Personal Predictors of Stress Resistance of Healthcare Professionals

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Abstract

Introduction. The article explores the problem of personal predictors of stress resistance of medical workers - subjects of clinical activity, insufficiently studied in the context of the predictor role of personal potential and its significant psychological education – dispositional optimism. The purpose of the study: to identify the relationships of optimism, properties that form personality adaptability, and neuropsychiatric resistance to determine the predictor role of the components of personal potential in the stress resistance of subjects of clinical activity. Methods. Applied: "Boston Stress Resistance Test", C. Scheyer and M. Carver optimism test, personality social adaptability questionnaire. Sample: doctors and nurses of medical and preventive institutions in Krasnodar (85 people). Statistical analysis was performed using methods of parametric, multifunctional and multivariate statistics in the SPSS-26 environment. Results. Subjects have a medium-high level of stress resistance, with high stress resistance prevailing among nurses (p < 0.05), and normal (medium) - in physicians (p < 0.01). The «positive expectations» indicator at the "high" and "above average" levels is set at 67,0%, and the «negative expectations» indicator is set at 33,0% of subjects. Adaptability is based on reduced creativity with an average level of conformity and lability. K-mean cluster analysis with inclusion of analysis of variance identified three clusters of different volumes. The first is the largest (55,3% of respondents); stress resistance corresponds to the normal range, and optimism is based on positive expectations. In the other two clusters, weak and very weak stress resistance is recorded during activity in the structure of optimism of the «negative expectations»
disposition. The properties of social adaptability remain unchanged under different manifestations of stress resistance. **Discussion.** Three types of stress resistance caused by different disposition indicators of optimism are statistically justified among healthcare professionals. The first type – “Optimistic stress resistance”, is based on the predominance of positive expectations. The phenomenon of reduced optimism established in two other clusters acts as a predictor of weak stress resistance of medical professionals and can be generalized as the “Type of alarming negative expectations”.

**Keywords**

adaptability, disposition optimism, conformity, creativity, lability, personality potential, healthcare professionals, stress resistance

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**For citation**


**Introduction**

The search for psychological resources of adaptation to changing living conditions, the preservation of emotional stability in the growing risks of technogenic, biogenic, sociogenic threats of the modern world today, without exaggeration, can be attributed to the most pressing problems of research in the human sciences. A lot of psychological research is devoted to the isolation of factors affecting the development of maladaptation states, and a significant part of them reveals the phenomenology of stress as a “trigger” of this process. A special object of analysis in a number of studies is the personality of a medical worker as a subject of professional activity, stressogenic in terms of the content of basic labor functions (Ilyasova, Farakhyanova, 2016; Soboleva, 2018; Pustashieva, 2017; Shadrina, 2019; Lambert et al., 2007; Abdollahi, Abu Talib, Yaacob & Ismail 2014; Rivera, Shapoval & Medeiros, 2021). Thus, in the materials presented by L. Sh. Kravchenko and Sh. U. Akhmedova (2017), it was shown that weak stress resistance leads to a decrease in the professional motivation of medical workers, to the manifestation of apathy, a negative attitude towards professional activity. In the studies of A. B. Rogozyans, on the
example of the personality of a doctor, the concept of an individual style of overcoming stress is substantiated, which the author considers as “a stable set of psychological means activated by the personality to overcome stressful situations and ensure the stability of the optimal level of mental stress, the preservation of holistic personality and authenticity of the personality” (Rogozyon, 2012, p. 2; Rogozyan, Yasko, 2012).

In analyzing the role of stress resistance in the process of coping with threats to the preservation of the integrity, authenticity of the person, the concept of personal potential, which defines this phenomenon as an integral characteristic of the level of personal maturity, which reflects the «measure of overcoming the given circumstances by the person» (Leontiev, 2011b, p. 7). Self-realization in social reality, resilience, openness to professional changes, a high level of personal maturity - distinctive features of the owner of a high level of personal potential formation (Leontiev, 2007, 2011a, 2011b; Yelnikova, Pronina, Faustova, Komlik, 2022; Yasko et al., 2021). Note that in a number of meaningful publications, works devoted to the analysis of the phenomenon of resilience are noticeably distinguished (Yelnikova et al., 2022; Makhnach, 2020; Tolochek, 2021, Fedotova, 2020; Yasko et al., 2021; Schwarz, 2018; Southwick, 2018, et al.)

