Education-Related Factors in Cultural Intelligence Development: A Colombian Study

Article *in* Journal of Teaching in International Business · June 2016

DOI: 10.1080/08975930.2016.1172541

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Abstract

This paper reports the results of a study inquiring about the role of education-related factors in the development of Cultural Intelligence. 557 students of a Colombian International Business undergraduate program participated in the study. The psychometric properties of the measures were assessed by conducting exploratory and confirmatory factor analyses, and by calculating the corresponding reliability coefficients. T-tests and ANOVA analyses were carried out to test the hypotheses of the study. The results of the study suggest that second language proficiency, multicultural team membership, and participation in curricular and extracurricular activities promote the development of the Cultural Intelligence of undergraduate International Business students.

Key words: Cultural Intelligence; Education; Colombia; International Business.

1. Introduction

In view of factors such as globalization, continued cultural tensions, sound theory and assessment tools, cultural intelligence (CQ) research has experimented an extraordinary growth (Ng, Van Dyne, & Ang, 2012). A number of studies inquiring into the correlates, antecedents and consequences of CQ have been conducted in different cultural and organizational settings. Previous research has established that employing workers with highly developed CQ has important implications for both the individual and the organization as CQ levels are known to influence an individual's performance at the personal and professional levels. Previous studies suggest that highly developed CQ contributes to build high-performing global teams, it allows working effectively in a culturally diverse work environment, it helps to succeed in global work assignments, and it provides competences to lead globally (Earley, Ang, & Tan, 2006). Further, CQ development is considered to be a predictor of good performance in negotiations in the sense that: it helps to prepare future negotiators (Adler, 2002; Gelfand & Brett, 2004) with more cooperative motives (Kumar, 2004), and stimulates the negotiators' integrative information behaviors which in turn lead to joint profit (Imai & Gelfand, 2010). Moreover, CQ also helps practitioners to develop mental models in order to perform effective leadership styles according to the culture (Hofstede, Hofstede, & Minkov, 2010; Janssens & Brett, 2006).

The Cultural Intelligence Scale (CQS) developed by Van Dyne, Ang, and Koh (2008) has been extensively used to measure the Cultural Intelligence at the individual level and has been validated for several countries, such as the United States, several European Countries and a few Asian countries; nevertheless, the instrument was not validated for the Colombian Context until now. Further on, when it comes to business education, the current trade dynamics and educational goals, demand for high qual-

ity standards to be addressed, including that of preparing young graduates to perfume in culturally diverse contexts. Graduate and undergraduate programs designed to develop useful skills in global settings need to evaluate the factors that positively contribute to future performance. The assessment of learning achievements of business students helps to improve curricula (Martell, 2007).

Following previous studies on the ways to develop CQ (Eisemberg et al., 2013; Van Dyne et al., 2008; Carpenter, Sanders, & Gregersen, 2001; Daily, Certo, & Dalton, 2000), the main purpose of this paper is to validate the use of the CQ Scale and to examine the education-related factors contributing to the development of CQ in undergraduate students. As a result, this paper contributes to the improvement of business education, namely: second language proficiency, participation in international teams, involvement in extracurricular activities relating to different cultures, and semester of their academic studies. The findings indicated that the difference in CQ levels between individuals with high and low second language proficiency is statistically significant. For students participating in multicultural teams, higher levels of CQ were observed only for the metacognitive and motivational dimensions. When analyzing the participation in extracurricular activities, CQ was found to be higher for those students involved. Lastly, when referring to the levels of CQ for students of different semesters of the program, the results show that students of higher semesters possess higher levels of CQ, but the increase is not a continuous process through the different semesters as small declines are observed in semesters four, seven and nine.

The paper is organized as follows: first, the conceptual background relating to Cultural Intelligence and its development is provided; second, information relating to the sample and the data collection procedure are explained; third, previous validations of the CQ Scale are outlined; then, the results of the validation for the CQS for the Colombian context and the results for the proposed hypothesis are presented. Lastly, the results are discussed to conclude that there are a number of factors influencing undergraduate student's development of CQ which involve not only the academic components of the curricula such as courses related to cross cultural topics; therefore, that business programs should provide and promote opportunities for students to participate in different types of activities such as the participation in multicultural teams and extracurricular activities.

2. Cultural Intelligence

In addition to the theories relating to cognitive intelligence, theories on multiple intelligences (Gardner, 1993; Sternberg, 1977; Mayer & Salovey, 1997; Thorndike, 1920) often include social intelligence, as an individual's ability to understand others and behave accordingly (Thorndike, 1920); emotional intelligence (EQ), as the ability to connect emotions with thought to regulate them in the search for emotional and intellectual growth (Mayer & Salovey, 1997); and more recently Cultural Intelligence (CQ) (Earley & Ang, 2003).

