

PSYCHOLOGICAL PROPERTIES OF THE MASTER KIT SOFTWARE PRODUCT USERS

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Introduction

In recent years, there has been a significant increase in the development of computer technology in the field of psychology and psychological assistance tools. The Master Kit software, an automated training tool for psychological self-regulation, is an example of such technique in the Russian-speaking space. The study of users' psychological characteristics is an important issue affecting the mechanism of action of the training tool on the one hand and demonstrating the unique characteristics of users as a special group of persons on the other.

The creation of a comprehensive understanding of individual characterological features, the typology of subjective self-regulation, and the experienced mental states of software users could predetermine the psychological image of the person using this software. This would further serve not only to find ways to improve the efficiency of the product but also to analyze the effectiveness of a tool's self-regulation in relation to the typological characteristics of the person; in other words, this will help create a more flexible and adaptive tool. It is also important that such psychological portrait can contribute to the assessment of the potential software user.

The basic objective of this study was to study the psychological characteristics of software users. We formulated a hypothesis that the Master Kit software users have a special set of individual psychological characteristics characterizing them as a unique population group. To do this, 316 people were recruited as a sample. Criteria for inclusion in the study group:

1. Software users aged 20–55 years.
2. Absence of mental and cognitive dysfunctions.
3. Active use of the software product (at least five times per month) throughout the study.
4. Period of use not less than three months.

Since the psychological portrait involves a system of dominant features of the individual and the features of his/her thinking, feeling, and behavior, as well as a set of stable features, a set of psycho-diagnostic tests was created for the evaluation and analysis of such psychological characteristics of a potential software user.

Thus, data in 80 scales was obtained for each subject, describing the processes of the state and features of the individual, including orientation, intelligence and way of thinking, emotionality and level of reactivity, anxiety, stability, as well as the ability to overcome difficulties; perseverance in achieving goals; sociability, self-esteem; self-control level; and ability to influence a group.

Research techniques

1. Personality diagnostics technique on motivation to success by T. Ehlers. The questionnaire is designed to diagnose an individual's motivational orientation to achieve success [28].
2. "Life style index" questionnaire by R. Plutchik, G. Kellerman, and G. Conte (adapted version by E. S. Romanova and L. R. Grebennikova) [35].
3. "Ways of coping behaviour" questionnaire by R. Lazarus (adaptation by T. L. Kryukova, E. V., Kuftyak, and M. S. Zamyshlyayeva) [26].
4. Melbourne decision-making questionnaire (abbr. MDMQ, Eng. Melbourne decision-making questionnaire, cоp. MDMQ) (adaptation by T. V. Kornilova). The technique is a personal questionnaire aimed at diagnosing individual decision-making style [23].

5. Standardized multifactor method of personality research/Mini-SMPR (Mini-SMPR questionnaire). Practical psycho-diagnostic tool developed by L. N. Sobchik on the basis of SMPR. It is intended for use primarily in clinical practice, revealing mainly a subjective assessment by a person of his/her condition [32].

6. The technique "Way of thinking" modified by G. Rezapkina is used to define the subject's way of thinking [25].

7. Spielberger anxiety scale (State-Trait Anxiety Inventory - STAI) Developed by C. D. Spielberger and adapted by Y. L. Hanin. It is designed to determine the level of self-esteem and anxiety [20].

8. Subjective control test questionnaire (USC) by J. Rotterdam. The questionnaire is adapted by E. F. Bazhin, S. A. Golikina, and A. M. Etkind and diagnoses the localization of control over significant events [30].

9. Psycho-diagnostic test (PDT) by V. Melnikov and L. Yampolsky. This technique is a multidimensional tool based on the standardized self-report of the subject and is designed to study the structure of the individual within the boundaries of certain factors [31].

10. Individual typological questionnaire by L. N. Sobchik. The ITQ is a tool for the study of individual typological features [33].