In studies of different authors, some components of personal potential are noted: wisdom (Leontiev, 2011b); optimism (Gordeeva, 2010, 2011, 2018); adaptation to difficult life situations (Alexandrova, 2011); ability to withstand stress (Rasskazova, Gordeeva, 2011). Among these qualities of higher substructures of personality, adaptability stands out - an integral property determined by the correspondence/inconsistency between the goals, aspirations of the personality and the results achieved by it (Ermine, Titarenko, 2001, p. 9).

Describing the psychological mechanisms of human adaptation, V. A. Bodrov assigned a special place to the roles of personal factors, including resistance to external influences, stressors of different etiologies (Bodrov, 2007, p. 58).

Personal potential includes a complex education defined as optimism - the ability to think constructively, positively assess your future, act purposefully and resist the impact of difficult life circumstances, preserving psychological well-being, show resilience and adaptability (Gordeeva, 2011, p. 131). In modern psychology, two main concepts of optimism have developed (Ilyin, 2015). One of them is based on the theory of positive psychology and attributive style (Seligman, 2006; Abramson et al., 1989; Abramson, Seligman, Teasdale, 1978; Luthans & Broad, 2022). On a variety of data, researchers have shown that optimists explain negative events as unstable, caused by external causes, pessimists in contrast, as stable, global related to internal causes (Peterson, 2000). It is noted that people with a pessimistic attributive style are prone to mental status disorders, to depression (Abramson, Metalsky, Alloy, 1989; Alloy, Kelly, Mineka, Clements, 1990).

In line with dispositional theories of personality, the concept of M. F. Scheyer and C. S. Carver (Carver et al., 2010; Scheier et al., 2001; Brissette, Scheier, Carver, 2002). It treats optimism as a dispositional construct and interprets it in the context of expectations. Optimism is the positive expectation of the individual regarding the results of his activities;
pessimism, in contrast, is characterized by negative generalized expectations of man regarding the future (Carver et al., 2010). Speaking of optimism/pessimism, C. Carver and M. Scheyer imply a generalized sense of doubt or confidence about the positive or negative outcome of achieving life goals. Studies of the phenomenology of dispositional optimism in domestic psychology are presented in various scientific publications that significantly complement and expand this construct (Sychev, 2010; Tsiving, Evnina, 2013; Gordeeva, Sychev, Osin, 2010). In particular, Russian-language versions of the diagnosis of optimism as a style of explaining success and failure (STONE questionnaire), as well as the disposition optimism test (LOT) (Gordeeva et al., 2009, 2010) became a significant contribution to the methodology of scientific search.

Numerous studies have made it possible to call dispositional optimism a significant predictive indicator of subjective well-being. Individuals with high optimism are not inclined to develop anxiety and distress, the positive perception of the activity performed does not allow them to experience strong negative emotions leading to mental overload. Optimists, faced with difficulties, demonstrate the ability to positively reformulate the problem. An analysis of optimist coping strategies showed that they more often than pessimistic-oriented subjects use constructive ways of coping (planning, positive reassessment, search for emotional and social support) and less often turn to non-constructive strategies for avoiding and avoiding the problem (Enikolopov, Petrova, 2009; Zaitsev, 2012; Gordeeva, Lunkina, Sychev, 2018).

The considerable activity of researchers in the field of personal potential issues leads to the actualization of the problem of its predictor role in ensuring the stress resistance of subjects of professional communities exposed to the risks of vital threats arising in the process of activity, in particular, medical workers. In the empirical search, we formulated a hypothesis: in medical professionals, dispositional optimism plays a predictor role in ensuring stress resistance. The hypothesis determined the purpose of the experimental study: on a sample of medical professionals to identify the relationships of optimism, properties that form personality adaptability, and neuropsychiatric resistance to determine the predictor role of the components of personal potential in the stress resistance of subjects of clinical activity.

