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**APPROBATION OF THE EXPANDED SCALE OF CULTURAL  
INTELLIGENCE IN RUSSIA**

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*Abstract*

The paper presents the results of approbation of the Expanded Cultural Intelligence Scale in Russia. Due to the growing intercultural interaction in a modern global society, it becomes important to study such personal characteristics, that ensure success during intercultural communication. Cultural intelligence is the capability of an individual to act and communicate effectively in culturally diverse settings. According to the concept of C. Earley and S. Ang, cultural intelligence consists of 4 factors: metacognitive, cognitive, motivational and behavioral. Differentiated structure of each factor of cultural intelligence, proposed later, enabled a more detailed study of this phenomenon. 1545 subjects completed the Russian version of the E-CQS. According to the results of our approbation, the E-CQS can be considered as a reliable and valid psychodiagnostic tool in Russia. Research on a representative Russian sample revealed good consistency and test-retest reliability of the E-CQS. Confirmatory factor analysis supported a factor structure, which is generally consistent with the original English version. Results on convergent and discriminant validity are in line with published data about the correlation of the main scales of the E-CQS with other types of intelligence and personal traits measured by the Big Five. Also, new data were obtained on the relationship between cultural intelligence and intercultural sensitivity and tolerance. In the absence of a suitable tool in Russian, approbation of the Russian version of the E-CQS provides deeper understanding of the factors and capacities of the effectiveness in intercultural interactions.

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**Keywords:** Cultural intelligence, intercultural communication, intercultural competence, psychodiagnostics, expanded scale of cultural intelligence.



## 1. Introduction

The accelerating cultural globalization with its contradictory but actively interacting processes of global and local trends clearly identified cultural diversity as one of the most important characteristics of the modern world. Differences between races, peoples, cultures, religions and subcultures do not disappear, but remain convex and visible on all countries. Intercultural competence is becoming an important condition for effective interaction in a wide range of spheres. In spite of high necessity, studies on individual capabilities for intercultural effectiveness remain sparse and unsystematic forming a gap in our understanding of why some individuals are more effective in culturally diverse situations. Therefore, Earley and Ang (2003) developed the construct of cultural intelligence (CQ) based on contemporary theories of intelligence (Sternberg, 1986). CQ is defined as an individual's capability to function and manage effectively in culturally diverse settings. CQ is a multidimensional construct comprising four factors: (1) metacognitive CQ (the mental capability to acquire and understand cultural knowledge) (2) cognitive CQ (knowledge about cultures, their similarities and differences) (3) motivational CQ (interest and confidence in functioning effectively in intercultural contexts) and (4) behavioral CQ (the capability to flex behaviors in intercultural interactions).

A significant stage in the CQ research was the development and validation of the 20-item Cultural Intelligence Scale (Van Dyne et al., 2008). The validated scale has greatly increased the empirical capacity of CQ and has inspired much research in the past ten years. Nevertheless, with the accumulation of empirical data, new tasks have arisen for a deeper understanding of cultural intelligence.

Thus, S. Ang and L. Van Dine with colleagues proposed a refined theoretical conceptualization of cultural intelligence and developed 37-item Expanded Cultural Intelligence Scale (E-CQS) (Van Dyne et al., 2012). Authors drew on existing research of intelligence and intercultural communication to identify sub-dimensions for each of the four primary factors of cultural intelligence.

Particularly, the researchers based on contemporary motivational perspectives (Deci & Ryan, 1985; Bandura, 2002) to identify *intrinsic interest* (valuing culturally diverse experience in and of itself because it is inherently satisfying), *extrinsic interest* (valuing the tangible, personal benefits that can be derived from culturally diverse experiences) and *self-efficacy* (having task-specific confidence in culturally diverse situations) as sub-dimensions of motivational CQ. For cognitive CQ, they differentiated *culture-general knowledge* (knowledge of the universal elements that constitute a cultural environment) from *context specific knowledge* defined as declarative knowledge about manifestations of cultural universals in a specific sphere and procedural knowledge of how to be effective in that sphere (Cushner & Brislin, 1996; Murdock, 1987; Triandis, 1994).