Empirical validity and results of the study

Psychological defense mechanisms and coping strategies play an important role in adapting to stressful and psychotraumatic situations. Psychological defenses more reflect unconscious ways of coping with the traumatic experience and the information causing it. There is no unambiguous opinion in the scientific and practical literature on psychological defense. Some authors consider the positive impact of psychological defenses, as they help adapt to traumatic events, but on the other hand, in the long term, the frequent use of a narrow range of psychological defenses can prevent a more realistic perception of situations and, as a result, lead to maladaptation.

When considering the mechanisms of psychological defenses as targets for correction, there are two approaches:

1. The first approach advocates the optimization of the style mechanisms of the psychological defenses of the patient's personality in the process of psychotherapy. Mechanisms of psychological defenses are regarded as quite normal; in case of a breakdown of the mechanism, a neurosis appears. It is necessary to consider the individual's propensity to use certain mechanisms. The principle of specificity consists of the optimization of the forms of defense adequate to the personality (displacement, repression, denial in a hysteroid, etc.; derealization, intellectualization, and rationalization in a psychasthenic). In this approach, the power of "I" is associated with the presence of mature psychological defense mechanisms.

2. The second approach consists of the disruption of psychological defense mechanisms and the formation of coping mechanisms in difficult situations. Psychological defense is considered as a passive-defensive mechanism, as an evidence of weakness, and the inability of a person to resist unfavorable conditions of reality. At the first step, the patient's personality becomes undefended against the threat, and it results in an increase in anxiety and tension. The person faces the need to realize his/her broken life relationships. However, the implementation of this approach has a significant strategic impact. The implementation of the second approach requires high professionalism from the psychotherapist and is designed for long and time-consuming work, fraught with deterioration of interpersonal relations between the therapist and the patient until their complete breakdown. However, this approach is more preferable since the reduction of anxiety and tension under the action of psychological defense mechanisms is achieved at the cost of disintegration of various levels of psychological functioning, which as a result manifests in painful symptoms.

Coping, in turn, characterizes the behavioral patterns of the solution of the traumatic situation. Each coping strategy has its upsides and downsides. For confrontation, it is the opportunity to actively oppose difficulties and stressful influence but with insufficient purposefulness and rational justification of behavior in a problem situation. For distancing, it is the opportunity to reduce the subjective importance of intractable situations and prevent intense emotional reactions to frustration, but it comes with the probability of devaluation of one's own experiences and an underestimation of the importance and possibilities of effectively overcoming problematic situations. Upsides of self-control include the possibility of avoiding emotional impulsive actions, predominance of a rational approach to problem situations, but its downsides are difficulties of expressing experiences, needs and motives related to the problem situation, and overcontrol of behavior. Advantages of the search for social support include the possibility of using external resources to solve the problem situation, but its disadvantages include the possibility to form a dependent position and/or excessive expectations toward others. Upsides of the admission of responsibility include the possibility to understand the personal role in the occurrence of actual difficulties. However, its downsides include the possibility of unjustified self-criticism and admission of excessive responsibility. In avoidance, there is the possibility of a rapid reduction of emotional stress in a stressful situation, but the solution of the problem remains impossible, with the probability of accumulation of difficulties and the short-term effect of the actions taken to reduce emotional discomfort. Advantages of problem solution planning are the possibility of purposeful and systematic solution of the problem situation, but its downsides are the probability of excessive rationality, lack of emotionality, intuitiveness, and spontaneity in behavior. Positive re-esteem provides the possibility of a positive rethinking of the problem situation, also increasing the probability of the person's underestimation of the effective possibilities of solving a problem situation.

To interpret the obtained data, descriptive statistics and Spearman's factor and correlation analysis were used.

Descriptive statistics.

1. For the studied sample of the Master Kit software users, the spectrum of psychological defense intensity was formed, presented in Figure 1 based on the descriptive statistics of the "life sense index."