Motivated by the numerous challenges posed by the globalization phenomenon (Earley & Ang, 2003), Cultural Intelligence (CQ) was first introduced as a construct in the late 21st century in an attempt to explain the differences in terms of performance amongst individuals that face complex multicultural business contexts (Ang, Van Dyne, & Tan, 2011). Culturally Intelligent individuals have the ability to interact effectively, at the personal and professional levels, while showing improved performance (Ang et al., 2007), given their openness and competence to manage cultural differences.

When relating CQ to other types of intelligence it can be found that similarly to cognitive and emotional intelligence, CQ refers to a specific set of abilities. Hence, these types of intelligence differ on the nature of the ability and the outcome to be predicted, and by the fact that CQ is culture-bound. As proposed by Ang et al. (2011), this means that a culturally intelligent person can perform across different cultural settings, while emotionally intelligent individuals in one context may not be so when facing cultural differences. CQ is not culture or context-specific, but specific to a particular type of situation, those that can be described as culturally diverse (Ang et al., 2011).

[TABLE 1 ABOUT HERE]

According to Sternberg and Detterman (1986), the intelligence should be treated as a multidimensional construct, meaning that there is not a general factor of intelligence (Sternberg, 1999). Each form of intelligence goes beyond cognitive abilities and should integrate three types of individual-level intelligence, namely practical, creative and analytical intelligence (Sternberg & Detterman, 1986). Drawing on Sternberg and Detterman's (1986) conceptualization, Ang and Van Dyne (2008) operationalized CQ as a construct composed of four factors, namely: metacognitive CQ, which refers to the individual's awareness of his own culture; cognitive CQ, which relates to the knowledge possessed about other cultures; motivational CQ, linked to the individual's interest to interact with other cultures in an effective manner; and behavioral CQ, which consists of the individual's ability to adapt and modify his behavior in order to interact in culturally diverse contexts.

Shannon and Begley (2008) propose a theoretical model with 3 antecedents of CQ. Each antecedent has a differential effect on CQ as it impacts different CQ dimensions. In Shannon and Begley's (2008) theoretical model the interaction with people from other cultural settings outperforms the other predictors of CQ in that this construct has a positive influence on all the 4 CQ factors. This antecedent of CQ is followed in importance by the ability to use foreign languages as required by the intercultural settings and, finally, by international work experiences.

According to Ng, Van Dyne and Ang (2009), international work and non-work related experiences

contribute to the development of the CQ. Specifically, these experiences promote the individuals' emotional involvement in transforming what they learn into conscious behaviors. International experiences are opportunities for the individuals to learn about norms, values and practices of different cultures. Moreover, knowledge and positive attitudes are enhanced, and individuals cope with future and unfamiliar intercultural interactions more effectively (Tarique & Takeuchi, 2008).

A number of scholars have pointed out the positive influence that international non-work related experiences have on the development of motivational CQ (see Table 2). Tarique and Takeuchi (2008) suggest that international non-work related experiences such as internships and short visits to other countries help individuals to develop skills and behaviors that in turn help them to perform more effectively in different cultural environments.

[TABLE 2 ABOUT HERE]

Previous research has shown how several education-related factors impact the cultural intelligence (CQ) of undergraduate and graduate business students from different countries. For instance, Morrell et al. (2013) found in a sample of students enrolled in an international business course that prior education international experiences are positively and significantly related to all dimensions of cultural intelligence. Besides, Engle and Crowne's (2014) study showed that a short-term international experience lead to a significant growth in all CQ dimensions of undergraduate students of different majors (i.e. occupational theory, physical therapy and law). Further on, MacNab, Brislin and Worthley (2012), and Eisenberg et al. (2013) research findings show that the participation of undergraduate business students in courses related to cross cultural management have an effect on their CQ. Other researchers have demonstrated that the use of pedagogical tools like cross-cultural role-play simulation games in international management courses (Bücker & Korzilius, 2015) and the implementation of virtual multicultural team projects in management programs enhance students CQ (Erez et al., 2013). Noteworthy, the studies cited up to here were conducted in the U.S or European countries. To our knowledge, up to now, no study has inquired the effect of a series of curricular and extracurricular activities directed to improve the level of CQ of IB Latin-American students. Moreover, no study demonstrating the validity of the CQ construct for the Colombian population was found. Considering that IB professionals require developing abilities to effectively interact in the global arena, the present study was conducted in order to identify the influence of key factors in the levels of Cultural Intelligence in order to contribute to the improvement of the quality of IB undergraduate programs.
As faculty members of an IB department and based on previous research on education-related factors related to CQ development, the authors proposed the following hypotheses:

h1: IB students with second language proficiency have higher levels of CQ than those who don't.

h2: IB students with experiences as members of multicultural teams have higher levels of CQ than those who don't.

h3: IB students who participated in extracurricular activities dealing with knowledge of other cultures have higher levels of CQ than those who don't.

h4: Differences in CQ between students of different semesters of the IB undergraduate program; the higher the semester, the higher the CQ levels.

