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TESTING CULTURAL INTELLIGENCE OF UKRAINIAN STUDENTS

Article is based on the findings of the phase 2 of Cultural Intelligence research conducted in Ukraine (2012-2013). The research was conducted in three phases. Phase I included the translation and adaptation of the scale to the audience with the use of two focus groups that consisted of 17 respondents. Phase II tested cultural intelligence scale for larger audiences in Ukraine using the translated scale from Phase I for 341 students. Phase III focused on the implementation of the Cultural Intelligence Scale (CQS) to approximately 1800 individuals throughout the country. The research findings made a considerable contribution to the understanding of cultural intelligence in non-American settings in Ukraine with the sample of Ukrainian students. During phase 2 of the research the four CQS factor structure was tested. It was found that the Ukrainian data properly fits theoretical four-factor model and reaffirmed Ukrainian and Russian versions of CQS validity and reliability.

Key words: *cross-cultural communication, cultural intelligence (CQ), cultural Intelligence Scale, cross-cultural competency.*

Cultural intelligence CQ is defined as an individual's capability to function and manage effectively in culturally diverse settings. This is a very popular concept all over the world [1]. CQS center in the USA shares data on the CQS level of different counties with widespread practical application – use for managers all over the world. CQ is a theoretical extension of contemporary approaches to understanding intelligence. CQ is defined as the capability to function effectively in culturally diverse settings [2]. Early and Ang (2003) theorized that CQ is a multidimensional concept that includes metacognitive, cognitive, motivational, and behavioral dimensions. The four factors of CQ mirror contemporary views of intelligence as a complex, multifactor and individual attribute. Metacognitive CQ reflects the mental capability to acquire and understand cultural knowledge. Cognitive CQ reflects general knowledge and knowledge structure about culture [4].

Motivational CQ reflects individual capability to direct energy toward learning about and functioning in intercultural situations. Behavioral CQ reflects

individual capability to exhibit appropriate verbal and nonverbal actions in culturally diverse interactions [5].

To measure the CQ at the empirical level the 20-items Cultural Intelligence Scale (CQS) was developed and validated by Ang et. al. in 2007. The validity and reliability of the CQS were tested in a number of studies providing a strong evidence that the CQS has a clear, robust, and meaningful four-factor structure which is stable across samples, time, and countries [2].

The concept of cultural competence, which is understood as a derivative of cultural education/awareness and cultural sensitivity, is widely used by Ukrainian sociologists who have used it to explain intercultural communication and the population's cultural participation [6]. However, the concept of cultural intelligence is a new field of study in Ukraine. Despite cultural intelligence studies have been conducted in many countries, there are few studies which examine cultural intelligence in former Soviet controlled countries [3]. Delving further into existing literature and research, at this point the researchers have found no literature as it relates to cultural intelligence being studied in Ukraine. This research is the first time that the cultural intelligence scale has been used in sociological research in Ukraine.

Relevance: Ukrainian society is undergoing major changes due to political and social restructuring in the light of Euromaidan Events and Crimean Crisis 2014. Taking into the consideration the political situation in the country with regards to occupation and annexation of Crimea by Russia, the EU relations are to be beneficial regarding the modernization of the country' energy infrastructure in order to become independent from the eastern neighbor. Furthermore, the implemented steps towards the visa-free people movement will also improve and fasten the information exchange. Open borders with European Union will lead to more exposure, cross-cultural communication and more frequent interaction of Ukrainians with other cultures.

The Ukrainian nation is now moving into a global arena where cultural intelligence skills are essential. Therefore the entire conceptual framework of CQ is a new and relevant area of study for Ukraine.

Research project

Within the framework of partnership between the USA and Ukraine, in 2012 a joint Research Project "Cross Cultural Competences and Cultural Intelligence: Case Study in Ukraine" was launched by the Dr R. Boyd Johnson and the Institute of Sociology at National Academy of Sciences of Ukraine.