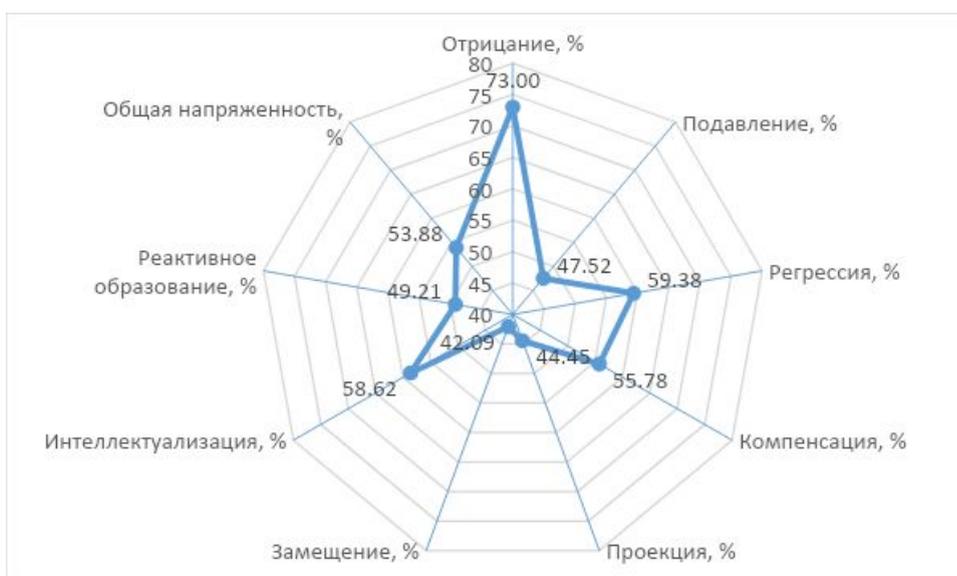


Fig. 1. Tension of psychological defenses

As seen in the diagram, the intense scales of most psychological defenses were observed in the study group. On the one hand, this may support the presence of a stressful situation in the subjects; on the other hand, it indicates the breadth of the defense methods used. Among psychological defenses, the tension prevailed in the scales “denial,” “regression,” and “intellectualization.” The scales “substitution” and “projection” were the least stressed.

2. The severity of different coping strategies is shown in **Figure 2.**



Fig. 2. Mean values of the intensity of coping strategies

Based on the data presented in the diagram, it can be concluded that when coping with a stressful situation, the sample of subjects preferred to use more “positive re-esteem,” “avoidance,” and “self-control” coping. Table 1 compiles and interprets the values from the point of view of coping adaptability.

Table 1

Interpretation of the mean tensions of coping strategies

Scale			Interpretation of the mean
Confrontation	0.58	.152	Mean level
Distancing	1.09	.154	Mean level
Self-control	4.53	.178	High level
Search for social support	3.00	.147	High level
Admission of responsibility	.89	.116	Mean level
Escape-avoidance	4.90	.211	High level

Problem solution planning	3.11	.170	High level
Positive re-esteem	6.72	.175	High level

Note: M is the mean value, σ is the standard error of the mean value.

The data in Table 1 shows that in the sample presented, “confrontation,” “distancing,” and “admission of responsibility” were at a mean level of tension while other scales had a high level of tension.

3. Coping may play a certain role in decision-making; it is studied through the Melbourne questionnaire of decision-making. From the perspective of a productive and effective influence in decision-making and coping, productive (vigilance) and non-productive coping (hypervigilance, avoidance, and procrastination) are distinguished. Figure 3 shows the data of the Melbourne decision-making questionnaire scales obtained in the sample under study.