**Methods**

An empirical sample was made up of 85 medical workers of various medical and preventive institutions in Krasnodar (doctors, 52 people (Group n1); nurses, 33 people. (Group n2)). Applied: «Boston stress resistance test» (Shcherbatykh, 2006), Optimism Test by C. Sheyer and M. Karver (Sychev, 2008), social personality adaptability questionnaire (Posypanov, 2002).

The purpose of the «Boston stress resistance test» is to determine an individual's vulnerability to stress. The technique was developed by researchers at the University of
The optimism test of C. Scheyer and M. Carver is based on the concept of dispositional optimism. It allows you to determine the predominant attitude of the personality to everyday or difficult life situations. The results are determined by two scales: «positive expectations» and «negative expectations». People with high levels of optimism see desired outcomes as achievable, and people with low levels of optimism are more passive to their desires. When processing results, the following levels of optimism are determined: high (22 points or more); above average (19-21 points); below average (17-18 points); low (16 or less).

The conceptual basis of the methodology «Questionnaire of social adaptability of personality» by O. G. Posypanov is the provision on social adaptability as a complex property of personality (Posypanov, 2002). As part of this complex, three properties are distinguished that form the main scales of the questionnaire: «adaptability – conformity» ($Kn$), «adaptability – lability» ($Lb$), «adaptability – creativity» ($Kp$). The questionnaire contains 25 statements (8 statements on each scale), one of which (approved. no. 9) gives reason to consider the effect of the effect of social desirability in the analysis of individual results. The match of the answer with the «key» is estimated at 1 point, so the maximum score on each scale is 8 points. The author proposes to consider five options for «profiles» of social adaptability, depending on the ratio of the levels of severity of indicators for each of the scales: the «profile» of the smallest social adaptability (indicators for all scales in the range of 0-2 points); «profile» of increased conformance ($Kn$ scale 4-6 points, other scales in the range of 0-2 points); «profile» of increased creativity ($Kp$ scale 4-6 points, other scales in the range of 0-2 points); «profile» of increased lability ($Lb$ scale 4-6 points, other scales in the range of 0-2 points); «profile» of maximum adaptability (indicators on all scales in the range of 4-8 points).

Methods of parametric (mean, standard deviation, Student’s t-test, Pearson correlation analysis), multifunctional ($\phi$- Fischer criteria) and multivariate statistics (cluster analysis by K-means; analysis of variance). Data processing is performed using the statistical program SPSS-26.

Results

The measure of stress resistance of healthcare professionals corresponds to the range of the average level ($M = 32.6\pm7.45$). If you group individual test results, we see that high stress resistance is observed in 38 people (44.7%), of which 24 doctors (46.2%) and 14 nurses (43.8%). Normal stress resistance was found in 37 people (43.5%), of which 22 doctors (42.3%) and 15 people (46.9%) of the average medical staff. Poor stress resistance was observed in 10 people (11.8%), of which 6 doctors (11.5%) and 4 (12.5%) nurses (Table 1).
Table 1
Measures of stress resistance of healthcare professionals

<table>
<thead>
<tr>
<th></th>
<th>High stress resistance</th>
<th>Normal stress resistance</th>
<th>Weak stress resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pers. % M±σ</td>
<td>Pers. % M±σ</td>
<td>Pers. % M±σ</td>
</tr>
<tr>
<td>Doctors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n₁ = 52 pers.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 46.2 26.1 ±3.6*</td>
<td>22 42.3 35.3 ±2.93**</td>
<td>6 11.5 47.5 ±7.56</td>
<td></td>
</tr>
<tr>
<td>nurses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n₂ = 33 pers.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 43.8 27.8 ±2.04*</td>
<td>15 46.9 33.4 ±1.92**</td>
<td>4 12.5 48.0 ±0.02</td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N = 85 pers.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38 44.7 26.7 ±3.2</td>
<td>37 45.2 34.5 ±2.70</td>
<td>10 11.8 47.7 ±5.64</td>
<td></td>
</tr>
</tbody>
</table>

Note: n₁ ↔ n₂: «*» - p < 0.05 at t = 2.37; «* *» - p < 0.01 at t = 5.88. Bold indicates indicators that are statistically significantly predominant in comparisons.