Ukraine was chosen for this study because of its unique position historically, politically, culturally, and geographically. The CQS Instrument measures four capabilities: CQ-Drive, CQ-Knowledge, CQ-Strategy, CQ-Action. CQS was first tested in Ukraine in 2012-2013. The goal of the US-Ukraine project was to translate the Cultural Intelligence Scale (CQS) into Ukrainian and Russian, test CQS in Ukraine among students in Kyiv, measure CQS level Ukraine-wide.

Methodology

This research was conducted in three phases focusing on Ukraine. Phase I (summer 2012) Translation and adaptation of the CQS into Ukrainian/Russian. Focus group in Kyiv (Qualitative). Phase II (fall 2012). Pilot testing of the translated scale with 341 respondents in Kyiv (Students of Shevchenko state University) Quantitative. Phase III (summer 2013). Integration of the CQS into the Ukraine-wide Monitoring (1800 respondents), data collection in all the regions of Ukraine. Quantitative.

Article is focused on phase 2 of the project. In Phase 2 after translation and adaptation of the instrument in Kyiv, the CQS instrument was tested for validity and reliability in the Ukrainian and Russian versions of the survey. Phase 2 involved a pilot test with 341 students from the Taras Shevchenko National University in Kyiv, Ukraine. These included students from the first to fifth year of studies, in a wide range of degree programs, with 96 males and 245 females. Both versions (Russian and Ukrainian) were randomly distributed, as all the students

spoke both languages fluently. Positive factor loadings on scale items and positive correlations between the four factors were found. Survey conducted with the students of the Taras Shevchenko National University in Kyiv; self-completed questionnaires.

Results and findings of Phase II:

Demographics of respondents

341 volunteer students of different University departments completed questionnaires containing 20 CQS items and a pull of supplementary questions. The full versions of Russian, Ukrainian and English questionnaires were used. The general characteristics of the sample, specifically departments' distribution, current academic year of study and gender of students enrolled in the survey are shown in Tables 1-3.

Table 1. CQS sample:

Departments Distribution

Department	Frequency
Biology	22
Economics	13
Cybernetics	9
Mathematics	36
Radiophysics	3
Sociology	49
Philosophy	74
Chemistry	3
Journalism	44
Philology	81
Other	4
Missing	3
Total	341

Table 2. CQS sample:

Current Academic Year Distribution

Which year of study	Frequency
1-st year student	45
2-nd year student	4
3-rd year student	154
4-th year student (bachelor)	81
Specialist	5
Master (5-th or 6-th year student)	49
Missing	3
Total	341

Table 3. CQS sample:

Gender Distribution

Gender	Frequency
Male	96
Female	245
Total	341

Survey Languages

Ukraine is a bilingual country. Due to this it was very important to test the validity and reliability of both Russian and Ukrainian translations of the CQS. Therefore, two versions of questionnaire were prepared for pretest. As students of the Taras Shevchenko National University of University speak both languages – both Russian and Ukrainian questionnaire versions were randomly distributed and further tested in each student's group.

General distribution of CQS scores

First, the general distribution of the scores in the sample are presented below (Table 4).

Table 4. General distribution of the CQS scores in the sample

	N	Mean	Std. Deviation
MC1_I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds	341	4.76	1.46
MC2_I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me	340	4.33	1.55
MC3_I am conscious of the cultural knowledge I apply to cross-cultural interactions	338	4.89	1.45

MC4_I check the accuracy of my cultural knowledge as I interact with people from different cultures	337	5.23	1.46
COG1_I know the legal and economic systems of other cultures	339	4.35	1.50
COG2_I know the rules (e.g., vocabulary, grammar) of other languages	338	4.85	1.51
COG3_I know the cultural values and religious beliefs of other cultures	336	5.05	1.36
COG4_I know the marriage systems of other cultures	338	4.55	1.46
COG5_I know the arts and crafts of other cultures	338	4.64	1.37
COG6_I know the rules for expressing non-verbal behaviors in other cultures	340	4.04	1.52
MOT1_I enjoy interacting with people from different cultures	337	5.66	1.52
MOT2_I am confident that I can socialize with locals in a culture that is unfamiliar to me	340	5.29	1.38
MOT3_I am sure I can deal with the stresses of adjusting to a culture that is new to me	341	5.21	1.35
MOT4_I enjoy living in cultures that are unfamiliar to me	341	4.66	1.74
MOT5_I am confident that I can get accustomed to the shopping conditions in a different culture	340	5.41	1.35
BEH1_I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it	341	5.08	1.54
BEH2_I use pause and silence differently to suit different cross-cultural situations	337	4.27	1.81

