

# Psychometric Techniques in Assessing Environmentally Responsible Behaviour: Profiling Professionals for Propensity to Deviant Behaviour

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**Keywords:** Adaptation of the Psychometric Technique, Psychology of Environmentally Responsible Behaviour, a Tendency to Deviant Behaviour, Environmental Education, Specialist of the Extreme Profile, Reliability, the Validity of the Test Questionnaire, Standardisation of the Test Questionnaire.

**Abstract:** The article explores the adaptation process of the psychometric methodology for assessing the inclination towards deviant behaviour for the utilization by experts of the relevant category - extreme profile and ecologically responsible behaviour. During the adaptation, a comprehensive examination of fundamental characteristics of the psychometric technique, such as reliability and validity, is intricately detailed. The particulars of the mechanism for translating the content of the psychometric technique into the Uzbek language, followed by mathematical and statistical verification, are elucidated. Additionally, the standardisation process is discussed to ascertain the norm for the target sample - specialists of the extreme profile.

## 1 INTRODUCTION

As you are aware, the effective professional conduct of specialists in an extreme profile demands the maintenance of a proper level of official discipline, socially responsible behaviour, moral and psychological reliability, moral stability, high competence, mutual assistance, and dedication. Conversely, deviant actions and behaviour among specialists pose a rather dangerous and destabilizing factor, negatively impacting the quality of task performance and the moral and psychological well-being of professional teams. Addressing these concerns necessitates systematic efforts to prevent deviant behaviour, with the issue of psychodiagnosis of the phenomenon becoming a predominant aspect, requiring a reliable, valid, and standardized psychometric technique.

An analysis of the scientific literature reveals that, to date, a relatively small number of psychometric techniques have been developed, typically applicable only for the psychodiagnosis of individual manifestations of deviant behaviour among specialists in an extreme profile. Additionally, A.N. Orel presents a test questionnaire for determining the inclination towards deviant behaviour, offering an integrated approach to psychodiagnosis, considering

the gender characteristics of the subjects - Kleyberg, Yu. A. (2004). This tool covers a broad spectrum of deviant behaviour manifestations through relevant scales, featuring two sets of statements (98 statements for males, 108 statements for females), detailed instructions, an appropriate processing mechanism, and result interpretation. To address the issue of prevention of falsification, i.e., conscious or unconscious distortion of psychodiagnostics results by subjects, the author introduces a reliability scale in the traditional form.

Despite the advantages of this test questionnaire, as pointed out by M.A. Shamanaeva, L.A. Dudko, D.S. Statsenko, the tool possesses several shortcomings that significantly restrict its application in psychological and pedagogical practice - Shamanaeva, M. A., & et. al. (2018). These limitations mainly stem from a weak differentiating and criterion function of the provided statements, the absence of suitable recommendations, and requirements for the qualifications and training level of a specialist conducting a psychodiagnostics examination. Given these circumstances, there is a pertinent need for a specific study to adapt the test questionnaire for determining the tendency toward deviant behaviour for use within the relevant category - specialists of an extreme profile.

## 2 METHODS

To adapt the test questionnaire for determining the tendency to deviant behaviour, an empirical study was organized and conducted, which was implemented taking into account three main steps. They are due to both the requirements for psychometric tools as a whole and the conditions for the activities of specialists in an extreme profile:

The first step is the translation of the content of the test questionnaire into Uzbek with subsequent mathematical and statistical verification of the acceptability of the translation.

The second step is to determine the reliability, and validity of the test questionnaire in order to study the stability, and accuracy of psychodiagnostics results regarding the phenomenon under study.

The third step is the standardization of the test questionnaire to determine the norm regarding the target sample, i.e. specialists of an extreme profile.

Thus, as part of the first step of the empirical study, the instructions and statements of the test questionnaire were translated into the Uzbek language, which specialist philologists and psychologists conducted. This process was focused not on the literal but mainly on the semantic translation. Further, to confirm the adequacy of the translation, a psychological examination was conducted on a test questionnaire on a bilingual sample (n = 87) of both female (n = 43) and male (n = 44) sex, aged 20 to 42 years (average age - 26.7 years). That is, first, respondents (specialists of the extreme profile) were asked to answer the questionnaire questions in Uzbek and then in Russian language (original language) (Fig. 1)."

