



CULTURAL INTELLIGENCE AND WRITING ABILITY: DELVING INTO FLUENCY, ACCURACY AND COMPLEXITY

Behzad GHONSOOLY¹ & Somayye SHALCHY²

Abstract: Over the recent decades, cultural intelligence, now referred to as CQ has become a burgeoning area of research in the domain of business and management. Given the paucity of research on the effects of CQ on second or foreign language learning especially writing, this study intends to examine the effects of CQ on L2 learners' written performance particularly in the domain of fluency, complexity, and accuracy. For the purpose of the study, the collected written data from 104 participants were quantified in terms of measures of accuracy, fluency, and complexity and the CQ questionnaire. Using Ang et al.'s (2007) questionnaire, we conducted confirmatory factor analysis on the questionnaire. The predictive power of CQ and its subscales (i.e., cognitive, meta-cognitive, motivational, and behavioral) in the variance of writing scores and fluency, accuracy, and complexity was explored too. The results of the analysis demonstrated that CQ and cognitive CQ are the best predictors of writing ability and writing fluency. Further explanations are provided in the discussion.

Keywords: Cultural intelligence, writing ability, fluency, accuracy, complexity

Özet: Son yıllarda CQ olarak da adlandırılan kültürel zeka, işletme ve yönetim alanında gelişmekte olan bir araştırma alanı olmuştur. CQ'nun özellikle yazma becerilerini de kapsayan ikinci veya yabancı dil öğrenmenin üzerine etkilerini inceleyen araştırmaların yetersizliği göz önüne alınarak, bu çalışma CQ'nun özellikle akıcılık, karmaşıklık ve doğruluk alanlarında olmak üzere ikinci dil öğrencilerinin yazılı performansları üzerine etkisini incelemeyi hedeflemektedir. Bu amaçla, 104 katılımcıdan toplanan yazılı very doğruluk, akıcılık ve karmaşıklık ölçümleri açısından ve Ang ve arkadaşlarının (2007) CQ anketi kullanılarak nicel olarak ölçüldü. Kullanılan ankete doğrulayıcı factor analizi uygulandı. Yazma puanlarındaki ve akıcılık, doğruluk ve karmaşıklıkta değişkenliklerdeki CQ'nun ve onun altölçeklerinin (yani bilişsel, biliş ötesi, motivasyon ve davranışsal) yordama gücü de araştırıldı. Diğer açıklamalar tartışma bölümünde ele alınmıştır.

Anahtar sözcükler: Kültürel zeka, yazma becerisi, akıcılık, doğruluk, karmaşıklık

1. Introduction

The rapid pace of globalization, which increases day by day, demands preparing people for the nuances of the modern, multicultural century. According to Cavanaugh (2007), due to the nature of globalization, providing opportunities to work across borders and cultures is a need for anyone to have effective cross cultural interaction. This requires a kind of cultural understanding, a sort of intelligence. As with other intelligences, people vary in terms of having high or low cultural intelligence. Therefore, the need to specify cultural intelligence gave rise to the development of a new construct which shares some attributes with social and emotional intelligence. This construct which was defined by Earley & Ang (2003) as the capability to function in different cultural settings is inherently multidimensional involving behavior as well as cognitive facets. They argued that relatively general capabilities such as emotional intelligence, cognitive intelligence, and social intelligence, despite their relevance to cultural contexts and individual's cognition and behavior do not apply when one is engaged with others from different cultural backgrounds. Building on this convincing argument, Ang and colleagues (Ang et al., 2007; Ang & Van Dyne, 2008; Van Dyne, Ang & Koh, 2008) developed a four-dimensional model consisting of meta-cognitive CQ, cognitive CQ, motivational CQ and behavioral CQ. While meta-cognitive CQ concerns higher-order mental

¹ Prof. Dr., English Language Department, Ferdowsi University of Mashhad, Iran, ghonsooly@um.ac.ir

² MA, English Language Department, Ferdowsi University of Mashhad, Iran, Somayyeshalchi@gmail.com

processes to acquire cultural knowledge and previous knowledge that leads to better information processing, i.e. planning, monitoring, revising mental models of cultural norms, cognitive CQ relates to the knowledge of norms and convention acquired from experiences and comprehension of the structure of culture, i.e. knowledge of legal systems. Motivational CQ discusses capabilities to direct attention and energy to function appropriately in different situations and interest of individual to interact with people from other cultures. Finally, behavioral CQ concerns ability to function verbally and non-verbally in an appropriate way (Ang et al., 2007; Crowne, 2008). People who are culturally intelligent adjust quickly, with minimal stress to situations where the culture is different from the ones they were socialized. Familiarity with diverse cultures is a skill that some people have not mastered.

