

Cultural Intelligence Scale: Validation in a Multicultural Setting of Erasmus Mundus Students and Alumni

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Abstract

Introduction

Purpose: This work aims at further developing and testing the psychometric properties of the Cultural Intelligence Scale (Ang & Van Dyne, 2006) in an Erasmus Mundus Students and Alumni Population, including reliability.

Design Methodology: The study included 626 participants from 109 different countries that encompasses 6 continents. Exploratory and Confirmatory Factor Analysis procedures were carried out in order to test the scale in a multicultural scale of Erasmus Mundus Students. Reliability was assessed using Cronbach Alpha.

Results: The scale presents excellent psychometric properties with alpha values that range from .84 to .90. Exploratory and Confirmatory Factor Analyses demonstrated that the original model of the scale presents an exceptionally good fit.

Limitations: The present study was conducted using a convenience sample and online questionnaires that limit its conclusions when we consider the globality of the Erasmus Mundus Students.

Research/Practical Implications: This study presents evidence that Ang and Van Dyne's scale is an adequate measure instrument to assess intercultural intelligence in a multicultural setting of students and alumni.

Originality/Value: Multicultural samples and studies are becoming more and more present and relevant; the study of intercultural competences and abilities is becoming increasingly important, and in this task, solid psychometric instruments are of paramount importance. This study presents evidence that Ang and Van Dyne's (2006) scale is a fairly recent and parsimonious instrument with excellent psychometric properties.

The process of globalization is well established and its effects have been widely discussed in the literature (e.g. Landis 2008). One such effect is the unquestionable growing diversity in modern day societies that requires greater cultural awareness of citizens (Fischer 2011). The increased diversity means that the intercultural competence (IC) is needed more and more in multicultural domestic work teams (Tsui and Gutek 1999); multinational work teams (Earley and Gibson 2002); by global leaders (Ang and Van Dyne 2006); and by those in overseas work assignments (Bhaskar-Shrinivas et al. 2005). So much so that nowadays, IC is deemed necessary for any person, regardless of one's age or occupation (CEC 2005, 13).

Intercultural competence has been studied actively at least since the 1950s (Gabrenya et al. 2012) and there is an entire nomological net and conceptual web of theories concerning this construct that reflect different perspectives, although different terms are used by different authors. According to Gabrenya et al. (2012), extant conceptualizations of intercultural competence generally include (1) relatively stable characteristics of the individual (such as personality traits, etc.); (2) knowledge about culture in general and regional cultural specificities; (3) attitudinal and motivational dispositions (e.g. ethnocentrism, interest in culture, and motivation to learn); and (4) skills (e.g. communication, language) and executive.

In 2003, Earley and Ang (2003) developed the construct of cultural intelligence (CQ) based on contemporary theories of intelligence (Sternberg 1986) and later Ang and Van Dyne furthered the construct and created a scale for measuring it (Ang et al. 2007). In spite of a rather large body of theory (e.g. Ng and Earley 2006; Triandis 2006; Brislin et al. 2006; Janssens and Brett 2006), empirical research on CQ has been scarce – primarily due to the newness of the construct (Ang et al. 2007).

CQ: Construct & Scale

Cultural intelligence (CQ) is a relatively novel construct that can be defined as 'an individual's capability to function and manage effectively in culturally diverse settings' (Ang and Van Dyne 2008, 3). CQ captures important aspects of strategy and motivation to engage in intercultural exchanges that are not captured by existing measures of intercultural effectiveness (e.g., Ang and Van Dyne 2008; Ward and Fischer 2008), which makes it an interesting construct for intercultural research (despite obvious limitations due to the self-rating nature of the accompanying instrument, see Gabrenya et al. 2010; Lee and Templer 2003; Ward et al. 2009).

Like many models of IC, CQ is a multidimensional construct, with 4 dimensions: (1) meta-cognitive CQ (the level of conscious awareness of cultural aspects during intercultural interactions), (2) cognitive CQ (focusing on higher order cognitive processes, represents knowledge of norms, practices and conventions in different cultures acquired from education and personal experience), (3) motivational CQ (the intention and capability to direct attention and energy towards intercultural experiences and to be motivated to learn more about cultural differences) and (4) behavioral CQ (the ability to engage in appropriate verbal and nonverbal actions in intercultural situations, capability to exhibit culturally appropriate verbal and nonverbal actions when interacting with people from other cultures).

In addition to the construct development, Ang and Van Dyne proposed a scale that intends to capture the self-rated ability to perform and adapt well to different cultural contexts and therefore has much potential as a diagnostic tool for intercultural success (Earley and Peterson 2004).

Instrument

The Cultural Intelligence Scale (CQS) is a 20-item instrument that uses a 7-point Likert type scale and where subjects respond whether or not the item statements describe how they really are, from 1 (strongly disagree) to 7 (strongly agree). The scales portion of the instrument is shown in Table 1. Items are divided into 4 subscales, namely: metacognitive CQ (4 items), cognitive CQ (6 items), motivational CQ (5 items) and behavioral CQ (5 items).

Sample

The present study is based on a sample of 626 participants from 109 different countries, encompassing 6 continents.

