

MEASURING CULTURAL INTELLIGENCE: A NEW TEST OF THE CQ SCALE

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Abstract

Cultural Intelligence (CQ) is an important construct which has not yet been fully conceptualized, nor operationalized. In this paper, we test the cross-cultural generalizability of the Cultural Intelligence scale (CQS) on a sample of Chinese respondents with extensive overseas experience. As the Cultural Intelligence construct is relatively new several authors call for further testing of the CQS in different cultures. To enable comparison with former published studies, we follow the same procedure for a sample Chinese students with overseas experience as used in the original study testing CQS on American and Singaporean students. Retesting the CQS with our new data results in lower validity and reliability than in the original studies. This research does not confirm the four factors of the CQ construct. Furthermore, we explore the influences of external/demographic factors on the observed CQS scores. With the help of the added demographic factors, possible explanations and suggestions for further research and development of the CQS are given. Besides, we show the influences of CQS on cross-cultural effectiveness.

Key words: Cultural intelligence, measurement instrument, retest, Chinese sample.

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1.1. INTRODUCTION

Globalization makes firms across the world ever more depending on relationships with foreign markets and firms. As a result, managers and their employees interact more frequently with people from other countries and cultures. Increasingly, managers have to cope with stress and uncertainty due to changing demands and situations and to a diverse range of relationships often across the border (Dragoni et al., 2009). Managing multiple relationships in a cross-cultural context adds complexity to a wide range of business processes. Such a complexity generates a risk of misunderstanding, which may result in interpersonal conflicts, even when activities and tasks are well structured (Gelfand et al., 2001; Lievens et al., 2003; Takeuchi et al., 2002). In order to overcome these misunderstandings, managers need to develop cross-cultural competencies.

Although the challenges of increasing globalization seem equally critical for most managers, it is getting more and more important for companies to recognize that some managers are better equipped to compete internationally than others. It is also increasingly important to understand why some individuals function more effectively than others in culturally diverse situations do (Ang & Van Dyne, 2008). According to Ang and colleagues (2007, 336) “research on individual capabilities for intercultural effectiveness is sparse and unsystematic, leaving an important gap in our understanding of why some individuals are more effective than others in

culturally diverse situations.” Selecting and developing individuals who can function effectively in culturally diverse settings is a significant challenge facing firms today (Van Dyne et al., 2009).

1.1.1.Global management competencies constructs

It is for this reason that in the last decades, different constructs, related to global management and cross-cultural competencies have been developed. Constructs such as global mindset (Kefalas, 1996; Arora, 2004), cultural effectiveness (Van der Zee and Van Oudenhoven, 2001), and cultural intelligence (Earley and Ang, 20003) entered into the international management literature. However, most of these constructs have different disciplinary roots and use terms that are not always clearly defined. Despite these differences and lack of clarity, some of these constructs have been tested scientifically and more rigorously (Bücker and Poutsma, 2010). One of these promising constructs is Cultural Intelligence (CQ) developed by Earley and Ang (2003). Cultural Intelligence is defined as an individual’s capability to function and manage effectively in culturally diverse settings or environments (Ang et al., 2007). That is, Cultural Intelligence deals with how an individual is able to adapt and thrive when in an environment other than the one where they were socialized, through the use of various traits and skills (Brislin, Worthley and Macnab, 2006). A culturally intelligent employee can make decisions, communicate, and negotiate across cultures while motivating other employees from different cultures (Thomas and Inkson, 2004). Not only does CQ require knowledge of a novel culture, it also requires an individual's motivation to engage in that culture (Earley and Ang, 2003).

Cultural Intelligence, according to Ng and colleagues (2005, 5) “fills an important gap in the literature of intelligence by focusing on one’s ability in a critical domain: cross-cultural contexts.” Since its initial conception (Earley and Ang, 2003), the cultural intelligence construct

developed in two different directions, represented by Thomas and colleagues (2006) and Ang and colleagues (2007). So far, only Ang and colleagues' construct has resulted into the development of a measurement instrument, the Cultural Intelligence Scale (CQS) (Ang et al., 2004, 2007).