BEH3_I vary the rate of my speaking when a cross-cultural situation requires it	338	4.93	1.79
BEH4_I change my non-verbal behavior when a cross-cultural situation requires it	341	4.64	1.72
BEH5_I alter my facial expression when a cross-cultural interaction requires it	341	4.23	1.77
Metacognitive_CQ_mean	333	4.79	1.20
Cognitive_CQ_mean	324	4.57	1.08
Motivational_CQ_mean	335	5.24	1.11
Behavioral_CQ_mean	334	4.63	1.31
Composite CQ mean (20 items)	307	4.79	0.88

Testing CQS four-factor structure

To test the validity of the CQS in Ukraine and to ensure that the CQS could be successfully applied in Ukraine one should test if the same four-factor structure, discovered and proved by a number of other studies, is valid here (Handbook of Cultural Intelligence, p.19). Thus, in further analyses the four-factor model was used as default, and its consistency was proved.

To verify if our pretest data fits theoretical structure of the 20-item CQS we applied Confirmatory Factor Analysis (CFA) using AMOS (version 16.0). Maximum likelihood was chosen as a method of estimation. Factors were correlated. Estimations were calculated on a 20-items correlation matrix. CFA shows an acceptable fit of data to the theoretical model. Fit indexes are presented in the Table 5.

Table 5. Fit indexes of 4-factor model

chi-square	Df	NFI	CFI	SRMR	RMSEA
435,47	164	0,857	0,905	0,065	0,07

RMSEA<0.10 means good fit of the model.

All standardized factor loadings (0,507-0,903) are significantly different from zero (p<0,05).

Picture 1 shows standardized factor loadings and correlations between factors.

On the basis of our results we can explore coherence of the CQS structure for students in Ukraine to the CQS structure for students in other countries described in the previous analyses by Dyne, Ang, Koh, 2008 (Handbook of Cultural Intelligence, Chapter 2). Also we observe the same positive factor loadings on scale items and positive correlations between four factors. Thus, the findings of the research in Ukraine, like the previous international studies, test the theoretically based four-dimensions' CQ structure and reaffirm the CQS validity.

Testing coherence of the Russian and Ukrainian CQS scale versions

Taking into account that Ukraine is a bilingual country, it is a widespread practice to use both Russian and Ukrainian questionnaires during one survey fieldwork (as respondents might request either version). In line with this, it was crucial for the survey quality to test coherence of both versions with each other and with the original English questionnaire.

In pretest survey we tested both CQS language versions. In each student's group the Russian and Ukrainian questionnaire forms were randomly distributed. As a result, 155 Russian and 186 Ukrainian completed questionnaire forms were collected.

To test the coherence of both versions we split dataset into 2 separate samples (Sample 1 – for those who filled out Russian questionnaire forms, Sample 2 – for those who filled out Ukrainian questionnaire forms) and tested 2 groups using confirmatory factor model.

To gain evidences that model fits in both language versions, 3 models were tested:

1) Configural – factor loadings freely estimated across two different 'language samples'.

2) Metric – with constraints of invariant factor loadings across two different 'language samples'.

3) Scalar – with constraints of invariant intercepts across two different 'language samples'.

Fit indexes are presented in Table 6.

Table 6. Fit indexes of 4-factor model for two 'language samples'
(Ukrainian n=186, Russian n=155).

Model	chi-square	Df	NFI	CFI	SRMR	RMSEA
Configural	679,987	328	0,795	0,88	0,074	0,056
Metric	689,471	344	0,792	0,882	0,076	0,054
Scalar	711,828	360	0,785	0,88	0,076	0,054

CFA demonstrates acceptable fit of data for all three models for Ukrainian and Russian 'language samples'. Standardized factor loadings in all three models were significantly different from zero (critical ratio for regression weight is significant, p<0,05) for both languages.

