

Variable	Cluster Means (glux.sta)				
	Cluster No. 1	Cluster No. 2	Cluster No. 3	Cluster No. 4	Cluster No. 5
AI	1,99063	5,72857	-2,8500	4,9333	6,2000
I-ŌI	-1,85312	0,78095	-3,5438	1,3867	0,6000
a	1,77500	5,62857	-0,2938	4,1867	5,7125
à	-0,07500	1,99524	-2,1688	2,1400	2,5000
ïä	1,07187	2,16191	-2,5375	3,1400	1,3125
ò	-0,80312	0,87619	-1,6688	2,1800	2,0000
ËY	13,65625	14,14286	12,5000	13,8667	13,7500
IO	15,06250	11,09524	16,3750	11,0000	13,5000
Ōäéëïö	24,25000	16,09524	29,9375	17,8000	17,7500
E	3,37500	3,47619	3,5625	3,2667	4,1250
V	1,15625	1,23809	2,0625	3,0667	0,5000
d	2,50000	2,42857	3,5000	3,6667	2,0000
B	3,50000	3,47619	3,2500	3,6000	3,7500
M	5,87500	6,28571	4,5000	8,4667	8,5000

Clusters of teenage psychotypes: cluster №1 – cycloid psychotype of personality, cluster №2 – hysteroid psychotype, cluster №3 – epileptoid psychotype, cluster №4 – schizoid psychotype, cluster №5 – mixed psychotype of personality.

Scales: VN – vegetative instability; O-P-D – obsessive and phobias disorders; A – ashenic displays; H – hysterical reaction; ND – neurotic depression; A – situational anxiety; IE – intro-extraversion; NA – neurotic anxiety; Taylor – constitutional anxiety; E – emancipation; V – psychological inclination to drinking alcohol; d – psychological inclination delinquency; B – index of minimal brain dysfunction; M – scale masculinization.

Table 2

**Variability of psychological parameters of teenagers of the cluster with cycloid structure of psychotype (standard deviation, average values)**

Variable	Descriptive Statistics for Cluster Cluster contains 32 cases		
	Mean	Standard Deviation	Variance
AI	1,99063	4,636487	21,49701
I-ŌI	-1,85312	3,336792	11,13418
a	1,77500	3,655222	13,36065
à	-0,07500	3,901861	15,22452
ïä	1,07187	4,000261	16,00209
ò	-0,80312	2,442564	5,96612
ËY	13,65625	2,134348	4,55544
IO	15,06250	2,939580	8,64113
Ōäéëïö	24,25000	6,117136	37,41935
E	3,37500	1,718026	2,95161
V	1,15625	4,997479	24,97480
d	2,50000	1,796053	3,22581
B	3,50000	1,047270	1,09677



Thus, unfavourable life activity environment causes tendency to personal transformation among teenagers with cycloid structure of psychotype. The more time (years) the teenagers with considered psychotype spend in ecologically unfavourable environment of life activity, the more probable is steady personal variability from the range of psychological norm-accentuation to the range of abnormal personal variability in constitutional-continual space of the personality.

In the group of teenagers with **histeroid** structure of psychotype (table 3) there are found high parameters on extraversion and neurotism (scale E-I < 0,01), on scales of situational anxiety ( $p < 0,0004$ ) and hysterical reaction ( $p < 0,0001$ ), and also high level of the scale of general neurotization ( $p < 0,00009$ ) in combination with low level of the scale of psychopathization ( $p < 0,08$ ), that testifies to the increased general neurotization, in which structure the situational anxiety ( $p < 0,0004$ ) and the increased level of hysterical reaction ( $p < 0,0001$ ) play a significant role, providing negative psychotypological drift, or steady deformation of histeroid structures of the personality in conditions of long unfavourable influence of ecological factors.

Table 3

**Variability of psychological parameters of teenagers of the cluster with histeroid structure of psychotype (standard deviation, average values)**

Variable	Descriptive Statistics for Cluster : Cluster contains 16 cases		
	Mean	Standard Deviation	Variance
Äí	-2,8500	6,43542	41,4147
Ī-Ōí	-3,5438	2,66633	7,1093
à	-0,2938	4,09869	16,7993
è	-2,1688	3,07392	9,4490
íä	-2,5375	3,79454	14,3985
ò	-1,6688	2,61246	6,8250
ËŸ	12,5000	3,89872	15,2000
ÍÒ	16,3750	2,91833	8,5167
Öäéëïð	29,9375	4,59665	21,1292
E	3,5625	1,20934	1,4625
V	2,0625	4,63995	21,5292
d	3,5000	1,93218	3,7333
B	3,2500	1,43759	2,0667

The comparative psychological and mathematical analysis of two groups of teenagers distributed in clusters with histeroid and cycloid structures of psychotypes has shown the following results which are reflected in the table 4.