1.1.2.The Cultural Intelligence construct

The Cultural Intelligence construct received broader attention at the Academy of Management Conference in 2004 and hosted a special issue of the *Group & Organization Management Journal* in 2006. Ng and Early (2006), contributing to this special issue claimed: "There are many interesting questions about CQ that remain to be asked and answered. Empirical research on Early and Ang's (2003) conceptualization of CQ is nascent, yet preliminary results are promising; more momentum and greater concerted effort to move this field of research forward is needed." This is confirmed by other authors: "Given the newness and novelty of the construct, empirical research on CQ is sparse albeit growing" (Ang et al., 2006, 101). Gelfand and colleagues (2008, 379) concluded in the last chapter of the *Handbook of Cultural Intelligence*: "Yet this volume (*Handbook of Cultural Intelligence*) also illustrates that we are still in a very embryonic state regarding theorizing and research on the CQ facets."

1.1.3.New directions

Some authors suggest new directions for research on CQ. Ng and Early (2006) proposed that future research regarding CQ should address its measurement, and its larger nomological network. They conclude: "We hope organizational researchers will take up our challenge and address the various pieces of a larger puzzle" (Ng and Early, 2006, 16). Time has shown that this

suggestion has been taken up by Ang and colleagues (2007) who developed the CQS, a measurement instrument to measure CQ. However, these authors themselves and other authors claim there is a need to further explore the nature and dimensions of CQ and to further validate and test the CQS (Ang et al., 2007; Thomas et al., 2008). Ang and colleagues (2007) recommend that future research could examine additional CQ predictors, such as individual difference characteristics, and CQ outcomes, such as intercultural effectiveness indicators. Next, they recommend the enlargement of the geographic scope of CQS' testing by adding new countries and cultures. Finally Thomas and colleagues (2008, 136) claim that: "The complete development of a measure of cultural intelligence remains a work in progress." These scholars clearly suggest further development of the CQ construct and of its measurement.

Unlike other scales derived from similar constructs that have been privately developed and copyrighted, restraining further testing of their validity and further development, the CQS has been tested openly (Brislin et al., 2006; Templer et al., 2006; Ang et al., 2007). Table 1 gives an overview of these testing results.

1.1.4.Overview of assessments of the CQS

An overview of assessments of the Cultural Intelligence Scale (CQS) since 2004 is provided in Table 1.

[Insert Table 1 about here]

According to Ang & Van Dyne (2008, 34) a number of empirical studies expired among Singaporean and US students provide "strong evidence that the CQS has a clear, robust, and meaningful four-factor structure." In addition, results demonstrate that the four-factor structure of the CQS is stable across samples, across time, and across countries. Ang and Van Dyne (2008,

35) also claim that from a theoretical perspective, the findings of these studies “indicate that the 20-item CQS holds promise as a reliable and valid measure of CQ.” Moreover, the CQS also has a practical application: “it can provide important insights and personal information to individuals on their own CQ.” The authors conclude: “In sum, the CQS has exciting implications for global leadership and effectiveness of individuals in work and non-work international and domestic settings that are culturally diverse.”

The CQS instrument seems to be promising. Significant relationships with several other relevant competencies models have been established. For example, CQS has been related to the emotional intelligence (EI) scale by Schutte and colleagues (1998), to the Big Five personality scale by Mount and Barrick (1995), to the cross-cultural competency scale, CCAI by Kelly and Meyers (1995), and to cross-cultural adjustment (Templer et al., 2006).

On the one hand, the results of the testing of the CQS are encouraging. However, on the other hand, we observe in Table 1, that most validation studies (Ang et al., 2006, 2007) come from a sample of young undergraduate students with limited foreign experience. The test of the nomological validity of the scale is also done among various respondents groups: undergraduate students, international managers, and foreign professionals (Ang et al., 2007, Study 1, 2 and 3). However, the last two groups of respectively 91 and 103 respondents, are rather small though, especially if you want to compare for nationality within these samples. Furthermore, in Study 2 (Ang et al., 2007), fit indices, such as NNFI and CFI (.86 and .88) and RMSEA (.06) are not particularly good. This does not show a convincing model fit. Another surprising result is that the undergraduate students from Singapore (Ang et al., 2007, Study 1) have a significant lower score on the means for the four CQS factors than the US students, which is not explained.

In this paper we like to take up the challenge, as proposed by Ang et al. (2007), to include more country studies and to include more CQ predictor and CQ outcome variables. We also critically evaluate the CQS and further test the CQS in a homogeneous country sample, consisting of mature students with proven experience living in another country for a minimum period of three months. These students have been confronted more intensive with cultural differences (and culture shock) and are thus better able to fill in the questionnaire. The questions of the CQS all refer to cross-cultural situations and assume former experience with cultural differences. The students in the samples of Ang and colleagues (2007), who are predominantly domestic students in Singapore and the U.S. seem to have limited exposure to foreign cultures. Lacking this cross-cultural exposure may result in experiences that are from a cultural perspective too limited to give appropriate answers to the CQS survey questions. To enable exploration of more relationships between CQ and predictor variables and outcome variables, new demographic variables are included in the research.