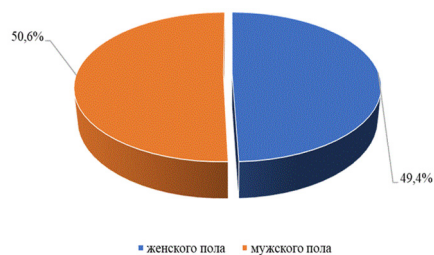


Figure 1: Empirical Study: Quantitative Analysis of Test Questionnaire Translation Adequacy for Deviant Behaviour Tendency in Uzbek, by Gender (n=87).

To enhance the reliability of the adequacy test for the translation, a re-examination in the Russian language was conducted after 6-7 days, minimizing the likelihood of respondents memorizing the statements of the test questionnaire. A specially designed answer form and stencil-type processing key were employed to streamline the examination procedure and initial result processing.

The confirmation of the adequacy of the translation relied on correlation analysis of the obtained results (in raw scores) from the survey conducted in Uzbek and Russian languages. Preliminary analysis, based on the non-parametric Kolmogorov-Smirnov criterion, revealed that the empirical data significantly deviated from normal distribution. Consequently, correlation analysis was performed using the nonparametric Spearman criterion through the SPSS software package.

Moving to the second step of the empirical study, retest reliability for the test questionnaire assessing the tendency toward deviant behaviour was explored on the same sample of extreme profile specialists during a second examination (after 7-8 days). A correlation analysis was then conducted on the obtained indicators. This phase involved 191 specialists of the extreme profile, comprising both female (n = 87) and male (n = 104) participants, aged 20 to 44 years (average age - 26.9 years). Among the total respondents, 98 individuals took the survey in Uzbek, and 93 in the Russian language. Similar to the previous stage, preliminary analysis, according to the non-parametric Kolmogorov-Smirnov criterion, indicated a statistically significant departure from normal distribution. Therefore, correlation analysis was performed using the nonparametric Spearman criterion with the assistance of the SPSS software package (Fig. 2).

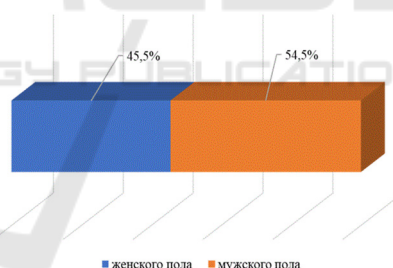


Figure 2: Quantitative characteristics of the sample of the empirical study of the retest reliability of the test questionnaire for determining the tendency to deviant behaviour on the basis of sex (n = 191).

In the second step of the empirical research, the next key indicator studied was the validity of the test questionnaire. This crucial aspect was assessed by comparing the results of the survey (the second round with n = 191 for reliability) with the outcomes of expert evaluations regarding the participants' inclination towards deviant behaviour. The assessment aligned with the specific feature, mirroring the scales of the test questionnaire. This alignment facilitated the subsequent analysis to determine the empirical validity coefficient.

Sixty-four psychologists, comprising both female (n = 34) and male (n = 30) practitioners with hands-on experience working with extreme profile specialists, participated in the expert evaluation. The peer-review utilized a well-established form to assess tendencies toward deviant behaviour in extreme profiles. This form provided suitable evaluation criteria, a ten-point rating scale, and a standardized mechanism for processing the obtained results.

Preliminary analysis of the survey and expert evaluation results, according to the non-parametric Kolmogorov-Smirnov criterion, revealed a statistically significant deviation from normal distribution. Subsequent correlation analysis employed the nonparametric Spearman criterion using the SPSS software package. As mentioned earlier, the final phase of the empirical study, the third step, focused on standardizing the test questionnaire based on survey results from 976 extreme profile specialists. This group included both female (n = 427) and male (n = 549) participants, aged 20 to 45 years (average age - 26.6 years) (Fig. 3).