3. Method

3.1. Sample and procedure

Overall, 557 students of a Colombian IB undergraduate program participated in the study. In all cases the family of origin was Colombian. The ages ranged from 15 to 27 years. 58% of the respondents were women. However, the typical undergraduate student in Colombia, joins the program right after graduating from high school, at an average age of 17 years old. Exceptionally a minority of students will graduate from high school younger (15 years old), or join the IB program at a later age. Additionally, the Colombian regulation does not require a minimum age to enter an undergraduate program. The participants voluntarily responded to the questionnaire and gave their consent to the authors for publishing aggregated results. Two data collections were conducted. 482 students returned usable questionnaires. The data gathered from the first subsample were used to explore the psychometric properties of the CQ inventory. The responses of the participants composing the second sub-sample were employed to confirm the validity and reliability of the instrument. Both sub-samples included IB students from all the semesters of the undergraduate program.

The International Business undergraduate program currently has 1040 students and consists of 9 semesters. English as a second language is a requirement for admission and proficiency in B1 according to the Common European Framework is certified by international standardized evaluations such as TOEFL, IELTS, FCE or TOEIC. Because of English proficiency requirements for enrolment, most of the students either studied in bilingual and international schools, or went abroad to learn the language. Also, third language proficiency requirements towards the end of the program make students to pursue foreign learning environments, whether to travel abroad or to have native teachers and classmates in any of the six options they can choose from.

By sixth semester, all students not only need to show proficiency in advanced level in English (B2), but also an intermediate level in a third language of their choice (B1). The internship is a mandatory activity within the program, scheduled in the eighth semester, and can be performed at a broad range of industries, companies and locations, in Colombia or abroad. The curriculum includes courses related to international and intercultural aspects such as intercultural management, cultures and organiza-

tions, international negotiation and conflict resolution. Also, students can participate voluntarily in extracurricular activities related with intercultural management such as conferences, simulations or study tours. Further on, the program offers students who wish to engage into an international experience as part of the curriculum the opportunity to apply to an exchange semester in a partner university.

It is important to state that undergraduate students in Colombia are a homogeneous group in terms of age, access to university requirements, and academic program design (because of country regulations regarding higher education). Further, the international business undergraduate program where the participants of the study were enrolled is the second largest in Colombia of this kind, with 1040 students.

3.2. Measures

Van Dyne et al. (2008) developed and validated the Cultural Intelligence Scale (CQS) comprising 20 items through a series of studies to assess its validity. On an initial stage the study included a pool of 13 to 14 items per dimension for a total of 53 items; after testing the items for clarity, readability and definitional fidelity, 40 items were retained (10 for each dimension of CQ). Then, a first study was conducted using a sample of 576 Singaporean undergraduate students resulting in the exclusion of those items with high residuals, low factor loadings, small standard deviations or extreme means; as a result, 40 items were retained to measure the four dimensions. The authors ran a Confirmatory Factor Analysis (CFA), which demonstrated a good fit of the model to the data (Ang et al., 2011).

On a second stage, 4 additional studies were conducted to cross-validate the scale across samples, time, countries and methods. Study 2 (N=447) confirmed the four-factor structure through a CFA; then, a subset of respondents from this study was used in study 3 to assess the temporary stability of the scale; study 4 (N=337) was used to conduct multiple group tests of invariance using structural equation modeling to stablish generalizability across countries, using undergraduate students from Singapore and the United States. On the final stage, observer's rather than self-perceived levels of CQ were assessed using a sample of managers enrolled in an MBA program (N= 142). The web based questionnaire included self-reported CQ and interactional adjustment; also, participants were requested to complete an observer questionaire reporting the CQ of a randomly assigned peer. As a result, convergent, discriminant and criterion validity of the CQ was confirmed across self and peer ratings using a Multitrait Multimethod (MTMM) (Ang, et al., 2011).

The education-related factors included in the study were assessed as follows: Proficiency on English as a second language was measured using students' self-reported ratings by asking them about their

knowledge of English at an advanced level. For assessing the student's participation in multicultural teams, the survey included a question about their previous participation in activities, academic or not, involving members from different cultures; as for extracurricular activities, participation in academic and non-academic activities, within or outside the curriculum, such as conferences and cultural events, was considered.

3.3. Analysis

SPSS (v.21) was used to conduct tests of normality and multicollinearity of the scores, and to test the hypotheses of the study. To our knowledge Van Dyne et al. (2008) measure has not been validated for the population under study. In order to assess the psychometric properties of the measures, two factor analyses were conducted. In the field of intelligence measurement this has been referred to as internal validation processes (Sternberg, 2003). SPSS (v.21) was also selected to perform the exploratory factor analysis and to test the reliability of the subscales. Further, Mplus (v. 6.12; Muthén & Muthén, 2010) was chosen to confirm the validity and reliability of the measures. To this end, the Confirmatory Factor analysis (CFAs) approach was used.

To test for normality, the skewness and kurtosis coefficients of each item were divided by their corresponding standard errors. Values between -2.58 and 2.58 indicate that the variables are close enough to the normal distribution (Hair, Anderson, Tatham, & Black, 2008). Multicollinearity was assessed using the Variance Inflation Factor (VIF) and tolerance coefficients. Critical values for these coefficients are 10 and 1.00, respectively (Hair et al., 2008).