In sum, in this study, we further develop the CQS in three ways. First, we examine the validity and reliability of the CQS by testing the CQS on a group of homogeneous students: a group of 308 Chinese students with significant overseas experience. Ang and colleagues (2007) tested the CQS in two English-speaking countries. In this study, the sustainability of the CQS is tested in a non-English speaking Asian country, China, making use of the Chinese version of the CQS (see references). Thus, we hope to further contribute to development of the scale. Second, we include a number of external demographic variables, enabling new insights as predictors in the differences in CQS among age groups, among gender, among different educational background, among different target countries, among different fields of study, the amount of time spent abroad and the status of living abroad (alone, with partner/spouse, with family/friends

of the same nationality or different nationality) thus improving understanding. Third, we analyze the relationship between CQ and one of its outcomes (i.e., cross-cultural communication performance).

1.2.THE CULTURAL INTELLIGENCE CONSTRUCT

Cultural intelligence (Earley and Ang, 2003) captures the capability of a person to adjust to various cultures and cultural settings. Earley and Ang (2003, 9) define cultural intelligence as “a person’s capability for successful adaptation to new cultural settings, that is, for unfamiliar settings attributable to cultural context.” A high CQ enables a person to behave effectively in a multicultural environment or to effectively switch between different cultural environments as part of his/her daily work. CQ is a form of intelligence, like social intelligence or emotional intelligence. Earley and Mosakowski (2004, 153) define intelligence as “a person’s capacity to solve problems and adapt to changing situations.” While a traditional view on intelligence focuses on academic skills, social or emotional intelligence alternatively reflects the capability to interact and work with other people (Earley and Mosakowski, 2004). However, these capabilities focus on domestic settings. The capability to understand people’s behavior and effectiveness across cultural boundaries is what Early and Mosakowski define as Cultural Intelligence (CQ). Thus, CQ is a specific form of intelligence focused on a person’s capabilities to grasp, reason, and behave effectively in situations characterized by cultural diversity (Ang et al., 2007). Thomas and colleagues (2008, 127) define Cultural Intelligence as “a system of interacting knowledge and skills, linked by cultural metacognition, that allows people to adapt to, select, and shape the cultural aspects of their environment. Templer and colleagues (2006, 167) provide empirical evidence for the CQ construct: “findings on motivational CQ and cross-cultural

adjustment, using a group of global professionals from diverse backgrounds, demonstrate the validity, generalizability, and applicability of the CQ concept. Global employees who were more interested and motivated to explore and experience diverse cultures, and who were more self-confident in their abilities to adapt to new cultural environments adjusted better to work, life, and social demands in foreign assignments”. In another research, relating CQ to the Big Five personality factors, Ang and colleagues (2006, 115) give evidence of CQ: “[...] the current study provides two types of evidence for the distinctiveness of the four-factor structure of CQ. First, results demonstrated the discriminant validity of the four CQ factors compared to the Big Five personality factors. Second, results also demonstrated differential relationships between specific personality characteristics and specific facets of CQ.”

1.2.1.CQ: a multidimensional construct.

CQ represents a multidimensional construct of intelligence. Ang and colleagues (2007) describe it as an aggregate multidimensional construct, meaning that the construct and the dimensions are on the same level of conceptualization and that the dimensions together form the overall CQ construct. The four dimensions – Meta-Cognitive CQ, Cognitive CQ, Motivational CQ, and Behavioural CQ – are different capabilities that together form overall CQ.

Metacognitive CQ is an individual’s cultural consciousness and awareness during interactions with those from different cultural backgrounds. Ang and colleagues (2006, 101) describe it as “the processes individuals use to acquire and understand cultural knowledge” People with strength in metacognitive CQ consciously question their own cultural assumptions, reflect during interactions, and adjust their cultural knowledge when interacting with those from other cultures (Ang and Van Dyne, 2008).

Cognitive CQ reflects knowledge of the norms, practices and conventions in different cultural settings acquired from education and personal experience (Ang et al., 2007). This includes knowledge of the economic, legal, and social systems of different cultures and subcultures and knowledge of basic frameworks of cultural values (Ang et al., 2007). Given the wide variety of cultures in the contemporary world, cognitive CQ indicates knowledge of cultural universals as well as knowledge of cultural differences.