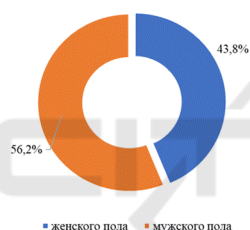


Figure 3: Standardization of Deviant Behaviour Test Questionnaire: Quantitative Analysis by Sex in a Sample of 976.

Simultaneously, the standardization sample formation was carried out randomly, employing a generated table of random numbers. These steps ensured a normal distribution of the acquired psychodiagnostics data, confirmed through the utilization of the non-parametric Kolmogorov-Smirnov criterion. For the standardization process, the widely adopted Stan scale, specifically the Standard Tens proposed by R.B. Cattell - Nasledov, A. (2004) - Sidorenko E. V. (1996), was employed. Two versions of this scale were used - the original version and an altered version where the ten-point scale proposed by R.B. Cattell was transformed into a four-point scale. Throughout the standardization process, various mathematical derivatives such as the mean (M), standard deviation ( $\sigma$ ), asymmetry indicators (A), excess (E), etc., were computed. These calculations facilitated the graphical distribution of raw scores according to standard estimates.

During the initial phase of the empirical study, the outcomes of the correlation analysis substantiate a noteworthy positive correlation in the examination results across all diagnostic scales, including sincerity. The mean statistical coefficient for translation adequacy, applicable to both female and male versions, stands at 0.83 with  $p < 0.05$ , a level we find entirely acceptable, affirming the respondent's accurate understanding of the translated instructions and statements in the test questionnaire (Table No. 1).

Table 1: Average statistical coefficient of translation adequacy for both the female and male versions is 0.83 at  $p < 0.05$ .

№	Names of comparison scales	Correlation coefficients at $p < 0.05$	
		female version	male version
1	Scale of sincerity (in Uzbek) & Scale of sincerity (in Russian)	0.87	0.85
2	Scale of propensity to overcome norms and rules (in Uzbek) & Scale of propensity to overcome norms and rules (in Russian)	0.84	0.86
3	Scale of tendency to addictive behaviour (in Uzbek) & Scale of tendency to addictive behaviour (in Russian)	0.83	0.82
4	Scale of propensity for self-damaging and self-destructive behaviour (in Uzbek) & Scale of propensity for self-damaging and self-destructive behaviour (in English)	0.74	0.75
5	Scale of propensity for aggression and violence (in Uzbek) & Scale of propensity for aggression and violence (in English)	0.92	0.9
6	Scale of volitional control of emotional reactions (in Uzbek) & Scale of volitional control of emotional reactions (in Russian)	0.88	0.9
7	Scale of propensity for tort behaviour (in Uzbek) & Scale of propensity for tort behaviour (in Russian)	0.7	0.7
8	Scale of acceptance of the female social role (for women) (in Uzbek) & Scale of acceptance of the female social role (for women) (in English)	0.84	0.86

In the second phase of the empirical study, the results of the correlation analysis provide clear confirmation that the coefficient of retest reliability for the considered test questionnaire averages 0.78 at  $p < 0.05$ . This includes the female version in both Uzbek and Russian languages with a reliability coefficient of 0.8 and the male version in both Uzbek and Russian languages with a reliability coefficient of 0.76. These figures represent acceptable indicators for the reliability of the test questionnaire in question (Table No. 2).

Furthermore, the results of the correlation analysis between the survey results on the test questionnaire and expert evaluation indicate that the average coefficient of empirical validity for the test questionnaire is 0.8 at  $p < 0.05$ . This indicator strongly confirms the satisfactory accuracy of the survey results, making it an acceptable measure of the validity of the test questionnaire in question (Table No. 3).

Table 2: Results of correlation analysis of the results of the survey on the test questionnaire for determining the tendency to deviant behaviour (n = 191).