The EFA was conducted using the maximum likelihood estimator and the varimax rotation. The adequateness of the sample size for the EFA was assessed using the Kaiser Meyer Olkin (KMO). KMO > .80 indicate that the sample size is suitable for the EFA. The number of factors was chosen following the Kaiser criterion (Kaiser, 1960). According to this criterion, eigenvalues > 1 indicate the number of factors to be retained. Items with communalities above .40 can be retained (Costello & Osborne, 2005). The critical value for the factor loadings is > .40. However, items loading in more than 1 factor should be removed from the analysis. Cronbach's Alpha was calculated to assess the reliability of the scales.

The Confirmatory Factor Analysis (CFA) approach was adopted to confirm the psychometric properties of the measures. Two CFA models were tested in order to choose the most competitive model. A one factor CQ model in which all the original items loaded was compared with a four CQ dimension model. In this model, the items loaded in their corresponding theoretical CQ dimension. Maximum likelihood estimation with robust standard errors (MLR) was employed to cope with the asymmetry of

the data. CF-Varimax rotation was use in both CFAs. The Satorra-Bentler (χ^{2diff}) test was employed to choose the CFA that best fitted the data.

To calculate the χ^{2diff} from χ^2 tests of models estimated using the MLR estimator Satorra and Bentler (1999) proposed the following formulae:

T = (T0 * c0 - T1 * c1)/cd
Where:
c0 = scaling correction factor for the null model;
c1 = scaling correction factor for the alternative model;
d0 = degrees of freedom for the null model;
d1 = degrees of freedom for the alternative model
T0 = the Satorra-Bentler scaled chi-squared value for the null model;
T1 = the Satorra-Bentler scaled chi-squared value for the alternative model
cd = (d0 * c0 - d1 * c1)/ (d0 – d1).

The goodness of fit of each CFA was examined using the Comparative fit index (CFI), the Tucker-Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA) were selected to weight. The cut-off value for the CFI and TLI indices is .95 (Hu & Bentler, 1999). The rule of thumb for the RMSEA is around .07 or less (Hu & Bentler, 1999). The Average Variance Extracted (AVE) and the composite Reliability (CR) coefficient were calculated to assess the discriminant validity and reliability of the CFA factors.

Finally, a series of tests were conducted in order to validate the hypotheses of the study and, simultaneously, to conduct external validation operations (Sternberg, 2003) directed to assess the psychometric properties of the CQ measure. These tests included t-tests for independent samples (hypothesis h1, h2 and h3) and a MANOVA (hypothesis h4).

4. Results

The Kaiser-Meyer-Olkin index (KMO = .90) confirmed the adequateness of the sample size for the EFA. 4 factors with eigenvalues above 1 explained 64.29 % of the variance of the original items. All the original items were retained as all their communalities overcame the critical value. The decision of retaining all the original items was supported by the fact that each item loaded in its corresponding theoretical fact and the absence of cross-loadings (see Table 3).

[TABLE 3 ABOUT HERE]

Cronbach`s alphas ranged from .82 to .93 indicating excellent reliability for the EFA factors (see Table 4). All factors resulted positively moderate to high, and significantly correlated. These results suggest that the four factors are dimensions of a more general CQ factor.

[TABLE 4 ABOUT HERE]

The χ^{2diff} test resulted significant, indicating that the best fitting model was the 1 factor CFA. However, the CFA with items loading in each of the four CQ theoretical dimensions showed better model fit indexes than the 1 factor model. All fit indexes for the 4 factor CFA were satisfactory. Conversely, the 1 factor CFA had general fit indexes way below the cutoff values (see Table 5). Thus, the 4 factor model was chosen over the model with one general CQ factor (see figure 1).

[TABLE 5 ABOUT HERE]

[FIGURE 1 ABOUT HERE]

Reliability and discriminant validity coefficients of the CFA factors were satisfactory (see Table 6). If the AVE coefficient is greater than the squared correlations between the construct and the other latent variables, discriminant validity can be concluded the corresponding CFA factor (AVE test; Fornell & Larcker, 1981). The squared correlations had values (.03 - .49) below all the AVE coefficients, confirming discriminant validity for all the CFA factors. This relative independence of each CQ dimension supports the choice of the 4 dimensions CFA in spite of the 1 CFA general CQ factor.