More than that, referring specifically to research on metacognition (O'Neil & Abedi, 1996; Pintrich & De Groot, 1990) authors delineated *planning* (strategizing before a culturally diverse encounter), *awareness* (knowing about cultural thinking and specific of cultural identity) and *checking* (reviewing assumptions and adjusting mental maps when actual experiences differ from expectations) as sub-dimensions of metacognitive CQ. Finally, they identify flexibility in *verbal behavior* (flexibility in vocalization) and *non-verbal behavior* (flexibility in communication that is conveyed via gestures, facial expressions, and body language), as well as *speech acts* (flexibility in communicating specific types of

messages such as requests, invitations, apologies, gratitude, disagreement in appropriate local standard) as key sub-dimensions of behavioral CQ (Hall, 1959; Spencer-Oatey, 2008).

## **2. Problem Statement**

In the absence of a suitable tool for assessing intercultural competence in Russian, approbation of the Russian version of the Expanded Cultural Intelligence Scale provides for deeper understanding of the factors and capacities of the effectiveness in intercultural interactions. The aim of our work is to validate the psychodiagnostic tool for measuring cultural intelligence as the central element of intercultural competence.

## **3. Research Questions**

The main research aim is to find empirical evidence supporting the proposed sub-dimensions of CQ and the psychometric properties of the Expanded Cultural Intelligence Scale (E-CQS) on the Russian-language sample.

## **4. Purpose of the Study**

The main goal of the study is to validate the Expanded Cultural Intelligence Scale on Russian sample.

- 4.1. The verification of the constructual equivalence of the E-CQS in Russian to the original requires evidence that the structure, the internal consistency and the relationship between the scales of the E-CQS fit to the original one.
- 4.2. To test the conceptual equivalence of the E-CQS we measured relationship between four factors and following variables a) other types of intelligence (IQ and EQ), b) Big Five personality traits, c) tolerance, d) intercultural sensitivity.

## **5. Research Methods**

- 5.1. The sample involved 1545 students and graduates of various specialties, 1047 (67.8%) women and 498 (32.2%) men in the age of 17 to 91 years (mean age  $28.46 \pm 11.82$  years) from 10 cities of Russia.
- 5.2. After receiving permission from the authors, experts made a direct and reverse translation of the E-CQS.

In Study 1, in addition to the E-CQS, respondents completed the following methods: 1) Big Five by R. McCrae and P. Costa in A. Khromov's adaptation; 2) Tolerance Index by G. Soldatova and etc.; 3) Scale of Intercultural Sensitivity by O. Khukhlaeva, M. Chibisova M.Y., Y. Logashenko based on Developmental Model of Intercultural Sensitivity of M. Bennet (N=1545). In Study 2 we measured

cultural intelligence with the E-CQS, the cognitive ability with the Wonderlik Personal Test and emotional intelligence with EQ questionnaire by D.V. Lucina (N=50).

5.3. Test-retest reliability. 44 students from the initial sample filled the E-CQS twice with an interval of 3 months, during which they listened to the lecture courses "Ethnopsychology" or "Psychology of Intercultural Communications."

5.4. Data was processed in IBM SPSS Statistics 23.0 and Mplus 7.

## 6. Findings

We obtained the following results.

### 6.1. Consistency and test-retest reliability of the scale.

The main factors of the E-CQS are characterized by high consistency (in all cases the Cronbach's alpha is above 0.80 in Table 01), which is consistent with the CQS, where the Cronbach's alpha varies for different factors and samples 0.71-0.85 (Van Dyne et al., 2008). The reliability-consistency of the sub-dimensions is lower (0.62-0.79), but considering that most of them have three items, these indicators are also acceptable.