Motivational CQ reflects the capability to direct attention and energy toward learning about and functioning in situations characterized by cultural differences. Those with high motivational CQ direct attention and energy toward cross-cultural situations based on intrinsic interest and confidence in their cross-cultural effectiveness (Ang et al., 2007). It reflects a high self-efficacy.

Behavioral CQ is “the capability to exhibit appropriate verbal and non-verbal actions when interacting with people from different cultures” (Ang et al., 2006, 101). Those with high behavioral CQ exhibit situational appropriate behaviors based on their broad range of verbal and non-verbal capabilities, such as exhibiting culturally appropriate words, tone, gestures and facial expressions (Ang et al., 2007).

1.2.2.Item development of the CQS

Ang and Van Dyne (2008, 19) started building their CQ scale with 53 items, from which after panel evaluations and some rephrasing 40 items were retained. Dimensionality of the CQ scale was assessed with confirmatory factor analysis (CFA)(LISREL 8: maximum likelihood estimation and correlated factors. Through a process of item reduction by deleting items with high residuals, low factor loadings, small standard deviation, extreme means, and low item-to-

total correlation, 20 items with the strongest psychometric properties, were kept: four meta-cognitive CQ items, six cognitive CQ items, five motivational CQ items, and five behavioral CQ items. The final CQS as developed by Ang and colleagues (2007) is presented in the Appendix, Table 3.

1.3. METHOD

1.3.1. Sample

A lot of Chinese students are studying overseas in Europe, the US and Asian non-Chinese countries. This Chinese student community with overseas experience forms a solid group to do empirical research on related to the CQS. This overseas Chinese student cohort was approached via a number of Chinese students working and studying at the Radboud University in Nijmegen. Next, the networks of these Chinese respondents were asked to further distribute the questionnaire to their Chinese networks. Next, the questionnaire was published online on Chinese forums in the Netherlands, Germany, France, the U.K., the U.S., Canada, Australia, New Zealand, Japan, South-Korea, and Singapore.

Finally, 307 respondents were considered appropriate for analysis. Characteristics of the sample are provided in Table 2.

[Insert Table 2 about here]

1.3.2. Questionnaire Design

The final questionnaire for our research consists of four parts. The first part consists of the original Chinese version of the CQS. It contains 20 items covering the four dimensions of CQ. The second part, designed by the researchers of this study, consists of 10 demographic questions.

These questions will be used for further analysis of possible relationships between CQ and respondent's backgrounds. The third part, designed by the authors of this study, consists of 4 questions measuring respondents' communicative effectiveness across national cultures. The fourth part consists of 10 questions measuring respondents' social desirability. The Marlowe-Crowne Social Desirability Scale 2 (10) is used because of its short length and high reliability (Strahan & Gerbasi, 1972). The purpose is to check for possible bias as a result of respondents' social desirability.

1.3.3. Translation

All the questions in part 2, 3, and 4 are originally designed in English and are translated into Chinese. In this process, the translation and back-translation procedure is adopted. Due to limitation of time, cost, and scarcity of Anglo-Saxon-Chinese bilinguals in the Netherlands, we asked eight Chinese persons who have lived, studied or worked in the U.S. or U.K. for over 10 years to make the translation. All of them are highly educated (Ph.D. degrees) and have a high level of proficiency in both English and Chinese. Four of them made the translation from English to Chinese; the other four did the back-translation from Chinese to English. The differences in translations were discussed by conference via network video meetings. This resulted in the final version of the questionnaire used in this study.

1.3.4. Data analysis

With the help of SPSS and AMOS (for structural equation modeling) we analyzed the data. First, we determined the level of measurement model fit by running confirmatory factor analysis. This resulted in four models showing model fit indices. We also calculate the factor loadings

belonging to the model and the Cronbach Alphas showing reliability. Second, we calculate a correlation matrix showing the correlations between the CQ factors. Third we do a regression analysis to measure the causal relationship between a number of independent variables and the dependent variable CQ.