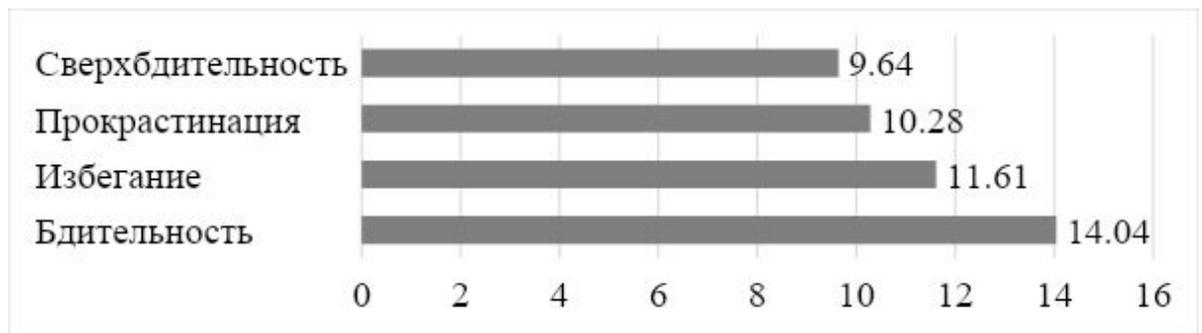


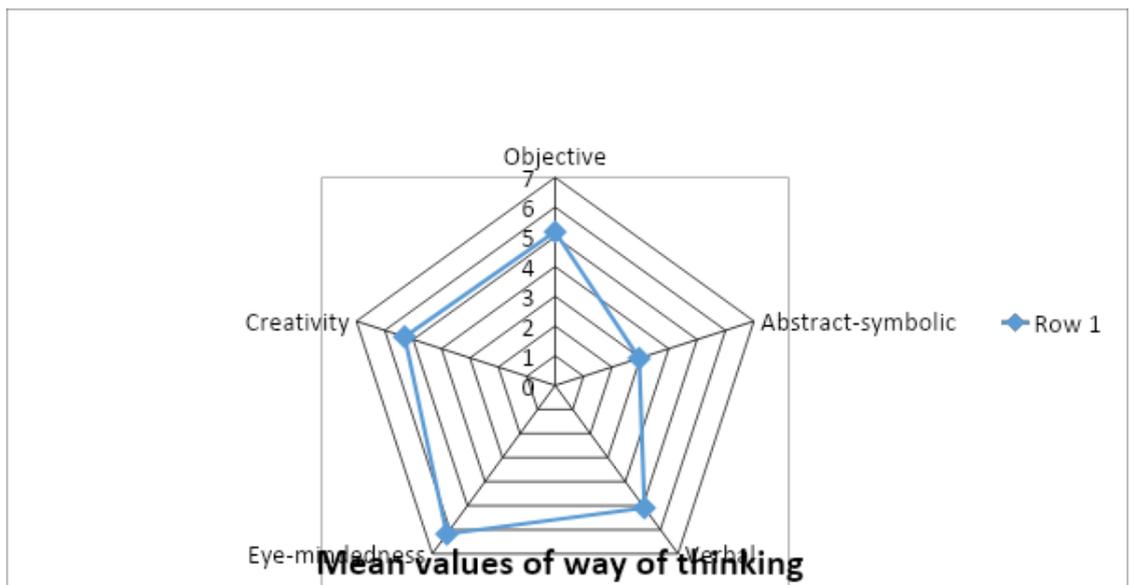
Fig. 3. Mean values of the scales of the Melbourne decision-making questionnaire

Based on the data presented in Figure 3, it can be concluded that this sample relied more on productive coping of vigilance in decision-making, that is, when making relevant decisions, they were inclined to search for available information, based on which it was possible to make more effective decisions.