**Table 01.** Means, standard deviation, consistency and test-retest correlation of the sub-dimensions of cultural intelligence

Variable	MN	SD	Cronbach's alpha (N=1545)	Test-retest reliability (N=44)
Overall CQ	169.17	29.78	0.93	0.62
Motivational CQ	43.26	8.62	0.82	0.69
Cognitive CQ	44.43	9.46	0.85	0.67
Metacognitive CQ	43.16	8.39	0.83	0.52
Behavioral CQ	38.32	9.46	0.86	0.67
Intrinsic interest	14.89	3.65	0.72	0.65
Extrinsic interest	14.13	3.64	0.62	0.60
Self-efficacy	14.25	3.31	0.73	0.72
Culture-general knowledge	22.93	4.96	0.68	0.70
Context specific knowledge	21.51	5.37	0.82	0.60
Planning	13.08	3.65	0.71	0.59
Checking	14.52	3.21	0.79	0.46
Awareness	15.56	3.24	0.68	0.30
Speech acts	12.98	3.61	0.67	0.62
Verbal behavior	12.38	3.57	0.65	0.55
Non-verbal behavior	12.95	3.63	0.69	0.61

Correlation analysis confirms test-retest reliability of most CQ factors ( $r = 0.52-0.72$ ). In only two cases, the test-retest correlation does not exceed 0.50: *awareness* and *checking* are relatively unstable as sub-dimensions of metacognitive CQ ( $r = 0.30$  and  $r = 0.46$ ,  $p < 0.05$ , respectively). In general, this result is consistent with both data on the stability of the basic factors of cultural intelligence (Van Dyne et al., 2008) obtained for the original version, and with data on the possibility of changing cultural intelligence under the influence of various external and internal factors (Earley, Ang, 2003).

Comparison of cultural intelligence indicators in the first and second measurements indicate that general CQ increases with retest ( $t = -2.62$ ,  $p < 0.05$ ) due to an increase of cognitive ( $t = -2.83$ ,  $p < 0.01$ ) and behavioral ( $t = -2.28$ ,  $p < 0.05$ ) CQ. This result completely corresponds to the data of the original version (Van Dyne et al., 2008), which the authors explain by the fact that between two measurements, respondents studied cultural values and participated in role-playing games. In this study, students also attended courses and participated in seminars related to the cultural context - "Ethnopsychology" and "Psychology of Intercultural Communications", which indicates the possibility of developing cultural intelligence in the learning process.]

## 6.2. The factor structure of the scale of cultural intelligence.

The factor structure of the original version of the scale was investigated by confirmatory factor analysis in two stages. At the first stage one used the CQS. The model, which includes four correlating latent factors (motivational, cognitive, metacognitive, and behavioural CQ), better described the empirical data, comparing to alternative models with independent factors or fewer (Van Dyne et al., 2008). At the second stage, using the E-CQS, it was shown 1) that each of the four factors can be represented as consisting of sub-dimensions, 2) the superiority of the model, including 11 primary sub-dimensions and 4 secondary factors, over the model including only 4 secondary factors (Van Dyne et al., 2012). In this paper, we also repeated these two stages.

The results of the first stage of confirmatory factor analysis on the Russian sample fully correspond to the original. The model, which includes four correlating latent factors (motivational, cognitive, metacognitive and behavioral factors), is characterized by acceptable (though low) indicators of conformity (CFI = 0.82, RMSEA = 0.065 (95% CI 0.063-0.066), SRMR = 0.057,  $\chi^2 / df = 7,45$ ) and significantly better fit to the data than the model, where these factors are independent ( $\Delta\chi^2 = 2506$ ,  $\Delta df = 6$ ,  $p < 0.01$ ). In the original work there is no data of fit of the model including a single secondary factor of cultural intelligence (Van Dyne et al., 2008): according to our data, this model is also significantly better comparing to the model with four independent factors ( $\Delta\chi^2 = 2459$ ,  $\Delta df = 4$ ,  $p < 0.01$ ), but its performance is somewhat worse than that of the first model. This suggests that such indicator as general cultural intelligence should be used with caution: the data confirms the presence of four related but meaningfully different factors.