It can be confirmed that both with Ukrainian and Russian versions of the model we observe the same CQS structure, same magnitude of factor loadings and same factors' means. Such results fully prove the validity and identity of both CQS language versions translated and adopted during the Ukrainian part of research.

Reliability testing

CQ is an aggregated multidimensional construct which has two distinguishing features: (a) dimension exists at the same level of conceptualization as overall construct and (b) dimensions make up the overall construct. Metacognitive, cognitive, motivational, and behavioral CQ is the different types of capabilities that together form the overall CQ construct (Handbook of Cultural Intelligence, p. 7). In accordance with this we expect rather high consistency of the CQS scores in general and of the CQS 4 dimensions in particular. Cronbach's Alpha are shown in Table 7.

Table 7. Cronbach's Alpha for different CQ dimensions and for CQ in general

	N of Items	Cronbach's Alpha
Metacognitive CQ	4	0.82
Cognitive CQ	6	0.83
Motivational CQ	5	0.81
Behavioral CQ	5	0.81
Composite CQ (20 items)	20	0.89

These reliabilities are consistent with those reported in Ang et al. (2007) and in Shannon and Begley (2008) [5]. Such scores of Cronbach's Alpha are a good evidence of the reliability of the CQS in general and 4 CQS dimensions in Ukraine. To test CQS internal consistency during pretest, we split data into 2 subsamples using random selection method in SPSS. Sample was divided into 2 subsamples: n1=180, n2=161.

To gain evidence that model fits for both randomly selected subsamples, 3 models were tested as follows:

1) Configural – factor loadings freely estimated across two subsamples.
2) Metric – with constraints of invariant factor loadings across two subsamples.
3) Scalar – with constraints of invariant intercepts across two subsamples.

Fit indexes are presented in the Table 8.

Table 8. Fit indexes of 4-factor model for two random subsamples (n1=180, n2=161)

Model	chi-square	Df	NFI	CFI	SRMR	RMSEA
Configural	637,615	328	0,808	0,894	0,0768	0,053
Metric	667,588	344	0,798	0,89	0,0791	0,053
Scalar	676,69	360	0,796	0,892	0,0791	0,051

CFA demonstrates good fit of data for all three models across two random subsamples. Standardized factor loadings in all three models were significantly different from zero (critical ratio for regression weight is significant, p<0,05) for both random subsamples. High Cronbach's Alpha and consistency of the models on two random subsamples provide the evidence of CQS reliability.

Additional questions

In this pilot test additional data was also of interest: thus two hypotheses about relations between CQ and selected external concepts were tested.

H1: International experience will positively relate to metacognitive CQ, motivational CQ, and behavioral CQ.

International experience would seem to be important for CQ factors. Global cross-cultural experience allows individuals to obtain knowledge, skills, and behavior that are essential for living and working in different environments, such as intercultural communication skills, increased adaptability, and flexibility in volatile environments.

Shannon and Begley (2008) tested a hypothesis about positive relations of international work experience with metacognitive CQ, motivational CQ, and behavioral CQ, and their study demonstrated positive relations of international work experience with CQ in general [5]. As few Ukrainians have global work experience, the research was adapted to test a hypothesis about positive relations of any (not only work) international experience with metacognitive CQ, motivational CQ, and behavioral CQ and with CQ in general.

The pilot group was asked the following questions:

· *Have you ever been in other countries outside Ukraine (except CIS countries-- former Soviet republics) since you were 14?*

· *Have you ever lived outside Ukraine (except in CIS countries) for three months or more since you were 14?*

· *Do you have any friends who have moved from Ukraine abroad (except to CIS countries)?*

· Do you personally know anybody abroad (people you are acquainted with or friends, except

CIS citizens) with whom you regularly (not less than once a month) meet or communicate using phone, Skype, messaging, chat or social media?

Do you have relatives abroad (except CIS citizens) with whom you regularly (not less than once a month) meet or communicate using phone, Skype, messaging, chat or social media?