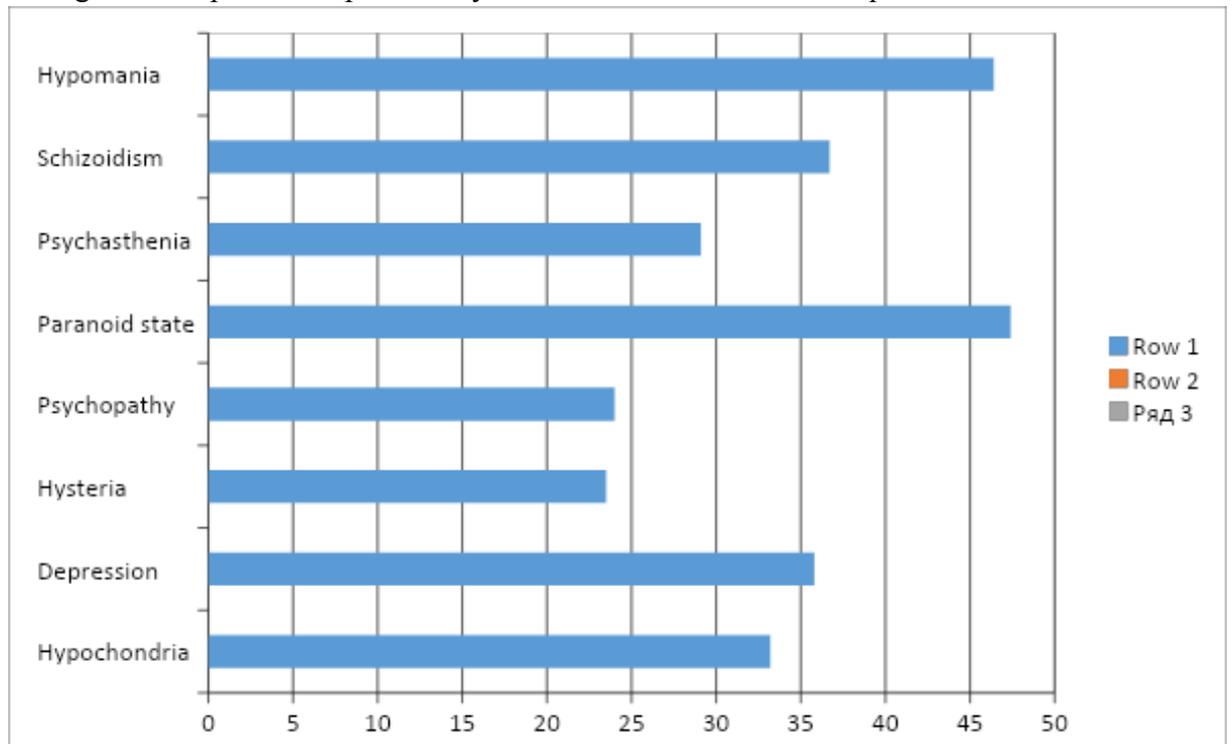
4. The personality diagnostics for motivation to success by T. Ehlers is designed to assess the motivational orientation of the individual to achieve success. In the sample studied, the mean values were at the level of $M = 16.11 \pm 0.2$. This can be interpreted as the mean level of motivation for success (approaching a high level).

5. According to the results of the Spielberger anxiety test, it can be concluded that the majority of respondents in the sample have a test variant of moderate anxiety (on both personal ($M = 42.5$, $Me = 42$) and reactive scales ($M = 38.5$, $Me = 38$)).

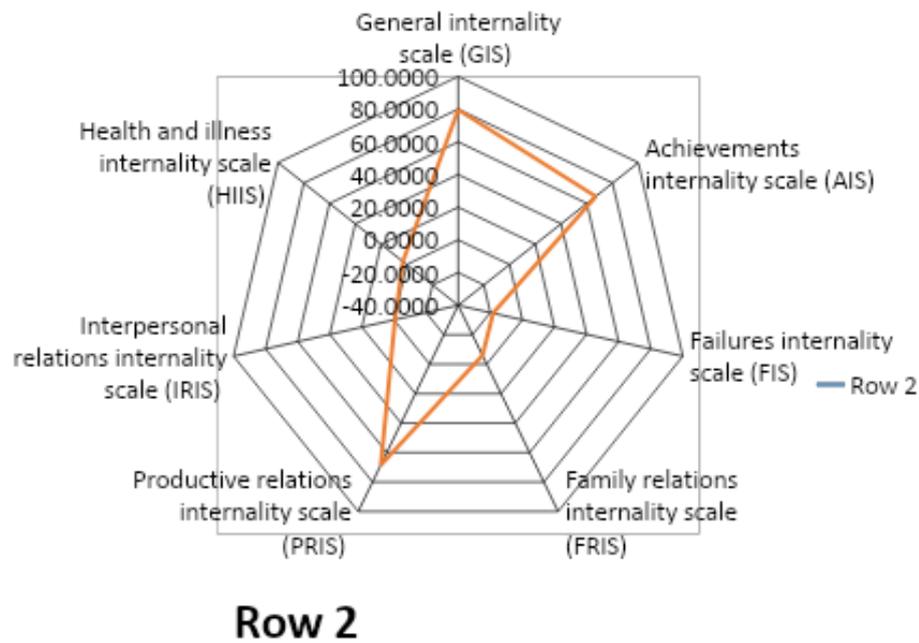
6. Results of the test to determine way of thinking were distributed as shown in Figure 4.