Ages of respondents vary between 22 and 74 years old (mode= 53 years and mean= 43.4 years; standard deviation= 10.5); most respondents are female (79.3% female respondents; 16.4% male respondents; 4.3% did not answer this question). The high mean of age is attributed to general characteristics of Erasmus Mundus programs, which include many adults/ persons who come back to university after having gained certain work experience. In the present sample, descriptive statistics for each item revealed that the answers to all items ranged between the minimum (1) and the maximum (7) (see Table 1). Frequency analysis in each response option revealed an acceptable distribution in all the items, with no percentages above 50% in a single response alternative, indicating the existence of response variety and a reasonable discriminative power of the items. In most items, means and medians are similar; skewness and kurtosis values are acceptable, indicating that their distribution approximates the normal distribution.

Table 1. Content, means and standard deviations of the items.

Items	Mean	Standard Deviation
1. I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.	5.57	1.33
2. I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.	5.72	1.26
3. I am conscious of the cultural knowledge I apply to cross-cultural interactions.	5.52	1.28
4. I check the accuracy of my cultural knowledge as I interact with people from different cultures.	5.35	1.46
5. I know the legal and economic systems of other cultures.	4.24	1.47
6. I know the rules (e.g., vocabulary, grammar) of other languages.	4.47	1.69
7. I know the cultural values and religious beliefs of other cultures.	4.94	1.34
8. I know the marriage systems of other cultures.	4.43	1.51
9. I know the arts and crafts of other cultures.	4.32	1.40
10. I know the rules for expressing non-verbal behaviors in other cultures.	4.14	1.48
11. I enjoy interacting with people from different cultures.	6.32	1.18
12. I am confident that I can socialize with locals in a culture that is unfamiliar to me.	5.73	1.35
13. I am sure I can deal with the stresses of adjusting to a culture that is unfamiliar to me.	5.92	1.20
14. I enjoy living in cultures that are unfamiliar to me.	5.70	1.40
15. I am confident that I can get accustomed to the shopping conditions in a different culture.	5.92	1.27
16. I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it.	5.28	1.55
17. I use pause and silence differently to suit different cross-cultural situations.	4.77	1.53
18. I vary the rate of my speaking when a cross-cultural situation requires it.	5.24	1.42
19. I change my non-verbal behavior when a cross-cultural interaction requires it.	4.97	1.47
20. I alter my facial expressions when a cross-cultural interaction requires it.	4.36	1.68

Results

Exploratory Factor Analysis

A principal components analysis (PCA) was conducted on the 20 items with orthogonal rotation (oblimin) using SPSS software, because high correlations between the dimensions was expected. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO=0.92 ("meritorious", according to Sharma [1996]) and all KMO for individual items (measures of sample adequacy) were >0.7, which is well above the acceptable limit of 0,5 (Field 2009). Bartlett's test of sphericity ($\chi^2(190)=6410.28, p < 0.001$), indicated that correlations between items were sufficiently large for PCA.

Four components had eigenvalues over Kaiser's criterion of 1 and an analysis of the scree plot indicated the existence of four components as well. Table 2 shows the factor loadings after the rotation.

Reliability

Internal consistency was estimated using Cronbach's alpha. These four components showed a good internal consistency, with alpha values above 0.70 (Nunnally, 1978): $\alpha = .89$ for factor 1 (CQ Strategy, 4 items), $\alpha = .84$ for factor 2 (CQ Knowledge, 6 items), $\alpha = .84$ for factor 3 (CQ Motivation, 5 items), $\alpha = .84$ for factor 4 (CQ Behavior, 5 items), and $\alpha = .90$ for the global scale, overall CQ.

Table 2. Orthogonally rotated component matrix based on correlations among the items of the CQ and communalities (h²).

	CQ Knowledge	CQ Motivation	CQ Behavior	CQ Strategy	h ²
13. I am sure I can deal with the stresses of adjusting to a culture that is new to me.	.84	.12	.14	.22	.79
12. I am confident that I can socialize with locals in a culture that is unfamiliar to me.	.82	.18	.12	.20	.75
11. I enjoy interacting with people from different cultures.	.78	.12	.10	.29	.72
15. I am confident that I can get accustomed to the shopping conditions in a different culture.	.77	.07	.17	.16	.65
14. I enjoy living in cultures that are unfamiliar to me.	.77	.15	.18	.19	.68
7. I know the cultural values and religious beliefs of other cultures.	.24	.79	.03	.14	.71
8. I know the marriage systems of other cultures.	.07	.78	.11	.08	.64
9. I know the arts and crafts of other cultures.	.07	.75	.15	.11	.60
10. I know the rules for expressing non-verbal behaviors in other cultures.	.06	.73	.22	.12	.61
5. I know the legal and economic systems of other cultures.	-.01	.68	.06	.16	.49
6. I know the rules (e.g., vocabulary, grammar) of other languages.	.21	.63	.04	.01	.44
19. I change my non-verbal behavior when a cross-cultural interaction requires it.	-.18	.09	.80	.15	.71
17. I use pause and silence differently to suit different cross-cultural situations.	.12	.11	.78	.19	.67
20. I alter my facial expressions when a cross-cultural interaction requires it.	-.03	.14	.76	.07	.60
18. I vary the rate of my speaking when a cross-cultural situation requires it.	-.19	.13	.73	.24	.64
16. I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it.	.36	.12	.63	.14	.56
1. I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.	.27	.18	.17	.78	.74
3. I am conscious of the cultural knowledge I apply to cross-cultural interactions.	.29	.19	.17	.78	.75
2. I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.	.35	.09	.20	.71	.67
4. I check the accuracy of my cultural knowledge as I interact with people from different cultures.	.16	.14	.23	.70	.59
% of Variance accounted for	36.63	12.36	9.95	6.11	