Comparison of the characteristic distribution parameters in subgroups n₁ and n₂, which found high and normal stress resistance, gives reason to say that the indicator corresponding to the high stress resistance range is more pronounced in nurses (at t = 2.37 p < 0.05), and the indicator of the «normal stress resistance» range has a higher value in the group of doctors (at t = 5.88 p < 0.01). There are no differences in the «weak stress resistance» parameter. There is also no difference in the proportions of the analyzed levels (in all comparisons φ*<sub>эмп.</sub> < φ*<sub>кр.</sub>).

Analysis of the results for the optimism test showed that it is in the range of diagnostic values of the average level (M = 20.0±3.00). 32 people (37.6%) have a high level of optimism, of which 24 doctors (46.2% of the n₁ group) and 8 people are nurses (24.2% of the n₂ group). The result above average was shown by 25 people (29.4%), of which 12 doctors (23.1% of the n₁ group), and 13 nurses (39.4% of the n₂ group).

The «below average» result was found by 16 (18.8%) respondents: 7 doctors (13.5% of the n₁ group) and 9 nurses (27.3% of the n₂ group). A low level of optimism was diagnosed in 12 respondents (14.1%). Of these, 9 doctors (17.3%) and 3 nurses (9.1%) (Table 2).
Table 2

Indicators of optimism of medical professionals

<table>
<thead>
<tr>
<th></th>
<th>High levels of optimism</th>
<th>Above the average</th>
<th>Below average</th>
<th>Low level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pers. (%) M±σ</td>
<td>Pers. (%) M±σ</td>
<td>Pers. (%) M±σ</td>
<td>Pers. (%) M±σ</td>
</tr>
<tr>
<td>Doctors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n₁ = 52 pers.)</td>
<td>24 (46.2)*</td>
<td>23.25 ± 0.85</td>
<td>19.83 ± 0.94</td>
<td>17.57 ± 0.53</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9^ (17.3)</td>
<td>15.0 ± 1.5</td>
</tr>
<tr>
<td>Nurses</td>
<td>8 (24.2)*</td>
<td>22.63 ± 0.52</td>
<td>20.23 ± 0.73</td>
<td>17.11 ± 0.33</td>
</tr>
<tr>
<td>(n₂ = 33 pers.)</td>
<td></td>
<td></td>
<td>9 (27.3)</td>
<td>3 (9.1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 (9.1)</td>
<td>16 ± 0</td>
</tr>
<tr>
<td>Overall</td>
<td>32 (37.6)</td>
<td>23.09 ± 0.82</td>
<td>20.04 ± 0.84</td>
<td>17.31 ± 0.48</td>
</tr>
<tr>
<td>(N = 85 pers.)</td>
<td></td>
<td></td>
<td>16 (18.8)</td>
<td>12 (14.1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15.25 ± 1.36</td>
<td></td>
</tr>
</tbody>
</table>

Note: doctors ↔ medical staff: «*» ϕ* = 2.09, p < 0.01; «^» - ϕ* = 1.70, p < 0.045; «+» - ϕ* = 1.56, p < 0.05. Bold indicates indicators that are statistically significantly predominant in comparisons.

As can be seen from the data given in table 2, a high level of optimism is more typical for doctors than for nurses (at ϕ* = 2.09, p ≤ 0.01); above-average and below-average levels predominate among nurses (at ϕ* = 1.70 and ϕ* = 1.56, p ≤ 0.045 and ρ ≤ 0.05, respectively).