7. Degree of respondents' personality traits under the mini-SMPR questionnaire:



8. Results of the Rotter test on the definition of control locus:



9. According to the results of the descriptive statistics, the arithmetic mean and the median (Table 2) by the PDT technique of Melnikov and Yampolsky indicate the fact that users generally have increased indicators on the scales of “neuroticism” and “depression.” This indicates that the user has high anxiety, a sense of anxiety and fear, a tendency to doubt, and indecision.

Table 2

	Median	Mean
Neuroticism	12	12.63
Psychoticism	8	8.48
Depression	14	13.22
Conscientiousness	8	7.69
Disinhibition	7	7.01
Total activity	6	6.60
Timidity	6	6.21
Sociability	10	10.09
Aesthetic sensibility	7	7.37

Femininity	5	5.18
Mental instability	10	9.71
Asociality	8	7.56
Introversion	9	9.33

Note: median — median, mean — arithmetic mean.

Average indicators on the scale of “psychoticism” indicate that the person as a whole tends to accept criticism and remarks if they are not excessive. He/she has their own opinion on many issues and tries to defend it. He/she is more inclined toward cooperation and compromise than rivalry. Mean values on the scales “sociability,” “timidity,” and “total activity” characterizes the user as a person, often bold and decisive but not so much to get involved in an escapade. As a rule, before making a decision, he/she comprehensively weighs all “pros” and “cons.”

Mean values on the scales “conscientiousness” and “disinhibition” indicate that users tend to focus on the social environment, exercise prudence in the process of life, but experience anxiety and unrest in stressful situations. In general, he/she is demanding of themselves and of other people. Most often he/she seeks to act in accordance with his/her honor and conscience. But there may be deviations from the generally accepted moral norms. Values on the scale “aesthetic sensibility” indicate that the user is a moderate critical thinker, wary of authorities and nonstandard situations. He/she is moderately sensitive and refined, with a good artistic taste. In life, he/she is equally guided by logic and reason and by emotions. The parameter “femininity” indicates that a person is characterized by practicality; the user seeks to soberly and realistically assess the situation, but at the same time, he/she is not averse to dream and to think about himself/herself and other people, about life and events, and sometimes likes to philosophize. Values on the scales “mental instability,” “antisociality,” and “introversion” are averaged, which suggests that the user is moderately adaptive, may experience anxiety and loss of control, and has average mental stability and purposefulness of behavior.

10. Table 3 presents the arithmetic mean and median scales of the individual typological questionnaire of L. N. Sobchik. The results indicate the dominant mean values on the scales for the users:

Table 3

	Mean	Median
Aggravation	1.48	1
Extraversion	6.16	6
Spontaneity	5.64	6
Aggressiveness	5.22	5
Rigidity	4.75	5
Introversion	5.04	5
Sensitivity	5.10	5
Anxiety	4.99	5

Lability	5.77	6

Note: median — median, mean — arithmetic mean.

1. “Extroversion” shows the user’s appeal to the world of real things.
2. “Spontaneity” reflects characteristic patterns of behavior with a tendency toward self-assertion, adequate self-esteem, and desire for leadership in a social group.
3. “Aggressiveness” shows a tendency toward self-assertion, active self-realization, and the desire to defend one’s own interests.
4. “Rigidity” shows that the user is characterized by a certain resistance to stress and pedantry.
5. “Introversion” reflects a certain degree of user shyness and lack of communication.
6. “Sensitivity” reflects the fact that users are moderately sensible, and they are very sensitive to environmental pressure.
7. “Anxiety” reflects the user’s cautiousness in decision-making, responsibility toward others, and social harmony of the environment (tendency for personal accentuation).
8. “Lability” reflects the fact that the user is characterized by mood variability and motivational instability.

