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RESEARCH OF THE SYSTEM OF INDIVIDUAL-TYOLOGICAL FEATURES OF PERSONALITY IN MANAGERS

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ДОСЛІДЖЕННЯ СИСТЕМНОСТІ ІНДИВІДУАЛЬНО-ТИПОЛОГІЧНИХ ОСОБЛИВОСТЕЙ ОСОБИСТОСТІ У МЕНЕДЖЕРІВ

Key words: *managers, Benton's test, icon, Minnesota Multifaceted Personality Inventory (MMPI), structural psychology*

Ключові слова: *менеджери, тест Бентона, піктограма, Міннесотський багатоаспектний особистісний опитувальник (MMPI), структурність психіки*

Using Benton's tests, pictograms, and the Minnesota multi-aspect personality questionnaire (MMPI), aspects of mental activity were studied in managers and in mentally healthy individuals. Relations formed between test scores were investigated using multiple linear regression and correlation. The indicators of the applied tests are revealed, both increased and decreased for managers compared to the norm. It was shown that managers showed more regression relations between the MMPI test indicators than persons in the control group. It is assumed that managers have a greater mental dimension than persons in the control group, which ensures an increase in personal potential. It can be assumed that managers' mental activity (structure of the psyche) is more complex due to certain personality characteristics, due to the features of their work, and a higher level of intelligence and education, and a great life experience.

Із використанням тестів Бентона, піктограм і Міннесотського багатоаспектного особистісного опитувальника (MMPI) вивчено аспекти психічної діяльності в менеджерів і в психічно здорових осіб. Зв'язки, що формуються між показниками тестів, досліджували з використанням множинної лінійної регресії та кореляції. Виявлено показники застосованих тестів як збільшені, так і зменшені в менеджерів порівняно з контрольною групою. Показано, що в менеджерів між показниками тесту MMPI виявлено більше регресійних зв'язків, ніж в осіб контрольної групи. Припущено, що в менеджерів розмірність психіки більша, ніж в осіб контрольної групи, що й забезпечує збільшення особистісного потенціалу. Можна припустити, що в менеджерів психічна діяльність (структура психіки) є складнішою з огляду на певні особистісні особливості, які зумовлені і особливостями їхньої роботи, і вищим рівнем інтелекту й освіти, і більшим життєвим досвідом.

Relevance. The English word "management" comes from the Latin word "manus" (hand). This term has no analogue in the Russian language, although some of it is used as a synonym for "management" and "scientific organization of labor". Management can be defined as a scientific and practical direction focused on ensuring the effective functioning (functioning) of organizations in market conditions of economic relations [1—3].

Today there is every reason to talk about the formation of management psychology as a fairly independent scientific direction. The object of study in management psychology is people who are involved in financial and legal relations in independent organizations, whose activities are subordinated to socially useful goals, and the criteria for their effectiveness are profitability, material and moral well-being of their members.

The subject of study of management psychology organically includes both traditional socio-psychological phenomena (for example, socio-psychological climate, communication) and issues of labor psychology (analysis of work activity, functional mental states, workplace organization, psychological foundations of quality, reliability and defect-free work), general psychology

(theory of activity, personality, development) and other applied areas of psychology [3—7].

A manager is a personality that is, a complex set of innate (natural) and acquired (social) qualities. They are welded together in the character of the individual, and not every one of his traits can be useful in the activities of a manager. All major works on management contain lists of qualities of an ideal manager. They can be divided into two groups: 1) biological and socio-economic characteristics and 2) personal qualities [4; 6].

The study of individual typological personality traits characteristic of managers is very relevant.

The concept of structure was introduced into psychological theory by Edward Titchener. The ideas of structure (from the Latin *structura* — structure) of the psyche arose quite a long time ago in psychological concepts) [8—10].

Structure is an integral property of the system and represents a certain type of relations between its elements.

Of particular interest is the study of the structure of the individual-typological characteristics of the personality of managers and the clarification of the system-forming factors in the structure of their individuality [5; 11].