We first did an analysis to assess measurement model fit. We started with Model 1 with the original 20 items of the CQ scale. The results in the Appendix, Table 4 (Measurement model's fit indices) under Model 1 show that the fit is bad. GFI, AGFI, TLI, and CFI are too low. RMSEA and SRMR are too high. We deleted four items (MC2, MOT1, MOT4, and BEH1) with low factor loadings (all lower than .50) (see Appendix 1, Table 3). Then, we recomputed CFA, the outcomes are presented in Model 2 (Appendix, Table 4). These results still reflect low model fit. Indices like GFI, AGFI, TLI are lower than .90, and CFI lower than .95. The indices SRMR and RSMEA are above .05 and .06, respectively. Looking at the cross loadings (Modification indexes) between eCOG 6 and eCOG5 and eCOG6 and eBEH5 we decided to eliminate item COG6, leaving a model with 15 CQ items. The fit indices of this Model 3 are also shown in the Appendix, Table 4. The outcomes show a clear improvement although the minimum levels of .9 for GFI, AGFI, TLI, and .95 for CFI are not yet reached. The same for the maximum level of .05 for RMSEA and .06 for SRMR. In the next step, we added co-variances between the error terms of COG4-MOT3, BEH4-BEH5, and MOT2-BEH3 and again run CFA. The outcomes of Model 4 in Appendix 1, Table 4 show an increase of the indices GFI, AGFI, TLI, and CFI up to .94, .91, .94, and .95, respectively. The RMSEA and the SRMR show a decrease to good values of 0.53 (90% CI: .039 - .066) and 0.50, respectively. These fit indices show acceptable level of fit (having 15 CQ items).

Looking at the factor loadings (standardized regression weights in the Appendix, Table 3, we can conclude that these loadings do not change a lot if we move from Model 1 to Model 4. The factor loadings of the BEH CQ dimension are overall very small. This dimension has not a very strong predictive power. Overall convergent validity is low (small factor loadings).

The reliability indices of the various CQ dimensions over the four models show that for MC, Model 4 shows an alpha of .72, which is acceptable. For COG, the reliability index alpha is .79, which is good. Cronbach's alpha for MOT is .65 and for BEH is .68 which is just below the recommended .70 level (Nunnally, 1978).

Looking at the correlations between the four CQ dimensions in the Appendix, Table 5 (correlation matrix), we see a strong and significant correlation (.818^{***}) between dimension MC and COG. These two CQ dimensions are strongly related and therefore show little distinctiveness. Between MOT and BEH we also see a strong correlation (.819^{***}). Correlations between the other dimensions are (.537^{***} and -.681^{***}). We compare the correlations with the square root of the average variance extracted (AVE, on the diagonal of the correlation matrix) (i.e., Fornell and Larcker's (1981) test) and we may conclude from these comparisons that the CQ model lacks discriminant validity and therefore does not reflect the four dimensions MC, COG, MOT, and BEH but only one dimension.

Next, we want to investigate the relationship between the external independent variables and the CQ dimensions separately and the total CQ construct. We see the outcomes of the regression analysis in the Appendix, Table 6, regression results. We see for 'Gender' a clear influence on COG, BEH, and total CQ. For 'Education' we see no clear relationships. The relationship of the independent variable 'Contact Frequency' is strong for all dimensions and the CQ construct. The relationship of the independent variable 'Abroad Time' is strong with the dimension COG

and the CQ construct. Social desirability shows a strong relation with the dimensions MC and MOT, and the total CQ construct. The F -values are significant for all dimensions and for the construct. The R square is relatively strong for all dimensions except BEH ($R^2 = .073$; $R^2_{adj} = .058$). What is interesting to notice is that the regression model for the overall CQ is better (high R^2), than the models for the individual dimensions. This strengthens the argument of the lack of discriminant validity and the uni-dimensionality of the construct.

1.4. DISCUSSION

Reflecting on the results of this study we may conclude that it makes sense to further develop the research on the cultural intelligence scale (CQS). From this research based on a homogeneous (concerning country background) sample of Chinese students with serious overseas experience we find that the reliability of the scale is not strong enough.

Internal reliability of the four CQ factors shows a strong reliability (.82) for the factor COG and rather modest figures for the other three factors: MC, MOT, and BEH (.69, .70, .68).

In fact there is only one strong factor, which seems to be behind the CQS. This may be due to the fact, as already announced by some of the respondents in their comment after filling in the questionnaire, that some of the questions' meanings are very closely related. Especially some of the MC-related questions are close to the COG-related questions. Another reason might be that instead of measuring real behavior and real motivation we merely measure attitudes towards behavior and motivation. And attitudes are more closely related to COG than to BEH and MOT. The different outcomes in this research study might be due to the fact that this is a much more homogeneous sample (country heritage) making only use of the Chinese questionnaire. It is not completely clear to what extent this Chinese version of the questionnaire was used earlier in the

research of Ang and colleagues. As the samples in Ang and colleagues' (2007) research were taken from large US and Singaporean universities (besides small groups of managers and professionals), it is possible that in these samples only the English version of the CQS was used. In that case our results may be related to the (lower) quality of the Chinese translation of the CQS.