[TABLE 6 ABOUT HERE]

No statistically significant differences in CQ were found in terms of age and sex with respect to CQ ($F(3) = 2.17$, $p > .05$ and $t(558) = .20$, $p > .05$, respectively). Further statistical analyses provided partial empirical support for the hypotheses of the study. A difference in perceived CQ was found between students that had taken courses related to cross-cultural topics and those who had not. The former reported higher levels of the perceived CQ motivation ($M = 6.08$, $SD = 1.12$) than the latter ($M = 5.85$, $SD = 1.12$). Although small, this difference resulted statistically significant $t(393.35) = 1.99$, $p < .05$ and supports previous research findings indicating that participation in courses covering cross-cultural topics is related to CQ development (Eisemberg et al., 2013; MacNab et al., 2012). In the same vein, statistically significant differences in perceived CQ were found between students who, according to self-perceived ratings, were fluent in a second language and those who were not. The former reported higher levels of CQ than the latter (see Table 7). This finding is in line with previous research suggesting that language skills, intended as the possibility of talking effectively in the required foreign language, are positively related to the cognitive and behavioral components of CQ (Shannon & Begley, 2008). In this case, proficiency in a second language marked a difference in all the CQ dimensions. The difference in terms of the metacognitive component has a theoretical explanation. According to Valdes (1986), when blocks in foreign languages learning are encountered, an initial step is for the language learner to get awareness of him / herself as a cultural being. On the other hand, cultural studies play a major role as motivators in second language learning (Ho, 1998), thus explaining higher levels of motivational CQ in fluent students with respect to students who are not.

[TABLE 7 ABOUT HERE]

Similarly, students that have participated in multicultural teams (M = 6.08, SD = 1.12) overpassed their pairs in terms of perceived CQ; specifically, the findings show significant statistical differences in terms of the metacognitive and motivational dimensions of CQ (see Table 8). This result is plausible given that CQ is considered a malleable state and in consequence may be transformed by, for instance, multicultural experiences (Earley & Ang, 2003). In fact, previous research findings shown that participation of MBA students in multicultural teams leads to a change in CQ (Moynihan, Peterson & Earley, 2006).

[TABLE 8 ABOUT HERE]

Further, the results show differences in the four dimensions of CQ between students that participated in extracurricular activities dealing with knowledge of other cultures, and those who did not. Specifically, the former reported higher levels in all CQ dimensions (see Table 9).

[TABLE 9 ABOUT HERE]

Finally, a MANOVA was performed in order to evaluate if there were differences in composite CQ between students of different semesters of the IB undergraduate program. The results indicate that the difference is statistically significant, $F(36) = 1.51$, $p < .05$, ; Wilk's $\Lambda = .90$, partial $\eta^2 = .03$. These statistically significant differences suggest that the composite CQ of the IB undergraduate program tend to grow through the semesters. However, univariate test indicated that only the differences in the motivational and behavioral dimensions of CQ are statically significant; $F(9) = 1.90$, $p = .05$ and $F(9) = 2.16$, $p < .05$, respectively. The highest levels of CQ were reported by students of semesters 3 and 10. Noteworthy, the results show that CQ mean scores grow from semester 1 to 3 (M = 5.21 to M = 5.46). Similarly, the level of CQ increase from semester 5 to 6 (M = 5.15 and M = 5.31, respectively). However, CQ mean scores decrease in semesters 4, 7 and 9 (M = 4.93, M = 4.92 and M = 5.02).

5. Discussion

This paper presents the results of a study inquiring on the key education-related aspects in CQ development in Colombian IB students. The Cultural Intelligence Scale (CQS) demonstrated good psychometric properties. Hence, validity and reliability of the instrument were assured to test the hypotheses of the study. The findings suggest that proficiency in a foreign language, participation in educational activities involving membership in a multicultural team, following extracurricular activities related to cultural differences and semester, mark a difference in terms of CQ development. Yet, differences in all the 4 CQ dimensions were only found when comparing by proficiency in a foreign language and participation in extracurricular activities related to cultural differences. When referring

to foreign language lessons, these findings may be due to the fact that language skills, which refer to an individual's ability to speech and understand accurately interactions in a different language (Shannon & Begley, 2008), have been found to serve as an instrument to acquire cultural knowledge (Earley, 2002) as language conveys many subtleties of a culture and reflects its core values. Further on, when it comes to learning a new language, motivation appears play a key role (Dörnyei, 1994).

With regard to differences in CQ development according to the semester, mean scores increased from semester 1 to 3, and 5 to 6. Students of first semester take only one IB-related course, which had not been completed by the time data was collected; therefore, that increased exposure to IB lectures –from zero at semester 1- may explain the growth on the CQ behavioral and motivational dimensions from semester 1 to 3. Participation on IB courses, including general cultural topics, increase from semester 5 to 6. Conversely, the participants of semester 7 are registered in a course on international human resource management relating to how organizations function differently influenced by different national cultures in order to raise awareness of the importance to develop current knowledge and competences to cope with intercultural encounters at the professional level. When considering the results of this study, according to which CQ levels appear to decrease at this point of the undergraduate program, it could be inferred that at this point of their studies, students can assess in a more realistic manner their own CQ Levels; then, the internship, which occurs in semester 9 of the program, also has an impact possible due to the fact that around 25% of students spend this semester abroad and face numerous challenges linked to the interaction with different cultures, therefore finding that they still have to improve their CQ.