Low scores on the scale: “aggravation” shows that the user is not inclined to highlight personal problems and often seeks to conceal the facts of treatment or not to accept them, probably at an unconscious level.

Factor analysis.

The factor analysis carried out through main components using varimax rotation made it possible to identify three main factors with a total effect of 37% (which makes possible to describe 37% of variables). Table 4 presents the scales included in the first factor (“psychoemotional stress”).

Table 4

	Factor 1
Personal anxiety	0.425
Neuroticism	0.836
Psychoticism	0.707
Depression	0.835
Timidity	0.496
Mental instability	0.854
Introversion	0.426
Distancing	0.422
Admission of responsibility	0.489
Escape-avoidance	0.669
Avoidance	0.534
Procrastination	0.518
Hypervigilance	0.695
Regression, %	0.785
Compensation, %	0.582
Projection, %	0.727
Substitution, %	0.676

Overall tension, %	0.713
Aggravation	0.562
Spontaneity	-0.419
Sensitivity	0.474
Anxiety	0.759

Based on the presented data, we can conclude that this factor mostly described the scales associated with emotional instability (“neuroticism,” “psychoticism,” “depression,” “timidity,” “anxiety,” “sensitivity,” “mental instability”) and ways of coping with stress (scale of psychological defense and coping strategies).

It can be assumed that the presented data demonstrates the relationship among the subjects in the studied sample of emotional instability and coping strategies. A connection with this factor was observed in the scales “neuroticism,” “psychoticism,” “depression,” “anxiety,” “mental instability,” “regression,” “projection,” “total tension,” “escaping,” and “hypervigilance” to the greatest extent. It should also be noted that “spontaneity” was inversely related to this factor. This indicated that the studied group, when stressful situations and emotional stress arose, was not prone to spontaneous rash decisions but at the same time sought to defend against them through avoidance, considering many alternatives and increasing the use of psychological defenses. It follows that the first factor can be combined under the meaning of “psychoemotional stress” not only reflecting unconscious personality components manifested because of stressful situations but also showing the perceived basis of a person’s mental state defining patterns of his/her behavior and reaction to the situation.

Scales of the second factor are presented in Table 5.

Table 5

	Factor 2
Verbal and logical thinking	0.484
Disinhibition	0.623
Timidity	-0.631
Sociability	0.617
Confrontation	0.572
Problem solution planning	0.523
Positive re-esteem	0.506
Reactive formation, %	-0.463
Extraversion	0.659
Spontaneity	0.566
Aggressiveness	0.577
Introversion	-0.666

Based on the presented data, we can conclude that it described the relationship of open interaction with the outside world (scale “extroversion,” “sociability”) by searching for opportunities to achieve the desired (scale “positive re-esteem,” “planning to solve the problem”) but also with the willingness to defend their interests (scale “aggressiveness,” “confrontation”). This factor shows the social adaptability of a person, his/her assessment of himself/herself in the society, and his/her motivation and involvement in the process. It reflects the structure of the human personality, which combines three subsystems: personality, its representation in the system of interpersonal relations and in other people. It follows that the second factor can be combined under the value of “personalization.”

Scales of the third factor are presented in Table 6.

Table 6

	Factor 3
Subject-effective thinking	0.479
Creativity	0.404
Conscientiousness	0.577
Aesthetic sensibility	0.493
Femininity	0.525
Sensitivity	0.586
Ehlers technique	0.451
Intellectualization, %	0.607

Based on the data presented in the table, it could be noted that the increase in “sensitivity,” “conscientiousness,” “aesthetic sensibility,” and “femininity” was also directly related to the attempt to cope with traumatic experience using the “intellectualization” psychological defense. This indicated the peculiarity of the studied sample as seeking to protect themselves from the negative effects of the stress by reducing the significance for themselves and other reasons causing this conflict or psycho-traumatic situation. This factor combines the features of personality and components of mental activity and in fact reflects the leading trends of personality traits and character traits that determine the individual type of experience. It made it possible to combine them into a factor called “subjectivity of experience.”