Concerning the independent predictor variables, we see a clear relationship between 'Gender' and CQ, finding higher scores for women than men on the COG and BEH dimensions. This seems plausible taking into account an also higher score for women on emotional intelligence for women. This has implications for selection and training programs. 'Contact Frequency' has a clear impact on CQ for all dimensions. This stresses the importance of stimulating exposure to foreign contacts when abroad. 'Abroad Time' has a relationship with COG and total CQ. As a consequence, longer international assignments stimulate the cognitive dimension and total CQ. This relationship also strengthens idea of only one factor behind the CQ construct. In terms of social desirability, MC and MOT and total CQ are vulnerable for social desirability. Questions related to these items need to be critically re-formulated.

1.5. CONCLUSIONS

The main conclusions drawn from this research are related to further development of the CQS scale. To improve the reliability and validity of the CQS, further research is needed. Especially more research making use of homogeneous samples of respondents from a diverse set of countries is needed. Especially respondents from European countries need to be involved in this research. To prevent interpreting the questions of the CQS too much in terms of attitudes, other ways of measuring Behavior and Motivation may be necessary. It is not sure that short survey

questions just will be enough. The use of small written cases or video fragments may be needed to get the respondent more close to his or her real behavior. For motivation, questions in dilemma format may enhance the quality of the outcomes as this forces respondents to show their more primary motivation without too much of social desirability. The same counts for Social Desirability and MC. Critical attention for the style of the questions used is needed.

1.5.1. Limitations

Also this research has its limitations. Although we collected a large sample of data, it is a convenience sample, having implications for reliability. We made use of the translated Chinese questionnaire provided by Ang and colleagues (2007). The quality of the translation may be due to a bias of the results, especially if we realize that some of the key words in the questions are very close in its meaning. Another limitation is that we collected data in only one country. More country samples should be tested which also enables comparison between countries.

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CQS Chinese version:

(<http://www.culturalq.com/papers/20%20cq%20scale%20in%20chinese.pdf>).

Appendix

Table 1: Overview of validation research in studies testing the CQS.

| Authors | Country | Sample | Measure | Outcome | Critics |
|---|---|--|---|--|---|
| Ang et al. (2007), study 1 | U.S. | 235 undergraduate students; average age = 22; 45% female | CQS | Outcome statistics are acceptable: $X^2 = 2349.73$, $df = 1350$; NNFI = 0.93; CFI = 0.94; SRMR = 0.05; RMSEA = 0.05; $\beta = 0.57-0.76$; Mean: MetaC = 5.00, COG = 3.67, MOT = 5.35, BEH = 4.18; SD = 0.93-1.18. | Sample consists of students with limited foreign experience; there is discriminant validity: AVE exceeded correlations ² between |
| Ang et al. (2007), study 1 | Singapore | 358 undergraduate students; average age = 19; 76% female | | Outcome statistics are acceptable: $X^2 = 1686.18$, $df = 869$; NNFI = 0.95; CFI = 0.96; SRMR = 0.05; RMSEA = 0.05; $\beta = 0.53-0.85$; Mean: MetaC = 4.63, COG = 3.14, MOT = 4.61, BEH = 4.12; SD = 0.67-0.90. | Sample consists of students with limited foreign experience; there is discriminant validity: AVE exceeded correlations ² between factors. |
| Ang et al. (2007), study 2 | 17 countries in Europe, Asia and ES. | 91 international managers; average age = 28; bachelor degree | CQS | Outcomes: $\alpha = 0.71-0.85$; $X^2 = 580.53$, $df = 401$; NNFI = 0.86; CFI = 0.88; SRMR = 0.08; RMSEA = 0.06 Mean: MetaC = 5.41, COG = 3.80; MOT = 5.82; BEH = 4.98 | NNFI and CFI are too low; RMSEA is too high; sample is not homogeneous; there is not tested for measurement equivalence among the separate countries. |
| Ang et al. (2007), study 3 | 12 Asian and European countries | 103 foreign professionals in IT consultant firm in Singapore. Supervisors of these professionals. | CQS | | Sample is not homogeneous. There is not tested for measurement equivalence. Total number of respondents is relatively small in comparison to number of countries. |
| Ang, S., Van Dyne, L. & Koh, C. (2006). | Singapore | Undergraduate students of University of Singapore, representing Singaporean students and foreign students from Europe, North-America, South-America, Eastern-Europe, Australia, New Zealand, although cultural heritage is not specified. Time 1: 465 students, and at Time 2 (6 weeks later) 338 students (of the former 465 students). | CQS | $\alpha = 0.76-0.84$ CFA: $X^2 = 369.91$, $df = 164$; GFI = 0.92; CFI = 0.97; NNFI = 0.96; SRMR = 0.46; RMSEA = 0.53. CFA supports good fit. | Sample is large, however also number of background cultures. Specifics among number of background cultures are missing. Measurement equivalence is not given. |
| Templer et al. (2006). | Singapore: South-East Asia, India, other Asian, Europe, America, Canada, Australia, New Zealand | 157 global professionals of different functions and different management levels | CQS, but only 5-item Motivational CQ sub-scale of the four factor CQS | A = 0.79 Mean = 5.31 for MOT CQ. High score on MOT CQ due to more experience and high education. | Sample is very diverse making inhibiting measurement equivalence. |