Even though, the four dimensions of CQ are equally important for individuals to display high levels of CQ, motivational CQ has been found to be a key driver on an individual's willingness to perform effectively on culturally diverse situations (Ang & Van Dyne, 2008). The results of this study indicate that high motivational CQ is related to second language proficiency, participation in multicultural teams, involvement in extracurricular activities and the number of semesters a student has been part of the program. This may be particularly important for those factors when the individual decides whether to engage in extracurricular activities that are not a requirement for graduation, or to advance on the learning of a second language beyond the requirements of the program.

When related to previous studies, the findings of this research are consistent for the relationship between second language proficiency and the development of Cultural Intelligence (Dörnyei, 1994; Janssens, & Brett, 2006; Shannon & Begley, 2008; Tarique & Takeuchi, 2008; Ng et al., 2009; Ang et al., 2011; MacNab et al., 2012; Ng et al., 2012; Eisemberg et al. 2013; Erez, et al. 2013); consistent for the relationship between the participation in multicultural teams and cultural intelligence (Ang & Van Dyne, 2008; Shannon & Begley, 2008; Tarique & Takeuchi, 2008; Ang et al., 2011; Ng et al.,

2012); consistent for the relationship between students' participation in extracurricular activities and cultural intelligence (Ang & Van Dyne, 2008; Shannon & Begley, 2008; Tarique & Takeuchi, 2008; Ang et al., 2011; Ng et al., 2012); however, when it comes to the relationship between the student's semester of studies and cultural intelligence, this study provides interesting findings indicating that as students advance on their studies they achieve higher levels of cultural intelligence, but the increase is not continuous and there may be small declines in semesters four, nine and seven. This deserves the attention of academic programs, considering that in the case of this study, students are exposed to courses relating to cultural differences in those semesters, which seems to lead to the individual's reflection about how much they still need to learn, as apposed to how much they already know.

On the light of this findings, undergraduate IB programs may modify the curricula to expose students at earlier stages to courses directly relating to cultural aspect, since they have been found to affect the development of CQ. This will allow students to reflect about their lack of knowledge and motivate them to continuously improve cultural intelligence through their studies. Further on, from the perspective of IB teaching methods and techniques, instructors are encouraged to focus on developing skills, as opposed to merely transferring knowledge to students. This way, they will motivate students to widen their perspectives and horizons, and to engage in extracurricular activities and multicultural teams as strategies that boost the development of CQ.

5.1. Limitations and future research.

This paper contributes to the understanding of education-related factors, within and outside the curriculum of international business undergraduate programs, which contribute to the development of CQ. However, international experiences, both work and non-work related, were not considered on the analysis. As proposed by (Ng, Van Dyne, & Ang, 2009), international experiences contribute to increase CQ by enhancing the emotional engagement of individuals to behave more effectively across different cultural settings. In the specific case of IB students, it is rather common to find that many of them participate in exchange programs or travel abroad for tourism, which may relate to the actual results of this study. In addition, the study had several methodological limitations. Longitudinal design studies must be conducted in order to conclude that these and other education-related factors have a positive and significant influence on the development of CQ. Finally, although beliefs of learners regarding their capabilities have demonstrated to be a strong predictor of foreign language skills and tasks (Saeid, Bee Hoon, & Swee Heng, 2012), professors and pair assessments must be included in the evaluation of foreign language proficiency and CQ in educational contexts. This measurement strategy can preclude the risk of common method bias leading to biased conclusions about CQ levels before and after education-related experiences.

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Table 1. Differences between Cultural Intelligence and cognitive and emotional intelligence

Type of Intelligence	Definition	Predicted outcome	Difference with CQ
Cognitive Intelligence	Ability to learn.	Performance across many jobs and settings.	It does not include behavioral or motivational aspects.
Emotional Intelligence	Ability to deal with personal emotions.	Ability to manage emotions.	It focuses on the perception and ability to manage emotions without considering the context.

Source: Based on Ang et al., 2011

Table 2. Influence of international non-work experiences on the development of motivational Cultural Intelligence

Influence of non-work experiences on the development of motivational CQ	**Source**
International experiences influence an intern's amount of exhibited effort.	Feldman & Bolino (2000).
Willingness to relocate.	Brett & Reilly (1988).
Willingness to communicate with host country nationals.	Mendenhall & Oddou (1985).

Source: based on Tarique & Takeuchi (2008)

Table 3. Cultural Intelligence Scale: EFA factor loadings and items' communalities

Item	***Metacognitive***	***Cognitive***	***Motivational***	***Behavioral***	h^2
1. *I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds*	***.74***				.75
2. *I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me*	***.65***				.63
3. *I am conscious of the cultural knowledge I apply to cross-cultural interactions*	***.85***				.88
4 *I check the accuracy of my cultural knowledge as I interact with people from different cultures*	***.60***				.56
5. *I know the legal and economic systems of other cultures*		***.75***			.60
6 *I know the rules (e.g., vocabulary, grammar) of other languages*		***.59***			.47
7. *I know the marriage systems of other cultures*		***.72***			.55