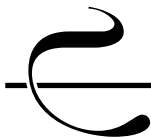


Table 4

**Comparative psychological characteristics of teenagers with cycloid and hysteroid structures of psychotypes by results of the t-test**

T-tests: Grouping: g (P_agg)											
Group 1: 1											
Group 2: 2											
Variable	Mean 1	Mean 2	t-value	df	p	Valid N 1	Valid N 2	Std.Dev. 1	Std.Dev. 2	F-ratio Variances	p Variances
ax	12.52941	11.82759	1.37532	61	0.174062	34	29	1.94212	2.10559	1.175422	0.651360
E	3.41176	3.20690	0.40442	61	0.687320	34	29	2.10508	1.87806	1.256381	0.541589
V	3.91176	3.06897	0.75407	61	0.453710	34	29	4.32307	4.53503	1.100463	0.785955
d	2.32353	4.10345	-2.77021	61	0.007413	34	29	2.31884	2.78189	1.439261	0.314371
D	3.82353	2.75862	3.10563	61	0.002880	34	29	1.50697	1.15434	1.704258	0.153895
B	3.79412	2.93103	2.27488	61	0.026440	34	29	1.70168	1.22273	1.936842	0.077895
M	7.26471	5.62069	2.86679	61	0.009283	34	29	2.59730	2.19437	1.400957	0.365996
F	3.41176	3.13793	0.53333	61	0.598746	34	29	2.01686	2.04807	1.031183	0.925249
AI	6.14588	0.76069	3.57786	61	0.000686	34	29	4.30329	7.44437	2.992634	0.002938
IOI	1.97618	-1.02138	3.71569	61	0.000442	34	29	2.79677	3.60162	1.658379	0.163645
A	5.91176	2.26759	3.68954	61	0.000481	34	29	3.23286	4.57661	2.004080	0.056568
E	3.91176	0.22276	4.14277	61	0.000107	34	29	2.56666	4.39000	2.925444	0.003561
IA	2.55118	-2.64897	4.48540	61	0.000033	34	29	4.31302	4.88924	1.285052	0.486435
O	3.22765	-0.34483	3.69600	61	0.000471	34	29	3.22273	4.42885	1.888577	0.080798
i	50.97059	7.93103	4.17858	61	0.000095	34	29	38.58362	43.15994	1.251283	0.533227
j	-5.79412	-6.58621	0.25315	61	0.801002	34	29	13.22940	11.29323	1.372284	0.396208
YE	15.29412	13.24138	2.59288	61	0.011897	34	29	2.96984	3.31291	1.244378	0.543229
IO	9.14706	13.06897	-2.97055	61	0.004247	34	29	5.52203	4.84717	1.297841	0.485099
Taylor	13.64706	20.00000	-2.84018	61	0.010507	34	29	8.89631	10.20504	1.315859	0.446752

The fact attracts attention: intercombination of some parameters of psychological scales is a basis of differentiation of teenagers with hysteroid and cycloid psychotypes in general population. It is necessary to note scales which values participate in discrimination (see in the text or the table a degree of reliability): delinquency, dissimulation, minimal brain dysfunction, masculinization, vegetative instability, obsessive and phobias, asthenic disorders, hysterical reaction, neurotic depression, situational anxiety, general neurotization, extra-introversion, neurotic and constitutional anxiety.

The parameters participating in discrimination of compared groups reflect expressiveness of personal decompensation and behavioural disadoption, confirming decrease of mechanisms of constitutional protection of the personality in unfavourable ecological life activity conditions. Moreover, psychopathological tolerance of teenagers with hysteroid structure of personality to destructive ecological factors of the life activity environment appears lower, than among teenagers with cycloid structure of personal psychotype. The presented results allow to confirm, that teenagers with hysteroid structure of personal psychotype have greater tropism to external unfavourable ecological factors in comparison with the teenagers having cycloid structure of psychotype.

There attracts attention a significant specific weight of scales of the clinical questionnaire of neurotic status in discrimination of compared groups, but mainly with significant excess of average values among teenagers with cycloid structure of psychotype in comparison with teenagers with hysteroid psychotype. Most likely this fact emphasizes more expressed negative psychopathological drift of teenagers with cycloid psychotype living in unfavourable ecological life activity environment on a vector "health-illness". Noted results give the basis to assume, that teenagers with cycloid structure of personality under the influence of external destructive factors have a stratification of neurotic experiences, symptoms on cycloid personal structure, caus-

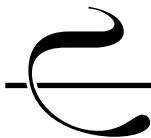


ing not only personal deformation, but also opening the way to neurotic disorders within the limits of concrete nozology.

At the same time among teenagers with hysteroid structure of the personality there prevail displays of behavioural disadoption (scale d,  $p < 0,007$ ) and neurotic, constitutional anxiety (scales NT and T,  $p < 0,004$ ,  $p < 0,0004$ ), that indicates on prevailing personal decompensation and behavioural disadoption of teenagers with hysteroid psychotype on a vector "norm – pathology" under influence of ecological life activity environment. The present results give the basis to assume primary formation of abnormal personal and behavioural variability.