In conclusion, it should be said that the three main factors we established, “psycho-emotional stress,” “personalization,” and “subjectivity of experience,” make it possible to fully appreciate the whole range of interacting elements of the user’s mental activity with the Master Kit software, thus revealing both deep structural changes and surface reactive (flowing) changes in the user’s mental state.

Discussion of results

The data analysis made it possible to establish the following:

1. The predominance of “denial” characterizes the sample as prone to blocking the receipt of traumatic experience. They were more inclined to deny some frustrating, alarming circumstances or some inner impulse or side of themselves. As a rule, the action of this mechanism is manifested in the denial of aspects of external reality, which, being obvious to others, are nevertheless not accepted and are not recognized by the personality itself. In other

words, it does not perceive information that is disturbing and may lead to a conflict arising from the manifestation of motives contrary to the basic mindsets of the individual or information that threatens his/her self-preservation, self-esteem, or social prestige.

2. When using “regression,” a person exposed to frustrating factors replaces the solution of subjectively more complex problems with relatively simpler and more accessible ones in the current situations. The use of more simple and familiar behavior patterns significantly reduces the total (potential) range of prevalence of conflict situations.

3. “Intellectualization” manifests itself in a fact-based “mental” way of overcoming a conflict or frustrating situation without experiencing it. In other words, the person suppresses experiences caused by an unpleasant or subjectively unacceptable situation using logical mind-sets and manipulations, even if there is convincing evidence in favor of the opposite. In this way of defense, there are often obvious attempts to reduce the value of an experience inaccessible to the individual. Thus, being in a conflict situation, people defend themselves from its negative effects by reducing the significance for themselves and others of the causes of the conflict or stressful situation. Thus, when coping with a stressful event, the studied group of Master Kit software users was inclined to block frustrating information, processing it through logical manipulations, and, in case of failure, transitioning to more accessible ones in the current situation.

4. Users tend to be in a state of actual stress, requiring the use of strategies to solve it. In solving the stressful situation, they sought, on the one hand, to postpone decision-making and rethink the problem from the positive side and, on the other hand, look for a more rational way out of the situation.

5. People using the Master Kit have a high degree of visual and imaginative thinking and a high level of creativity, with a low level of abstract and symbolic thinking.

6. The user can be described as a sensitive, impressionable, and easily vulnerable person. There is uncertainty in their abilities, the desire for consistency of actions and deeds, stereotypical lifestyle, and pedantry. He/she is characterized by a sufficiently high sense of duty and responsibility. He/she tries to be careful and obligatory. He/she is also quite sociable, kind, and caring and feels equally comfortable both in a big noisy company and alone. He/she shows a desire to expand the circle of acquaintances but mainly focuses on maintaining close emotional ties with a small group of friends. He/she adapts equally well to different conditions of life. Such person is courteous and polite, has emotional maturity and empathy, but is quite conforming at the same time, and difficulty adapts to stressful situations. In behavior, he/she not always has enough courage, determination, and perseverance. If he/she is interested, he/she becomes compliant and soft. Sometimes, he/she is able to take risks but only after a thorough consideration of his/her actions and their consequences.

Thus, according to the results of the study, the psychological characteristics of the Master Kit software users were identified, which made it possible to determine the psychological portrait of the user based on the “model” of psycho-physiological parameters.

It can be said that a potential software user is prone to immersion in subjectively experienced emotions, which speaks of high mindfulness and analysis of his/her own actions, has a desire for “self-control,” uses both conscious and unconscious self-regulation tools, tends to stay in a state of high actualization, has moderate anxiety, is focused on the social environment, is moderately adaptive to stressful situations, has emotional maturity, is congruent, and strives for comfortable and balanced psychological states.

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