Taking into account the above, the purpose of our work was to study the features of the individual typological

logical personality traits of managers using the Benton visual retention test, the pictogram test according to B.G. Khersonsky and Minnesota Multidimensional Personality Inventory (MMPI) and build mathematical models visualizing the multidimensionality of their individual typological space [11].

Material and research methods. The study involved 91 people, 26 control group people and 65 managers.

Research methods: Benton test, pictogram test according to B.G. Khersonsky and MMPI. The results obtained were processed using the Statistica 7.0 package.

Differences in indicators were monitored using the calculation of ratio coefficients and their errors.

The relations formed between test scores were examined using multiple linear regression and correlation [12]. Levels of statistical significance were accepted within the limits of $P < 0.05$ and $P < 0.1$.

To form mathematical models, each of the indicators of the set of indicators selected for the analysis was considered as a target characteristic (Y -s), and the remaining indicators were considered as influencing variables (set of X -s) and oriented influences were determined

using the multiple linear regression method. As a result of the procedure used, multiple linear regression equations of the form were obtained:

$$Y = a_0 + b_1X_1 + b_2X_2 + \dots + b_nX_n + e,$$

where a_0 is the free term; coefficients b_1, b_2, \dots, b_n — regression indicators reflecting the degree of influence on the analyzed indicator of the remaining elements of the set, X_1, X_2, \dots, X_n indicators.

The adequacy of the regression coefficients was assessed using the sigma deviations of the regression coefficients, and the overall performance of the regression was assessed by calculating the multiple correlation coefficient [12]. Geometrically, multiple linear regression equations were interpreted using polycyclic multigraphs [13].

Own research and discussion. Among managers, compared to the control group (which did not include managers at any level), the phenomena designated as "inorganic errors", "organic errors", "accidental or intentional distortion of results" were statistically significantly increased (Table 1). "productivity", "attributive images".

Table 1. Statistically significant correlation coefficients reflecting differences in the Benton MMPI and Picto tests among managers compared to persons in the control group

Number	Scale	Indicators	Ratio coefficients
Benton test			
1		Inorganic errors	1,85
2		Organic errors	1,91
MMPI test			
3	L	"Lie" scale — shows how sincere the subject was during the testing process	0
4	F	"Reliability" scale — shows the level of reliability of the data obtained, depending on his frankness and willingness to cooperate.	1,49
5	K	The "correction" scale reveals the degree of distortion of the test (profile), associated both with the closeness of the subject and with the influence of the unconscious defense mechanism of "repressing" from the psyche information that is traumatic and destroys the positive self-image	0
6	1	Somatization of anxiety — hypochondria	-3,19
7	2	Anxiety and depressive tendencies	0
8	3	Repression of factors causing anxiety — hysteria	-1,29
9	4	Implementation of emotional tension in immediate behavior	-1,33
10	5	Expression of male and female character traits	-1,49
11	6	Rigidity of effect	0
12	7	Fixation of anxiety and restrictive behavior (Anxiety, psychasthenia)	-2,69
13	8	Autization	-2,86
14	9	Anxiety denial and hypomanic tendencies	-1,24
15	0	Social contacts	-1,11
Test pictogram			
16	P	Productivity of concept reproduction (memorization)	1,09
17	G	Geometric images	-2,00
18	M	Metaphorical images	0
19	A	Attributive images	1,23
20	K	Specific images	-1,69
21	Ich	Person image	-4,05
22	AD	Adequate images	0

Statistically significantly reduced in managers compared to the control group (in which there were no managers of any level), such phenomena as assessments on the MMPI scales "somatization of anxiety — hypochondria", "repression of factors causing anxiety — hysteria", "implementation of emotional tension" were determined in immediate behavior", "expression of male and female character traits", "fixation of anxiety and restrictive behavior", "autism", "denial of anxiety and hypomanic tendencies", "social contacts", the number of images in the pictogram technique, designated as "geometric symbols", "specific images", "person images" [14].