Note: Former Soviet republic countries were excluded from the analysis because their dominant cultures (particularly Russian or Byelorussian) are so close to Ukrainian culture.

To obtain an International Experience Index, the answers to the questions above (0 – no, 1 – yes) were tabulated (Cronbach's Alpha=0.6), and the cumulative International Experience Index was calculated with the five scores. This index demonstrates rather high differentiating property – Chart 1.
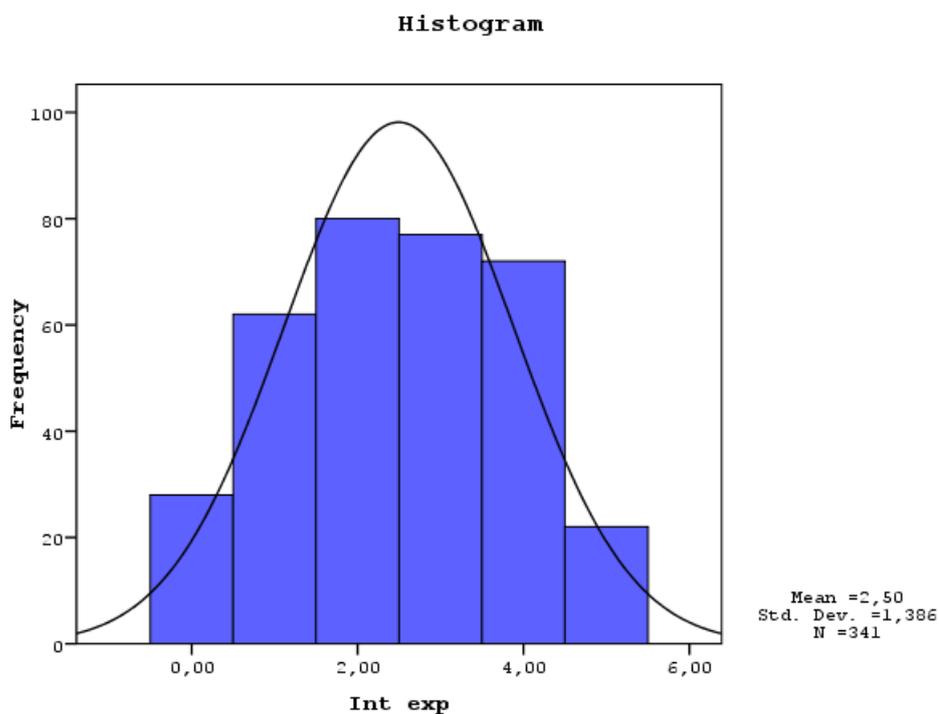

Histogram

Mean =2,50
Std. Dev. =1,386
N =341

Chart 1. Distribution of International Experience Index scores

H2: Foreign language knowledge will positively relate to cognitive CQ.

Shannon and Begley (2008) tested this hypothesis on the basis of the following definition: Cognitive CQ is an individual's knowledge of specific norms, practices, and conventions in different cultural settings. This is important because language conveys many subtleties of a culture and reflects its core values, norms, conventions, and differences in thought patterns, as well as transmitting cultural knowledge [5].

To obtain information about language skills the group was asked the following questions:

Do you speak at least one foreign language (except Russian and Ukrainian) at a level sufficient for communication? (0 – no, 1-yes)

Almost all students answered that they speak at least one foreign language at a level sufficient for communication. But the difference of CQ across groups of students who speak and don't speak a foreign language was statistically significant.

The results support Hypothesis H1: International experience positively relates to metacognitive CQ, motivational CQ, and behavioral CQ. International experience is the significant predictor for all four dimensions of CQ and for CQ in general; it positively relates to all four dimensions of CQ and to CQ in general.

The results also support Hypothesis H2: language skills (if one speaks a foreign language) positively relates to cognitive CQ. Language skills act as a significant predictor for Cognitive CQ which positively relates to Cognitive CQ. Also, Language skills are seen as a significant predictor for Metacognitive CQ and Motivational CQ and for CQ in general.