Confirmatory Factor Analysis

We then proceeded to the confirmatory procedures, which yielded the goodness of fit indices values obtained for this model structure indicating satisfactory values for all the estimated indices (Table 3).

Table 3. Goodness of fit indices obtained in the confirmatory factor analysis of the CQ

	χ^2	df.	χ^2/df	AGFI	CFI	RMSEA	Confidence interval (90%)
Original model	455.88**	167	2.78	.909	.954	.053	.048-.059

* p < .05, ** p < .01

As can be seen in Figure 1. – representing the present study's factor structure – items present satisfactory factor loadings that vary between .47 and .67, and thus indicating the model's convergent validity (Kline 2011).

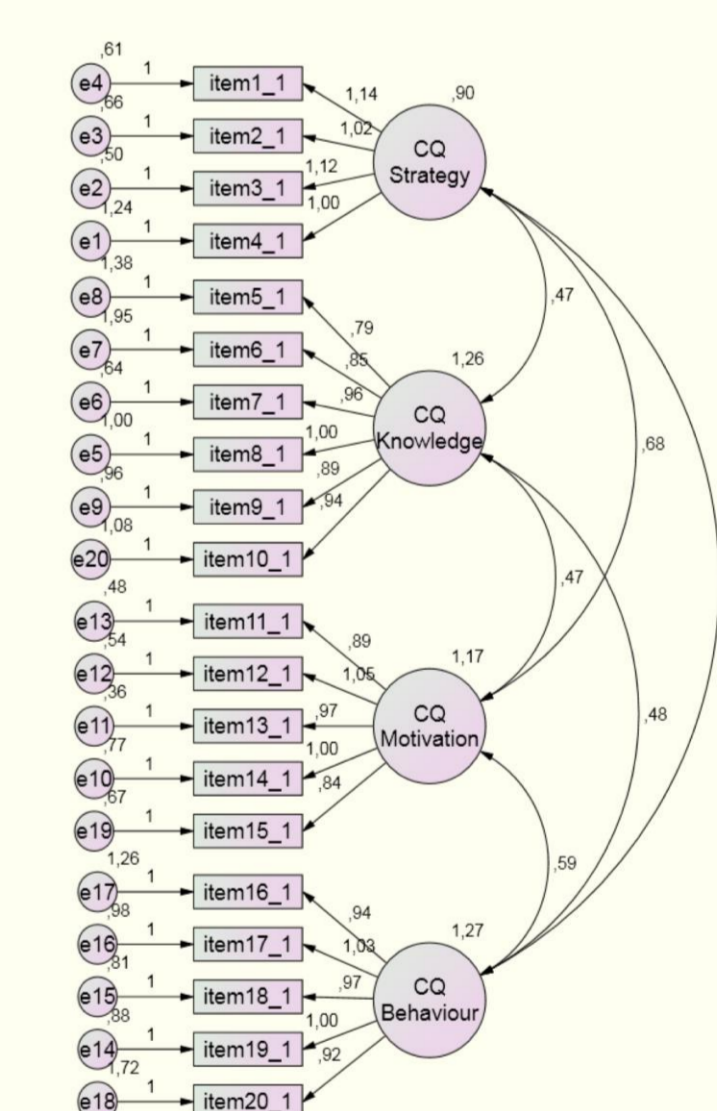


Figure 1. Original factor structure.

Discussion :: Conclusions

As one may observe, in all stages of our research the emerging factor structure of the scale matches completely the originally proposed model of cultural intelligence (Ang et al. 2007; Ang and Van Dyne 2008). This coincidence was firstly evidenced in the exploratory factor analysis and later confirmed at the confirmatory factor analysis stage and contributes to our understanding that this is a very robust scale and that the CQ construct is perfectly adapted to the population of international higher education students. Using the Cronbach alpha measure of internal consistency, one may also confirm that the scale is highly reliable, with values well above .70 in all subscales as well as the global scale, overall CQ. This goes to show that the instrument provides reliable and consistent information about the construct in various contexts, including the Erasmus Mundus Master programs' students and alumni. Therefore, the instrument could be one of the tools through which Erasmus Mundus participants' experience (and the experience of students enrolled in joint international master degrees with in-built mobility in general) could be studied, different intercultural initiatives within program's evaluated and employment preparedness gleaned into. The instrument seems to satisfy the criterion of being useful and easily comprehensible.

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