The Benton test is most often used in the practice of pathopsychologists, as it is the least labor-intensive for the test subject and easy to process for the experimenter. Its focus is visual short-term memory. For managers, the rate of inorganic errors increased by 1.85 times, and organic errors by 1.91 times. Managers are, on average, older than people who are not involved in management activities (control group). It is known that memory levels decline with age, so it is understandable why they had more errors in the Benton Visual Retention Test (both "organic" and "inorganic". This is likely due to the fact that the average age of managers was significantly greater than individuals in the control group. The tendency to follow conventional norms and the absence of internal tension is reflected by a low result on the F scale of the MMPI profile.

Higher scores on the F scale of the MMPI questionnaire may be explained by higher frankness and a better understanding of the goals of the study. The first, second and third scales of the MMPI profile are often combined under the term "neurotic triad".

A decrease in managers' scores on the MMPI scales "somatization of anxiety — hypochondriasis", "fixation of anxiety and restrictive behavior", "denial of anxiety and hypomanic tendencies" indicates a lower level of anxiety (lower neurotic tendencies) and a higher level of activity. With low neurotic tendencies, the level of severity of various types of personal distress is less pronounced (indicators "repression of factors causing anxiety — hysteria", "autization").

On scale 3 of the MMPI profile (demonstrativeness, repression of factors causing anxiety), managers showed a decrease in the indicator by 1.29 times. A decrease in profile on the third scale is usually characteristic of individuals with low demonstrativeness and a tendency to repression. This may indicate a focus on obtaining real results, and not on demonstrating one's personal significance, a more realistic approach to the assessment of events by managers compared to persons in the control group.

Lower scores on the scale of "implementation of emotional tension in immediate behavior" — scale 4 of the MMPI test indicate a higher level of self-control,

The managers had reduced scores on the fifth scale of the MMPI profile compared to the control group (ex-

pression of male and female character traits) (Table 1). Lower scores on the "expression of male and female character traits" and "social contacts" scales indicate leadership tendencies and sociability.

The decrease in the level of the MMPI profile in comparison with persons in the control group on the seventh scale "fixation of anxiety and restrictive behavior" (psychasthenic character traits) in managers is due to the fact that in managers these traits are, as a rule, slightly expressed, and the control group consisted of subjects referred by the district military registration and enlistment offices to determine suitability for military service.

A decrease in the MMPI questionnaire score on the eighth scale (Table 1) indicates that managers, to a lesser extent than persons in the control group, exhibit traits of autism (isolation, distance from the outside world).

A decrease in the indicator on the ninth scale (denial of anxiety and hypomanic tendencies) among managers serves as evidence of greater stability and consistency in their actions.

On the zero scale of the MMPI questionnaire, managers (social contacts) showed a decrease in the indicator (Table 1). As is known, persons with a high level of profile on the zero scale are characterized by difficulties in making interpersonal contacts, causing isolation, unsociability, a desire for activities not related to communication, and an anxiety reaction in cases where forced contacts are carried out regardless of the will of the subject. A decrease in the profile level on the zero scale indicates the absence of difficulties in establishing personal contacts and an extroverted orientation.

The classic pictogram method is used in pathopsychology, clinical psychology, as well as in military or forensic psychiatric examination. The purpose of the technique: the study of mediated memorization and the ability to generalize. A special picture is observed in the case of applying the pictogram method to a contingent of obviously healthy subjects. The absence of any disturbances in thinking and memory practically removes restrictions in the search for an answer and decisively enhances the importance of "internal conditions" in this process — the personality of the subject, his individual concrete experience, visual, intellectual, social.

The productivity indicator for reproducing concepts in the "pictogram" test is higher for managers than for individuals in the control group. The indicator "attributive images" among managers is also higher than among people in the control group, and the indicators "geometric images", "specific images", "person image" were determined by lower numbers than among people in the control group. The obtained differences indicate a higher level of intelligence and purposeful thinking among managers compared to the control group.

Considering that the idea of the multidimensionality of mental space in psychology remains completely undeveloped, in the next fragment of the work, using multiple regression and correlation analysis methods, we investigated oriented regression relations — the relations between the factors-indicators of the pictogram tests according to B.G. Khersonsky and MMPI.