№	Names of comparison scales	Correlation coefficients at $p < 0.05$			
		in Uzbek language		in Russian language	
		Female version	Male version	Female version	Male version
1	First Examination - Sincerity Scale & Second Survey - Sincerity Scale	0.82	0.79	0.81	0.8
2	First survey - scale of inclination to overcome norms and rules & Second survey - scale of propensity to overcome norms and rules	0.77	0.76	0.79	0.76
3	First Survey - Addictive Behaviour Propensity Scale & Second Survey - Addictive Behaviour Tendency Scale	0.79	0.76	0.77	0.76
4	The first survey is a scale of propensity for self-harming and self-destructive behaviours & The second survey is a scale of propensity for self-harming and self-destructive поведению	0.75	0.72	0.75	0.71
5	First examination - scale of propensity for aggression and violence & Second survey - scale of propensity for aggression and violence	0.84	0.82	0.83	0.83
6	The first examination - the scale of volitional control of emotional reactions & the second survey - the scale of volitional control of emotional reactions	0.82	0.8	0.83	0.82
7	The first survey is a scale of propensity for delinquent behaviour & the second survey is a scale of propensity for delinquent behaviour	0.8	0.71	0.8	0.7
8	The first survey is the scale of acceptance of the female social role (for women) and the second survey is the scale of acceptance of the female social role (for women).	0.79	0.72	0.77	0.71

Table 3: Results of correlation analysis of the results of the survey on the test questionnaire for determining the tendency to deviant behaviour and expert assessment (n = 191).

№	Names of comparison scales	Correlation coefficients at $p < 0.05$
1	Examination by means of a test questionnaire - a scale of inclination to overcome norms and rules & Expert assessment - a tendency to overcome norms and rules	0.78
2	Test Questionnaire Examination - Addictive Behaviour Propensity Scale & Peer Review - Tendency to Addictive Behaviour	0.79
3	Test Questionnaire Examination – Self-Damaging and Self-Destructive Behaviour Scale & Peer Review – Propensity for Self-Damaging and Self-Destructive Behaviour	0.77
4	Examination by means of a test questionnaire - a scale of propensity for aggression and violence & Expert assessment - tendencies to aggression and violence	0.83
5	Examination with the help of a test questionnaire - a scale of volitional control of emotional reactions & Expert assessment - volitional control of emotional reactions	0.8
6	Survey with a test questionnaire - a scale of propensity for delinquent behaviour & Expert assessment - a tendency to tort behaviour	0.8
7	Survey by means of a test questionnaire - a scale of acceptance of the female social role (for women) & Expert assessment - acceptance of the female social role (for women)	0.83

During the final, third step of the empirical study, tables were devised to translate raw scores on the test questionnaire into a standardized scale and interpret the results, considering all available psychodiagnosics scales. Significantly, the standardization process resulted in the development of two options for interpreting the obtained results. The first option (the conventional standardized scale), primarily for psychological support, involves interpreting the examination results on psychodiagnosics scales. This means translating raw scores into a standardized scale and interpreting them based on the severity of the trait, considering each psychodiagnosics scale. The second option (modified stan scale), primarily for psychological selection or the selection of specialists, entails interpreting the survey results on the test questionnaire as a whole. In this case, raw scores are translated into a standardized scale, considering each psychodiagnosics scale, allowing the formation of one of four profiles that correspond to specific group recommendations.

### 3 CONCLUSIONS

Hence, the systematically organized and executed empirical study, aimed at adapting the test questionnaire for determining the tendency to deviant behaviour, essentially resulted in the creation of a bilingual psychometric toolkit with satisfactory reliability and validity. This toolkit provides two standardized options for interpreting the obtained results, deemed acceptable for practical application in the ongoing efforts to prevent deviant behaviour among specialists of an extreme profile. Simultaneously, various studies advocate the combined use of such methods with other psychodiagnosics tools and techniques. This collaborative approach not only yields a more reliable and scientifically grounded outcome but also significantly diminishes the risk of erroneous conclusions while fostering the development of more effective practical recommendations.

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