8. I know the arts and crafts of other cultures		***.66***			.47
9 *I know the rules for expressing nonverbal behavior in other cultures*		***.63***			.51
10. *I enjoy interacting with people from different cultures*			***.78***		.80
11. *I am confident that I can socialize with locals in a culture that is unfamiliar to me*			***.77***		.74
12. *I am sure I can deal with stresses of adjusting to a culture that is new to me*			***.82***		.80
13. *I enjoy living in cultures that are unfamiliar to me*			***.79***		.76
14. *I am confident that I can get used to the shopping conditions in a different culture*			***.74***		.68
15. *I change my verbal behavior (e.g., accent, tone) when cross-cultural interaction requires it*				***.64***	.52
16. *I use pause and silence differently to suit cross-cultural situations*				***.75***	.67
17. *I vary the rate of my speaking when a cross-cultural situation requires it*				***.70***	.70
18. *I change my non-verbal behavior when a cross-cultural situation requires it*				***.69***	.64
19. *I alter my facial expressions when a cross-cultural interaction requires it*				***.65***	.48

Note: *n = 184; h^2 = item communality; maximum likelihood estimator with varimax rotation.*

Table 4. Cultural Intelligence Scale: Correlations, means, standard deviations and Cronbach's alpha of the EFA factors

	M	*SD*	1	2	3	4
1. Metacognitive	5.51	1.26	***.90***			
2. Cognitive	4.25	1.14	.33**	***.82***		
3. Motivational	6.09	1.19	.65**	.32**	***.93***	
4. Behavioral	5.10	1.27	.55**	.43**	.53**	***.88***

Note: n = 184; ** significant at the $p < .01$ level. Cronbach's alphas are on the diagonal.

Table 5. Cultural Intelligence Scale: CFAs' fit indexes

CFA model	χ^2	*df*	cd	RMSEA	CFI	TLI
1 factor	1351.8	152	1.19	.16	.60	.55
4 factor	329.66	146	1.15	.06	.94	.93
$\chi^{2diff} = 568.35$, $p > .05$						

Note: n=298; Rotation CF-Varimax; MLR estimator; cd = scaling correction factor

Table 6. Cultural Intelligence Scale: Reliability and Discriminant Validity CFA factors

CFA factors	*Composite Reliability*	*AVE*
1. Metacognitive	.88	.65
2. Cognitive	.84	.51
3. Motivational	.92	.71
4. Behavioral	.89	.63

Table 7. Differences in Cultural Intelligence according to self-perceived proficiency in a second language

CQ dimension	Fluent second language	M	SD	t-test	95% confidence intervals	
Metacognitive	Yes	5.54	1.26	$t(521) = 3.23, p < .01$	.20	.83
	No	5.03	1.37			
Cognitive	Yes	4.27	1.19	$t(110.01) = 2.84, p < .01$	.11	.64
	No	3.90	1.03			
Motivational	Yes	6.07	1.25	$t(93.36) = 2.92, p < .01$	.16	.87
	No	5.55	1.45			
Behavioral	Yes	5.19	1.30	$t(520) = 4.62, p < .01$	.44	1.09
	No	4.43	1.45			

Table 8. Differences in Cultural Intelligence according to participation in multicultural teams