In the table 4 on each of 18 scales there are presented comparative mutual relations of psychological parameters of groups of teenagers with cycloid and hysteroid psychotypes which authentically reflect intercombination of parameters of scales which specific weight is most significant for psychological and mathematical differential diagnostics (red color reflects highly reliable results).

Intercombinations of results of psychological and mathematical analysis on the t-test in the form of comparative characteristics of teenagers with cycloid and hysteroid structures of psychotypes on scales have shown the following results. Value of the parameter of emancipation displays an indisputable fact of its prevalence among teenagers with cycloid structure of psychotype in comparison with hysteroid psychotype. Results of psychological researches of inclination to drinking alcohol show that among teenagers with cycloid psychotype there is found out a small subgroup where psychological inclination to drinking alcohol is up from the range of psychological norm. At the same time among teenagers with hysteroid psychotype practically the whole group finds out psychological inclination to household alcohol drinking and the small subgroup reveals inclination to abnormal behavioural drift aside a range of abnormal variability. The analysis of the parameters reflecting psychological inclination to delinquency shows that among teenagers with hysteroid psychotype practically all find out inclination to deviating delinquent behaviour, but only among some the tendency to abnormal delinquent drift in the range of abnormal variability is marked. In group of teenagers with cycloid psychotype also among some the tendency to abnormal delinquent drift aside the range of abnormal variability is marked. It is lawful to assume, that teenagers from noted subgroups in case of long interaction with ecological factors of life activity environment will reveal steady negative drift, i.e. psychotypological tendency is transformed in delinquent stereotype of behaviour. Analyzing the scale "B" (the minimal brain dysfunction in PDQ) it is possible to confirm the identical frequency of detection of the minimal brain insufficiency, nevertheless, among teenagers with cycloid psychotype there is a subgroup with inclination to strengthening of displays of the minimal brain insufficiency under influence of ecological factors of environment. Displays of masculinization do not find out essential differences among teenagers of compared groups. Among teenagers with cycloid psychotype among some representatives there is observed expressiveness of the parameter of vegetative instability, in difference from teenagers with hysteroid psychotype for whom vegetative instability is characteristic as



a whole. Results of the table 4 allow to confirm, that among teenagers with hysteroid psychotype rather often there are representatives with doubts, fears, uncertainty, excessive impressionability and vulnerability. In group of teenagers with cycloid psychotype we observe some representatives among who attributes of obsession and anxiety are marked, what in both cases it is necessary to regard as prognostically unfavourable attribute of inappropriate psychotypological structure of personality. If similar attributes increase, especially in unfavourable conditions of life activity environment, it is possible to predict with a high degree of reliability failure of mechanisms of constitutional psychotypological protection in the form of abnormal personal and behavioural variability in the form of negative drift in constitutional and continual space of personality from the range of norm – accentuation aside the range of abnormal variability.

Asthenic displays are characteristic for the group of teenagers with hysteroid structure of psychotype, that testifies to readiness for an exhaustion of biological and psychological reserves of personality and decrease in energetic and information structure of personality. Among teenagers with cycloid structure of psychotype only among few asthenization attributes are marked, that, most likely, is connected with interaction with unfavourable factors of life activity environment. Among teenagers with hysteroid structure of personality among the majority it is observed the tendency to hysterical forms of reaction in reply to environment factors not suiting them. Among teenagers with cycloid structure of psychotype hysterical forms of reaction are observed only among small subgroup that mismatches the structure of psychotype and specifies high probability of negative psychotypological drift aside the range of abnormal variability with formation of nozal desordes of neurotic level. In both groups the tendency to distimic personal experiences is marked, however, among teenagers with hysteroid structure of psychotype the specified tendency extends on representatives of whole group, and among teenagers of cycloid psychotype it is only among few, confirming that high risk of negative nozologic drift on the scale of distimy among cycloids. Situational anxiety is observed among all teenagers with hysteroid structure of psychotype and only among few with cycloid psychotype, that confirms great emotional instability of teenagers with hysteroid psychotype of personality. The majority of teenagers with hysteroid psychotype differ by features of general neurotization what is synchronous to displays of situational anxiety. The small group with cycloid psychotype differs by attributes of general neurotization, what is to the greatest degree connected with ecological factors of life activity environment. The identical degree of expressiveness and distribution in group of attributes psychopathization confirms the risk of psychopathological negative drift at influence of destructive factors of life activity environment among teenagers with cycloid and hysteroid psychotype.

Results of the psychological and mathematical analysis (cluster, discriminant analyses) inspections of teenagers with cycloid and hysteroid structures of psychotypes living in unfavourable ecological life activity environment presented in the form of tabulated data can form the modern demonstrative base of destructive influence of ecological factors of life activity environment on a structure of personal psychotype.



### **The Literature**

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