This approach makes it possible to clarify the structure of relations between factor-indicators of these tests, to study the organization of management of the structure of individual psychological traits (features) of a person and, thereby, to form a multidimensional space of relations of the studied indicators.

When analyzing regression relations between the pictogram test indicator, 35 relations were identified in the control group, and 26 among managers (Table 2, Fig. 1). 22 regression relations were identified between the MMPI test scores in the control group, and 36 in the managers' group.

Table 2. Number of identified statistically significant coefficients of multiple regression and bivariate correlation in groups of subjects

Groups of subjects	Odds			
	Regressions		Correlations	
	Picto	MMPI	Picto	MMPI
Control group	35	22	3	17
Managers	26	36	7	35

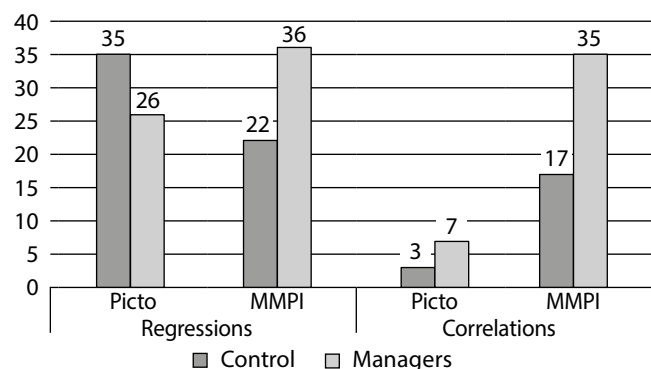


Figure 1. Number of identified statistically significant multiple regression and bivariate correlation coefficients in groups of subjects

Early on, we formed ideas about a unit of mental activity as a psychological, psychiatric, neurophysiological construct formed on the basis of multiple regression analysis of EEG indicators and the Luscher test anxiety indicator.

For managers, the number of regression relations between MMPI test indicators was greater than for individuals in the control group.

The Minnesota Multidimensional Personality Inventory (or MMPI) is designed to examine personality

traits and mental states of an individual. Considering the regression relation between two indicators of psychological tests as a unit of mental activity [1], it can be assumed that managers have a larger mental dimension than persons in the control group, which ensures an increase in personal potential.

The number of regression relations between pictogram test indicators among managers was less than among individuals in the control group. The pictogram test is designed to study mediated memorization and features of thinking, intelligence and personality. In this case, it can be assumed that some deterioration in performance is due to the fact that managers were studied to determine whether they were suitable for occupying a vacant position in the company, accordingly, they had high motivation, situationally increased anxiety, and these changes in mental state reduce productivity activities.

The largest number of relations in the control group was determined to the indicator "autization" — 4. Relations coming to the indicator "autization" were smaller in modulus than relations departing from this indicator. Therefore, we can consider that the "autization" indicator is a system-forming indicator among the many indicators of the MMPI test in the control group. For managers, the largest number of relations was determined to the indicators of the "correction" scale — reveals the degree of distortion of the test and "social contacts", 6 and 5, respectively. It should be noted that the relations coming to the "correction" scale indicator were smaller in magnitude than the relations departing from this indicator. All relations coming to the "social contacts" indicators were larger in modulus of relations departing from this indicator. Therefore, we can consider that the "correction" scale indicator is a system-forming indicator among the many indicators of the MMPI test for managers. The indicator "social contacts" can be considered a system-forming indicator in relation to the scales of "reliability", "correction", "anxiety and depressive tendencies", "repression of factors causing anxiety — hysteria" and "denial of anxiety and hypomanic tendencies" [15; 16].

When analyzing the correlation relations in the control group, 3 bivariate correlation coefficients were determined between the pictogram indicators, and 7 among the managers. 17 bivariate correlation coefficients were determined between the MMPI test indicators in the control group, and 35 among the managers.

An increase in the calculated correlation coefficients between test scores compared to the control group can be considered as evidence of a different personality structure in them. The increase in the "organic errors" indicator of the Benton test among managers, compared to the control group, may be associated both with the characteristics of the testing situation and with a higher average age (34 years for managers and 19 for the control group).