At the next stage of the study, the diagnosis of social adaptability of medical workers was carried out. It was established: as an integral personality property, adaptability is at the average level (M = 10.7 ± 1.12, which is 44.4% of the maximum indicator). At the same time, there were no differences in indicators between the n₁ and n₂ groups (t_emph < t_emph >). The «profile» of adaptability is specific: it does not correspond to any of the «profiles» described by O. Posypanov and can be defined as a «profile» of reduced creativity with an average level of conformity and lability. The difference in the profiles of the analyzed subgroups is noted by the «Кр», parameter, which, despite being in the range of reduced values, is significantly more pronounced in the group of doctors (M = 2.33 ± 1.22) compared to nurses (M = 1.79 ± 0.41); at t = 2.94 p < 0.05 (Fig 1).
Figure 1
«Profiles» of social adaptability of healthcare professionals

Notes: KN – «Adaptability-Conformity» scale; LB – «Adaptability-lability» scale; KR – «Adaptability-creativity» scale; “*” - $t = 2.94 \ p < 0.05$. Bold indicates indicators that are statistically significantly predominant in comparison.

Results of Processing the entire data array by cluster analysis by K-average followed by testing the intergroup differences by analysis of variance showed the following.

Seven variables ("stress resistance"; "optimism"; "negative expectations"; "positive expectations"; "adaptability-conformity"; "adaptability-lability"; "adaptability-creativity") formed indicators of three clusters of different volumes. The first cluster is the largest. It combined the characteristics of 47 respondents ($n_1$ - 28 people/59.6%; $n_2$ - 19 people/40.4%); the next largest - the third cluster, it includes indicators of 32 examined ($n_1$ - 22 people/68.8%; $n_2$ - 10 people/31.2%). The smallest is the second cluster: it includes data on six respondents, of which the third part is doctors (2 people), and 2/3 is nurses (4 people).

The results of the analysis of variance strongly show that the properties of social adaptability do not play a predictor role in the formation of stress resistance: they remain at the same level with both very weak and normal stress resistance. Differences between clusters are formed according to the criteria of stress resistance, optimism and integrating its qualities: «positive expectations»; «negative expectations» (table 3).
The most stress-resistant medical professionals included in the first cluster: the average SU score here was 27.7 points, which corresponds to the range of normal stress resistance. Physicians and nurses equally show high and above average optimism (M = 21.3). Here, significantly less than in the third cluster, the indicator of reflection of negative expectations is expressed (M = 1.74 versus 2.91) and these respondents are more actively guided to the desired results as achievable («positive expectations» M = 11.1 versus 7.2 and 9.3 in the second and third clusters).

Table 3

Results of K-mean clustering with inclusion of analysis of variance (ANOVA)

<table>
<thead>
<tr>
<th>Number of observations in each cluster</th>
<th>Variable indicators (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CU&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>1</td>
<td>47</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>32</td>
</tr>
<tr>
<td>Valid</td>
<td>85</td>
</tr>
<tr>
<td>Passed</td>
<td>0</td>
</tr>
</tbody>
</table>

Inter-cluster differences from analysis of variance:

1. \( F=141.071 \ p<.000 \)
2. \( F=13.79 \ p<.000 \)
3. \( F=8.23 \ p<.001 \)
4. \( F=21.86 \ p<.000 \)

Notes: CU - stress resistance; Opt - optimism; NE - negative expectations; PE - positive expectations; CP - «adaptability-conformance»; LB - «adaptability-lability»; KR - «adaptability-creativity».
The weak and very weak stress resistance characteristic of respondents included in the third and second clusters (M = 36.3 and M = 51.0, respectively) is accompanied by reduced optimism (M = 18.4 and M = 18.0, respectively), passivity in relation to their desires. This phenomenon is caused by a weakly expressed orientation to positive expectations (M = 9.3 and M = 7.2, respectively), with the activity of the internal mood of the personality to negative expectations (M = 2.91 and M = 1.2, respectively).