Table 2: Sample Characteristics

| External variables | Number of respondents | % of respondents |
|----------------------------------|-----------------------|------------------|
| Gender | | |
| Male | 148 | 48,2 |
| Female | 159 | 51,8 |
| Age | | |
| < 20 | 8 | 2,6 |
| $\geq 20 \leq 24$ | 104 | 33,9 |
| $25 \leq 29$ | 107 | 34,9 |
| $30 \leq 39$ | 73 | 23,8 |
| ≥ 40 | 15 | 4,9 |
| Education | | |
| Less than bachelor | 13 | 4,2 |
| Bachelor | 88 | 28,7 |
| Master/ MBA | 107 | 34,9 |
| Ph.D. | 99 | 32,2 |
| Time Abroad | | |
| Less than 3 months | 23 | 7,5 |
| 3-6 months | 13 | 4,2 |
| 6-12 months | 25 | 8,1 |
| 1-3 years | 91 | 29,6 |
| 3-5 years | 50 | 16,3 |
| More than 5 years | 105 | 34,2 |
| Contact Frequency | | |
| Seldom | 8 | 2,6 |
| Occasionally | 81 | 26,4 |
| Often | 159 | 51,8 |
| All the time | 59 | 19,2 |
| Living status | | |
| Alone | 106 | 34,5 |
| Partner/ same nat. | 79 | 25,7 |
| Partner mixed nat. | 16 | 5,2 |
| Family/ friends same nat. | 49 | 16,0 |
| Family/ friends mixed nat. | 13 | 4,2 |
| Family/ friends same/ mixed nat. | 37 | 12,1 |
| Others | 7 | 2,3 |
| Total | 307 | 100 |

Table 3. Standardized Factor Loadings and Cronbach's Alpha

| | | MC | | | | COG | | | | MOT | | | | BEH | | | |
|------|--|-----|------|------|------|-----|-----|------|------|-----|------|------|------|-----|------|------|------|
| | | M1 | M2 | M3 | M4 | M1 | M2 | M3 | M4 | M1 | M2 | M4 | M3 | M1 | M2 | M3 | M4 |
| MC1 | I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds. | .66 | .68 | .67 | .67 | | | | | | | | | | | | |
| MC2 | I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me. | .39 | n.u. | n.u. | n.u. | | | | | | | | | | | | |
| MC3 | I am conscious of the cultural knowledge I apply to cross-cultural interactions. | .85 | .87 | .88 | .87 | | | | | | | | | | | | |
| MC4 | I check the accuracy of my cultural knowledge as I interact with people from different cultures. | .55 | .53 | .53 | .54 | | | | | | | | | | | | |
| COG1 | I know the legal and economic systems of other cultures. | | | | | .69 | .69 | .69 | .68 | | | | | | | | |
| COG2 | I know the rules (e.g., vocabulary, grammar) of other languages. | | | | | .51 | .51 | .52 | .52 | | | | | | | | |
| COG3 | I know the cultural values and religious beliefs of other cultures. | | | | | .76 | .77 | .79 | .79 | | | | | | | | |
| COG4 | I know the marriage systems of other cultures. | | | | | .70 | .70 | .68 | .69 | | | | | | | | |
| COG5 | I know the arts and crafts of other cultures. | | | | | .66 | .66 | .63 | .63 | | | | | | | | |
| COG6 | I know the rules for expressing non-verbal behaviors in other cultures. | | | | | .62 | .62 | n.u. | n.u. | | | | | | | | |
| MOT1 | I enjoy interacting with people from different cultures. | | | | | | | | | .46 | n.u. | n.u. | n.u. | | | | |
| MOT2 | I am confident that I can socialize with locals in a culture that is unfamiliar to me. | | | | | | | | | .70 | .72 | .72 | .72 | | | | |
| MOT3 | I am sure I can deal with the stresses of adjusting to a culture that is new to me. | | | | | | | | | .65 | .69 | .70 | .70 | | | | |
| MOT4 | I enjoy living in cultures that are unfamiliar to me. | | | | | | | | | .46 | n.u. | n.u. | n.u. | | | | |
| MOT5 | I am confident that I can get accustomed to the shopping conditions in a different culture. | | | | | | | | | .50 | .48 | .48 | .47 | | | | |
| BEH1 | I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it. | | | | | | | | | | | | | .43 | n.u. | n.u. | n.u. |
| BEH2 | I use pause and silence differently to suit different cross-cultural situations. | | | | | | | | | | | | | .51 | .53 | .53 | .55 |
| BEH3 | I vary the rate of my speaking when a cross-cultural situation requires it. | | | | | | | | | | | | | .59 | .58 | .58 | .64 |
| BEH4 | I change my non-verbal behavior when a cross-cultural interaction requires it. | | | | | | | | | | | | | .64 | .65 | .65 | .55 |
| BEH5 | I alter my facial expressions when a cross-cultural interaction requires it. | | | | | | | | | | | | | .63 | .62 | .62 | .50 |
| | Cronbach's Alpha | .69 | .72 | .72 | .72 | .81 | .81 | .79 | .79 | .69 | .65 | .65 | .65 | .68 | .68 | .68 | .68 |