The influence of MMPI test scores on pictogram test scores in the control group and among managers.

To form mathematical models, each of the many pictogram indicators selected for analysis was considered as a target feature (Y-s), and all indicators of the MMPI test were considered as influencing variables (set of X-s) and oriented influences were determined using the multiple linear regression method.

In the control group, only one relationship was identified from the MMPI test indicator to the pictogram test indicators, and in the manager group — 17.

In the control group, the MMPI test indicator "expression of male and female character traits" had a statistically significant positive effect on the "productivity" indicator of the pictogram test (Fig. 2).

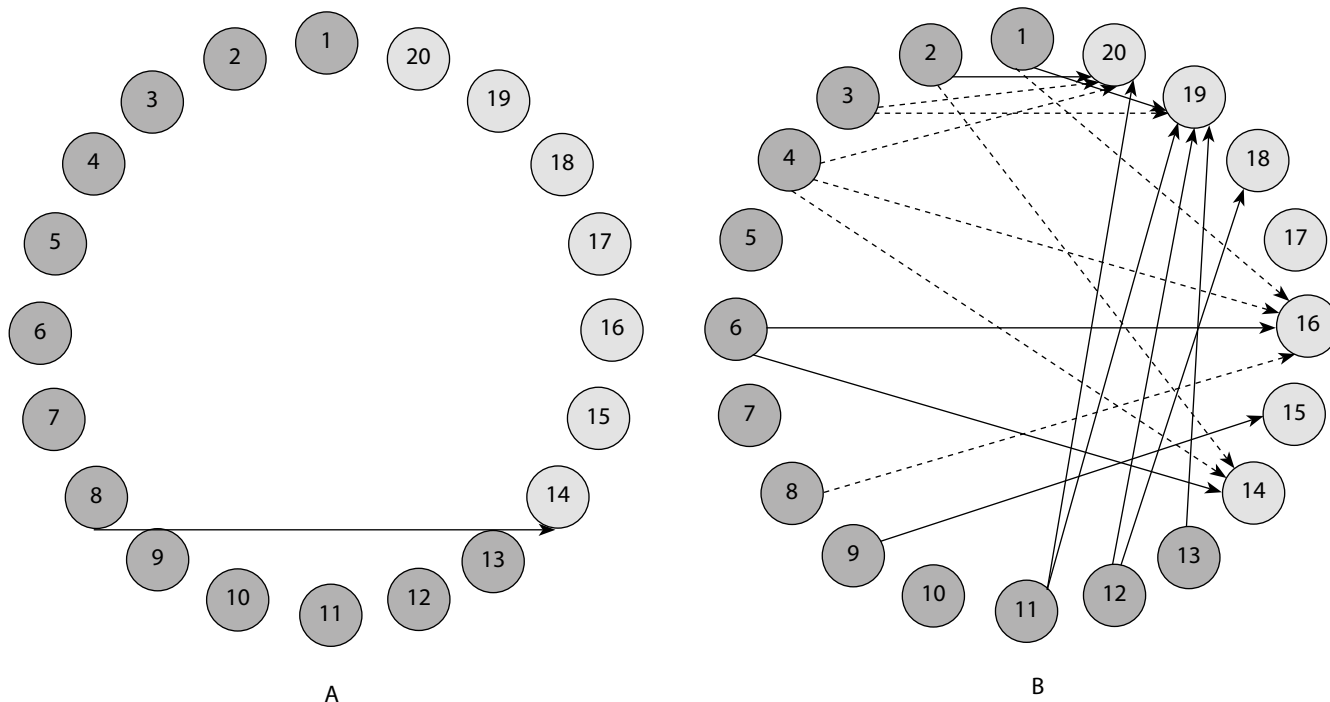


Figure 2. Multigraphs reflecting the influence of MMPI test indicators on pictogram test indicators in control group individuals (A) and managers (B)