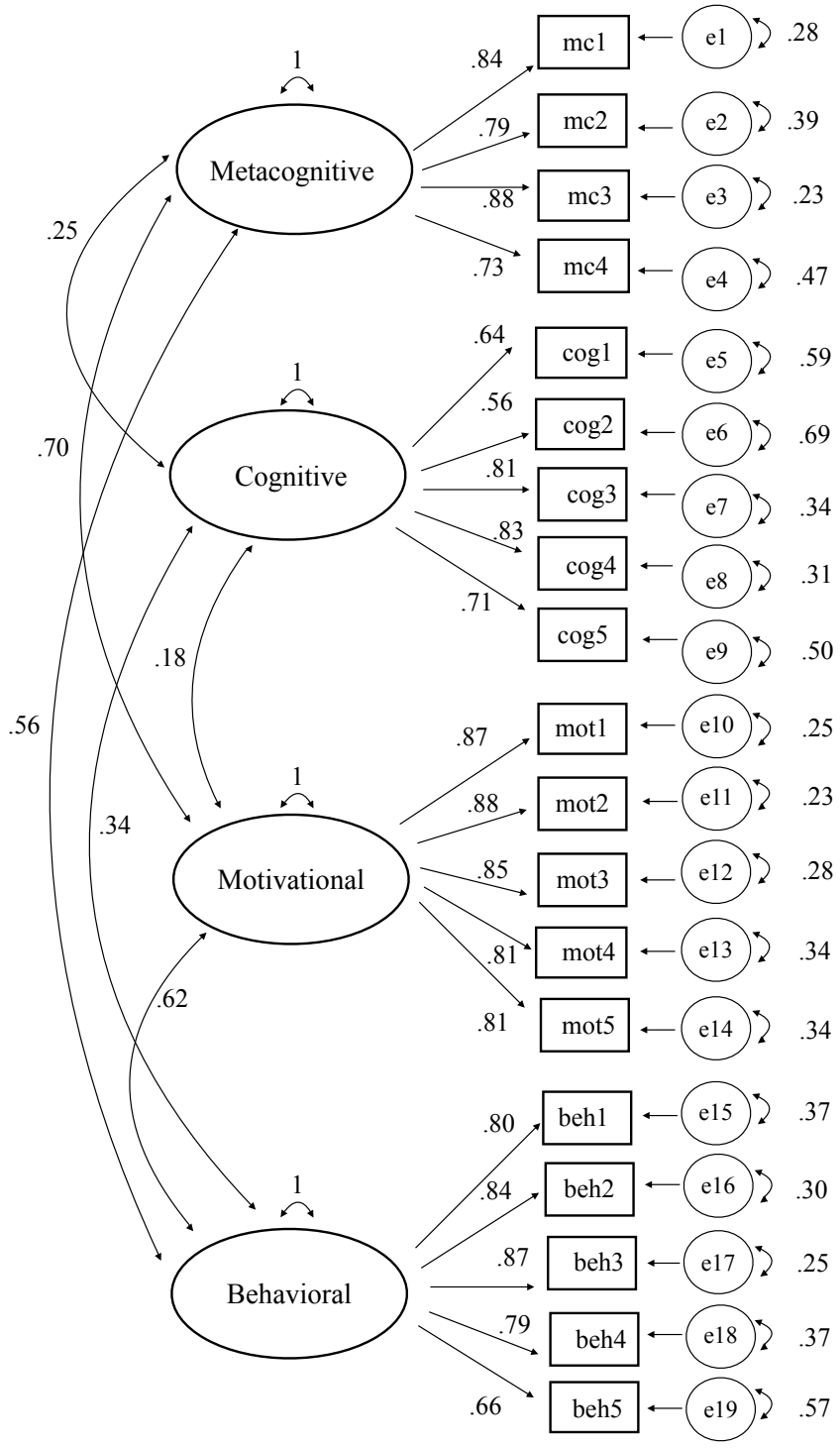
CQ dimen-sion	Multicultur-al teams	M	SD	t-test	95% confidence intervals

Metacogni-tive	Yes	5.54	1.28	$t(537) = 2.09$, $p < .05$	.02	.02
	No	5.30	1.26			
Motivational	Yes	6.10	1.28	$t(537) = 2.06$, $p < .05$	.01	.47
	No	5.82	1.26			

Table 9. Differences in Cultural Intelligence according participation in extracurricular activities

CQ dimension	Fluent second language	M	SD	t-test	95% confidence intervals	
Metacognitive	Yes	5.55	1.30	$t(523) = 2.46$, $p < .05$	.06	.57
	No	5.24	1.23			
Cognitive	Yes	4.32	1.17	$t(523) = 3.00$, $p < .01$	.03	.53
	No	3.97	1.18			
Motivational	Yes	6.06	1.28	$t(523) = 2.16$, $p < .05$	.11	.64
	No	5.78	1.28			
Behavioral	Yes	5.16	1.36	$t(522) = 2.18$, $p < .05$	.03	.56
	No	4.86	1.27			

Figure 1. Cultural Intelligence Scale CFA Factors



Note: n = 298; all paths significant at p < .01

The Cultural Intelligence Scale (CQS)

Read each statement and select the response that best describes your capabilities.
Select the answer that BEST describes you AS YOU REALLY ARE (1=strongly disagree; 7=strongly agree)

CQ Factor	Questionnaire Items
Metacognitive CQ:	
MC1	I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.
MC2	I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.
MC3	I am conscious of the cultural knowledge I apply to cross-cultural interactions.
MC4	I check the accuracy of my cultural knowledge as I interact with people from different cultures.
Cognitive CQ:	
COG1	I know the legal and economic systems of other cultures.
COG2	I know the rules (e.g., vocabulary, grammar) of other languages.
COG3	I know the cultural values and religious beliefs of other cultures.
COG4	I know the marriage systems of other cultures.
COG5	I know the arts and crafts of other cultures.
COG6	I know the rules for expressing non-verbal behaviors in other cultures.
Motivational CQ:	
MOT1	I enjoy interacting with people from different cultures.
MOT2	I am confident that I can socialize with locals in a culture that is unfamiliar to me.
MOT3	I am sure I can deal with the stresses of adjusting to a culture that is new to me.
MOT4	I enjoy living in cultures that are unfamiliar to me.
MOT5	I am confident that I can get accustomed to the shopping conditions in a different culture.
Behavioral CQ:	
BEH1	I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it.
BEH2	I use pause and silence differently to suit different cross-cultural situations.
BEH3	I vary the rate of my speaking when a cross-cultural situation requires it.
BEH4	I change my non-verbal behavior when a cross-cultural situation requires it.
BEH5	I alter my facial expressions when a cross-cultural interaction requires it.