Table 4. Measurement Models' Fit Indices

| Model | Modifications | χ^2 | d.f. | $\chi^2/\text{d.f.}$ | RMSEA | SRMR | GFI | AGFI | TLI | CFI |
|--------------|---|----------------------------|-------------|--|-----------------------|-------------|------------|-------------|------------|------------|
| Model 1 | Full model (20 items) | 411.0 | 164 | 2.51 | .070 [.062 - .079] | .061 | .882 | .849 | .847 | .868 |
| Model 2 | Delete items with low loadings (MC2, MOT 1, MOT4, BEH1) (16 items left) | 253.8 | 98 | 2.58 | .072 [.061 - .083] | .059 | .906 | .869 | .881 | .903 |
| Model 3 | Delete items with cross-loadings (COG6) (15 items left) | 187.1 | 84 | 2.23 | .063 [.051 - .075] | .056 | .926 | .895 | .910 | .928 |
| Model 4 | Covariances between error terms (COG4-MOT3, BEH4-BEH5, and MOT2-BEH3) (15 items left) | 149.5 | 81 | 1.85 | .053 [.039 - .066] | .050 | .940 | .910 | .938 | .952 |

Table 5. Correlation Matrix

| | MC | COG | MOT | BEH |
|------------|---------------------|---------------------|---------------------|-------------|
| MC | .707 | | | |
| COG | .818 ^{***} | .667 | | |
| MOT | .649 ^{***} | .681 ^{***} | .639 | |
| BEH | .638 ^{***} | .537 ^{***} | .819 ^{***} | .562 |

*** $p < .001$; Square root of AVE in the diagonal.

Table 6. Regression Results

| | MC | COG | MOT | BEH | CQS |
|--------------------------------------|------------------------------|--------------------|------------------------------|------------------------------|--------------------|
| Gender | .056 (1.027) | .153** (2.814) | .106 [†] (1.922) | .162** (2.845) | .150** (2.818) |
| Education | -.064 (-1.105) | .014 (.251) | -.019 (-.327) | -.021 (-.358) | -.028 (-.507) |
| Contact Frequency | .238*** (4.382) | .267*** (4.965) | .234*** (4.269) | .159** (2.816) | .287*** (5.438) |
| Abroad Time | .107 [†] (1.884) | .159** (2.842) | .099 [†] (1.729) | .029 (.494) | .128* (2.324) |
| Social Desirability | .229*** (4.192) | .108* (2.006) | .180*** (3.259) | .101 [†] (1.768) | .197*** (3.705) |
| <i>F</i> -Value | 10.18*** | 11.88*** | 9.022*** | 4.789*** | 14.485*** |
| <i>R</i> ² | .144 | .164 | .130 | .073 | .193 |
| <i>R</i> ² _{adj} | .130 | .151 | .116 | .058 | .180 |

[†] $p < .10$; * $p < .05$, ** $p < .01$, *** $p < .001$.

Standardized coefficients and *t*-values between parenthesis.