At the second stage, a model including the 11 correlating sub-dimensions of the E-CQS was used as the base model. This model corresponds well to empirical data (CFI = 0.88, RMSEA = 0.056 (95% CI 0.054-0.058), SRMR = 0.044,  $\chi^2 / df = 5.80$ ) and significantly exceeds the model with uncorrelated subscales ( $\Delta\chi^2 = 9218$ ,  $\Delta df = 55$ ,  $p < 0.01$ ).

Thus, the results make it possible to conclude that a general indicator of cultural intelligence should

be used with caution, since empirical data rather supports a model with four interrelated factors than a model with a single secondary factor. The scale of cultural intelligence can be used as including four factors (motivational, cognitive, metacognitive and behavioural CQ). In general, the Russian version of the E-CQS is characterized by the same structure as the original version.

### 6.3. Conceptual equivalence: convergent and discriminant validity of the cultural intelligence scale

To verify convergent and discriminant validity, we applied a correlation analysis of the E-CQS with other methods.

Analyzing the relationship between cultural intelligence and other types of intelligence, we obtained the following results: 1) there was no significant correlation between IQ and general CQ, there are weak links between IQ and the metacognitive CQ and its some sub-dimensions - *extrinsic interest, context specific knowledge, planning*; 2) EQ relates positively to general CQ, as well as to the cognitive and behavioral CQ. Analyzing the relationship between CQ and Big Five, we identified weak relation of *extraversion* and *openness* with general CQ, as well as with motivational and cognitive factors. Thus, the obtained data are in line with the results of previous studies of CQ on the independence of the construct of cultural intelligence, and on the existence of certain connections with other types of intelligence and personal traits (Van Dyne et al., 2017).

**Table 02.** Correlation analysis of the E-CQS with IQ, EQ, Big Five, Tolerance index and Intercultural sensitivity scales

Variables	CQ	Motivational CQ	Cognitive CQ	Metacognitive CQ	Behavioral CQ
IQ	.263	.254	.247	.286*	.125
EQ	.384**	.269	.361**	.227	.397**
Big Five					
Extraversion	.219**	.247**	.205**	.119**	.146**
Agreeableness	.194**	.163**	.101**	.163**	.213**
Conscientiousness	.092**	.077*	.004	.140**	.090**
Neuroticism	-.046	-.077*	-.041	-.052	.014
Openness	.270**	.277**	.264**	.163**	.183**
Tolerance index					
General tolerance	.259**	.331**	.179**	.152**	.194**
Ethnic tolerance	.291**	.390**	.228**	.143**	.198**
Social tolerance	.148**	.169**	.112**	.071*	.132**
Tolerance as a personality trait	.132**	.166**	.051	.126**	.100**
Intercultural sensitivity scales					
Acceptance		.379**	.267**	.442**	.387**
Understatement	-.086**	-.096**	-.031	-.098**	-.065*
Absolutization	.087**	.183**	.064*	-.006	.045
Ambivalence	.003	.065*	.002	-.058	-.001

To measure the convergent validity, we used the phenomena of tolerance and intercultural sensitivity as factors affecting intercultural communication: 1) *general tolerance* relates positively to general CQ and all its factors, especially to motivational CQ, a stronger link is shown between the subscales of *ethnic tolerance* and *intrinsic interest* ; 2) the strongest links exist between *acceptance* in intercultural sensitivity and general CQ, as well as motivational, metacognitive and behavioral factors.

Thus, the correlation analysis of CQ factors confirmed the independence of the construct and demonstrated positive relations with a number of indicators significant in intercultural interaction.

## 7. Conclusion

The results demonstrate that the Russian version of the E-CQS is a reliable and valid psychodiagnostic scale.

- 7.1. The results showed consistency and test-retest reliability of the E-CQS.
- 7.2. Confirmatory factorial analysis confirmed factor structure, which is consistent with the original English version.
- 7.3. Verification of convergent and discriminant validity are in line with known data on the relationship of CQ four factors with other types of intelligence and the Big Five personality traits. Also, new data were obtained on the relationship between CQ and intercultural sensitivity and tolerance.

Finally, we emphasize the importance of this method for expanding the research field of intercultural communication in the Russian-speaking environment.

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