Summary and conclusions

Pretest study on validity and reliability of the CQ four-factor model was based on the previous international studies of Ang at al. (2007), Dyne, Ang, and Koh (2008), Shannon and Begley (2008) [5]. The study conducted in Ukraine further supports the validity and reliability of Ang et.al (2007) 20-items four-factor measure of CQ [1,2.].

During our research the four CQS factor structure was tested. It was found that the Ukrainian data properly fits theoretical four-factor model. Like in the

previous studies (samples of the American, Singaporean and Irish students) positive factor loadings on items of the scale and positive correlations between four factors were observed.

Among the important outcomes was also the elaboration of coherent Russian and Ukrainian versions of the original English CQS: the available data collected with the use of both Ukrainian and Russian questionnaires fits the 'master model' and serve as a good evidence of both Russian and Ukrainian CQS versions validity. Also, the essential result of this work is the coherence of both Ukrainian and Russian versions with each other. It is an indispensable condition of further data collection high quality. For future use of the CQS in Ukraine, which is a bilingual country, it is important that data is properly collected with the use of fully identical instruments in both languages.

High Cronbach's Alpha of four dimensions of CQ and of CQ in general (MC -0.82, COG – 0.03, MOT – 0.81, BEH – 0.81, CQ General – 0.89) and consistencies of the models on two random subsamples provide the evidence of the CQS reliability.

The full CQS of 20 items correlate with the short CQS of 9 items 0.952 and is significant at the 0.01 level, what is the good evidence of validity of a short CQS.

Among the important factors of CQ are socio-demographic settings, foreign language skills and international experience which predict general CQ and some of the CQ dimensions. This also fully supported by the results of the previous studies. Despite expectations, Bogardus scale is not a significant predictor for the CQ dimensions.

To sum up, the Ukrainian quantitative study of 341 students methodologically reinforced the results of the previous qualitative phase and reaffirmed the CQS validity and reliability.

Overall, our research proved that the Ukrainian application of the CQS fits the theoretical model and have the same 'behavior' network as in the earlier done

studies. International validity and reliability of the CQS as a powerful methodological tool will be further proved in the future cross-cultural studies.

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У статті представлені результати II етапу дослідницького проекту «Міжкультурна компетентність та культурний інтелект: аналіз на прикладі України» (2012-2013). Дослідження проводилося у три етапи з метою охоплення всієї України. Етап I (літо 2012) Переклад і адаптація CQS українською/російською. Фокус-група - у Києві. (Якісний аналіз). Етап II (осінь 2012). Пробне (пілотне) тестування перекладеної шкали серед 341 респондентів - студентів Київського Національного Університету Т. Шевченка. (Кількісний аналіз). Етап III (літо 2013). Інтеграція в CQS у систему моніторингу по всій Україні (1800 респондентів), збір даних по всіх регіонах. (Кількісний аналіз). Результати дослідження сформували розуміння культурного інтелекту з української точки зору.

Ключові слова: *міжкультурна комунікація, культурний інтелект/ компетентність (КІ), шкала культурного інтелекту, міжкультурна компетентність.*

В статье представлены результаты II этапа исследовательского проекта "Межкультурная компетентность и шкала культурного интеллекта (CQS) тематическое

исследование в Украине» (2012-2013). Исследование проводилось в три фазы. Фаза I (лето 2012). Перевод и адаптация шкалы культурной компетентности на украинский/русский язык. Фокус-группа в Киеве (Качественный этап). Фаза II (осень 2012). Пилотное тестирования 341 респондентов переведенной шкалой в Киеве (студенты КНУ им. Тараса Шевченко) Количественный этап. Фаза III (лето 2013). Интеграция шкалы культурной компетентности во всеукраинский мониторинг (1800 респондентов), сбор данных во всех регионах Украины. (Количественный этап). Результаты исследования сформировали понимание концепции культурного интеллекта у украинской аудитории.

Ключевые слова: межкультурная коммуникаций, культурный интеллект/компетентность (КИ), шкала культурного интеллекта, межкультурная компетентность.