Designations: MMPI test: 1 — "lie" scale, 2 — "reliability" scale — shows the level of reliability of the data obtained, accidental or intentional distortion of the results, 3 — correction scale (conformity of behavior), 4 — "somatization of anxiety" scale, 5 — scale "anxiety and depressive tendencies", 6- scale "repression of factors causing anxiety", 7 — scale "implementation of emotional tension in immediate behavior", 8 — scale "expression of male and female character traits", 9 — scale "rigidity of effect" , 10 — scale "fixation of anxiety and restrictive behavior (anxiety, psychasthenia)", 11 — scale of autism, 12 — scale "denial of anxiety and hypomanic tendencies", 13 — scale of social introversion. Pictogram test: 14 — productivity of reproduction, 15 — "geometric" images, 16 — metaphorical images, 17 — attributive images, 18 — "specific images", 19 — person images, 20 — adequate images. Solid lines indicate positive influences, dashed lines indicate negative influences

For managers, the MMPI test score "present yourself in a favorable light" had a statistically significant negative effect on the "metaphorical images" score and positively on the "person image" score. The MMPI test indicator "accidental or intentional distortion of results" had a statistically significant negative effect on the "productivity" indicator and a positive effect on the "adequate images" indicator. The MMPI test score "hide psychopathology" had a statistically significant negative effect on the "person image" and "adequate images" scores. The MMPI test indicator "somatization of anxiety" had a statistically significant negative effect on the indicators "productivity", "metaphorical images" and "adequate images".

The MMPI test indicator "repression of factors causing anxiety" had a statistically significant positive ef-

fect on the indicators "productivity" and "metaphorical images". The MMPI test indicator "expression of male and female character traits" had a statistically significant negative effect on the "metaphorical images" indicator. The MMPI test indicator "rigidity of effect" had a statistically significant positive effect on the "geometric images" indicator. The MMPI test indicator "autization" had a statistically significant positive effect on the indicators "person image" and "adequate images". The MMPI test indicator "denial of anxiety" had a statistically significant positive effect on the indicators "specific images" and "person images". The MMPI "social contacts" test indicator had a statistically significant positive effect on the "person image" indicator of the pictogram test.

and the "anxiety denial and hypomanic tendencies" indicator was statistically significantly negatively influenced by the "geometric images" indicator of the pictogram test.

In conclusion, we can note a greater number of relations among managers compared to the control group, both from the MMPI test indicators influencing the pictogram test indicators, and from the pictogram test indicators influencing the MMPI test indicators. This confirms the conclusion that managers have a larger mental dimension than persons in the control group.

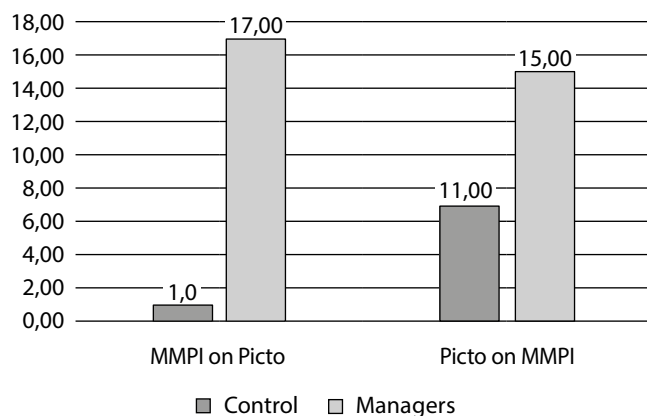


Figure 4. Number of identified statistically significant multiple regression coefficients determined from MMPI indicators per pictogram and from pictogram indicators to MMPI indicators in control group and managers

Conclusions:

1. When studying the individual typological characteristics of the personality of managers, using the Benton visual retention test, the pictogram test according to B.G. Khersonsky and MMPI, compared with the control, revealed a higher level of intelligence, a lower level of anxiety (lower neurotic tendencies) and a higher level of activity, level of self-control. Managers have leadership tendencies and are sociable.

2. Managers have mental dimensions, judging by the number regression relations between test indicators are greater than persons in the control group.

3. The "autization" indicator is a system-forming indicator among the many indicators of the MMPI test in the control group.

4. The "correction" scale indicator is a system-forming indicator among the many indicators of the MMPI test for managers.

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