**Discussion**

In the process of analyzing psychological resources of coping with threats to the preservation of the integrity, authenticity of the person, the concept of personal potential, which defines this phenomenon as an integral characteristic of the level of personal maturity (Leontiev, 2007, 2011a, 2011b), has special heuristics. Personal potential includes complex education - optimism explored in the methodological framework of two main concepts: positive psychology and attributive style (Seligman, 2006; Abramson et al., 1989; Abramson, Seligman & Teasdale, 1978) and dispositional theories of personality (Carver et al., 2010; Scheier et al., 2001; Brissette, Scheier, Carver, 2002). Numerous studies make it possible to call dispositional optimism a significant predictive indicator of subjective well-being, constructive coping with stresses (Enikolopov et al., 2009; Zaitsev, 2012; Gordeeva et al., 2018). The considerable activity of researchers in the field of personal potential issues leads to the actualization of the problem of its predictor role in ensuring the stress resistance of subjects of specific professional communities, in particular, medical workers, which determined the problem of the study we conducted: the justification of personal predictors of stress resistance of subjects of clinical activity.

The differences established in the data of the first stage of statistical analysis in the indicators of stress resistance, levels of optimism, properties of adaptability-creativity between subjects of medical and nursing activities were confirmed in the results of multidimensional statistics, which made it possible to consolidate persons with congruent diagnostic indicators into certain clusters.

The obtained results indicate that adaptability as a complex property of the personality of a medical worker is determined by the average level of conformity formation and lability, while insufficient creativity does not allow to actively influence the structure of interaction of the personality with the social environment, creating specific “barriers” in the implementation of joint activities, which is especially important in changing environmental conditions.

Three types of stress resistance are identified depending on the level of severity of this property. For the first, having the greatest representation among medical professionals (55.3%), normal stress resistance is characteristic, closely interrelated with actively demonstrated optimism, based on a significant predominance of positive life expectations.
over negative ones. This species can be defined as «Optimistic stress resistance». It forms the core of personal potential and characterizes a mature, authentic personality.

The personal potential of respondents who made up two other types of stress resistance (weak and very weak) does not have a resource of positive expectations. The phenomenon of reduced optimism established in these clusters obviously acts as a predictor of weak stress resistance of medical professionals. There is reason to define conditionally these combinations of personal qualities in general as «Type of disturbing negative expectations».

The study confirmed the hypothesis of the predictor role of dispositional optimism in ensuring the stress resistance of medical professionals. The results of the analysis indicate that in the practice of consulting work, special attention should be paid to providing psychological support to owners of the type of alarming negative expectations, directing efforts to find personal resources for the formation of positive expectations, developing personal potential - the basis of individual sustainability in a changing world, a world of threats to stability and well-being of both society and each individual.

**Conclusion**

It has been established that medical professionals are characterized by an average level of stress resistance, and it is more pronounced in the group of doctors, while among nurses there are significantly more owners of high stress resistance.

It has been shown that dispositional optimism is a component of the personal potential of doctors and nurses who have predominantly medium-high stress resistance, which gives reason to consider positive expectations as a psychological education that plays the role of a predictor of stress resistance.

It has been shown that the predictor role of dispositional optimism in the manifestation of stress resistance among medical professionals can be represented by the types: “Optimistic stress resistance” and “Type of alarming negative expectations” – a type that involves active psychological support for subjects of medical activity.

Adaptability of medical professionals is ensured by an average level of conformance and lability, however, the «adaptability-creativity» property is poorly developed, which can complicate the adoption of flexible, non-standard decisions when carrying out activities in conditions of vital threats.

**Literature**


GENERAL PSYCHOLOGY, PERSONALITY PSYCHOLOGY


Author Contribution

Bela Aslanovna Yasko – research concept and its theoretical justification, methodological justification of empirical search, writing the text of the Introduction section, scientific editing of the texts of the “Results” section; “Discussion of results”; a critical revision of the article’s content.

Lyudmila Sergeevna Skripnichenko – mathematical and statistical processing of empirical data in the SPSS-26 program; writing the sections “Results”, “Annotation”, “Guidelines”; preparation of the general text of the article; working with sources.

Sergey Nikolaevich Strikhanov – formation of an empirical sample, discussion of the results and their practical significance, writing of the review part of the article.

Diana Davidovna Tedoradze – selection and conduct of psychodiagnostic procedures, presentation of primary statistics.

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Conflict of Interest Information

The authors have no conflicts of interest to declare.