2. Empirical studies on CQ

Writing in this modern world should break the borders and the traditional view of L2 writing requires change. Atkinson (2003) proposed the view of second language writing that emphasizes its rich embeddedness in the world rather than the perspective which sees writing as solely practiced in the classroom. This new view would give the concept of culture a central place. Weigle (2009) described writing ability as a distinct mode of communication, involving very different socio cultural norms and cognitive processes. She maintains that writing is not merely a cognitive and individual act, rather a social and cultural act. Cultural intelligence is one of the important needs of educational administrators, businessmen in foreign marketing and international business and the army forces, international work candidates, global leaders (Ang, Van Dyne & Ng, 2009; Cavanaugh, 2007; Crowne, 2008; Davis, 2009; Ramsey, Leonel & Gomes, 2011; Vedadi, 2008). Cavanaugh (2007) believes that CQ can be developed with training and experience through assignment, culture assimilators or lectures. Cavanaugh continued that more exposure to various cultural training, and more knowledge acquired as a result would enhance overall capabilities of learners. Those with high CQ most likely develop self-efficacy as global leaders, adopt ethno relative attitudes toward different cultures, improve mental leadership models across cultures, and show flexibility in leadership style.

CQ is claimed to have certain effects on individual performance. According to Davis (2009) the development of CQ or cultural competence in the Canadian Forces could enhance success in complex cultural environment. Ramsey, Leonel & Gomes (2011) studied the effect of CQ on international business traveler's stress and concluded that CQ development would decrease individual strain in international business travel. Ang & Van Dyne (2006) explored the relationship of personality with CQ using the Big Five Trait Model. This model is used to measure personality and composed of variables such as openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. The results showed that conscientiousness was positively related to Meta-cognitive CQ, while highly agreeableness was related to behavioral CQ. On the other hand, neuroticism was negatively correlated with cognitive, motivational and behavioral CQ, and openness to experience was the only piece which was positively related to all four facets of CQ.

Cultural intelligence also has a significant relationship with transformational leadership. Ansari, Radmehr & Shalikhari (2012) ran a study on 159 Iranian managers in a trade office to find this interaction. They found that CQ can be a solution for many problems in different cultural and social contexts. Peivandi (2011) explored the relationship between cultural intelligence and writing ability in adult learners of English in Iran. He found that cultural intelligence is a moderate predictor of writing ability although cognitive and motivational CQ

are the best predictors of writing ability. The results also showed a significant relationship between cognitive CQ and motivational CQ with writing ability.

Cultural intelligence remains largely open-ended and little has been tested empirically (Cavanogh, 2007). Ang et al. (2007) reiterate this by saying that: "Empirical research on CQ has been scarce – primarily due to newness of the construct" (p. 4). To the best of the present researchers' knowledge, little has been done about the relationship of CQ with educational systems and nearly no research has been done in the domain of learning and teaching and particularly the association of CQ to fluency, accuracy, and complexity of writing of EFL learners.

3. Writing ability (fluency, accuracy, and complexity)

Writing ability is a complex skill and consists of several skills such as fluency, accuracy and complexity. Nunan (2001) defined fluency as "the ability of an individual to speak or write without undue hesitation" (p. 285). In a more delicate and measurable way, Fellner (2006) described fluency as the number of words produced in a specified amount of time. On the other hand, accuracy relates to the ability of the writer to spell words correctly without errors (Francis, 2006). Finally, complexity is an important feature of writing ability and consists of lexical and syntactic complexity. For Bonzo (2008), lexical complexity refers to sum of all complex words that occur within a written text, while syntactic complexity is characterized by lexical complexity and a clause with any type of non-canonical word order.

Task complexity has a significant effect on fluency, accuracy, and complexity of learners' writing production. Research on the effect of task complexity on writing outcomes is not scant (Amani, 2007; Kuiken & Vedder, 2007; Rahimpour & Hosseini, 2010; Ong & Zhang, 2010). For example, Rahimpour & Hosseini (2010) studied the impact of task complexity on second language written narrative. The results of a T-test showed that only students' writing fluency was influenced by increasing the cognitive complexity of narrative tasks. They also found that when students are free to allocate attention, first they focus on content rather than form. Amani (2007) investigated the written production of Iranian English students in foreign language setting with respect to the three types of pre- on line, and mixed planning. The planning group advantaged grammatical complexity more than non-planning group. The planning group showed greater fluency in pre-planned writing tasks. They had greater accuracy in on line planning; however mixed planning had greater fluency, accuracy and complexity than other planning types.

Nearly all researches on CQ are in relevance to leadership, management and business and a number of empirical studies on the relationship of CQ and writing are scarce. The present study tries to investigate the relationship between CQ and writing ability in the domain of fluency, accuracy, and complexity.

Given these limited and inconsistent empirical findings concerning CQ and writing ability, the present researchers have tried to provide answer to the following questions:

1. Is there any significant relationship between CQ and writing ability?
2. Is there any significant relationship between subscales of CQ including meta-cognitive, cognitive, motivational, and behavioral CQ and writing ability?
3. Is there any significant relationship between CQ and subscales of writing ability (i.e., fluency, accuracy, and complexity)?

4. Which subscales of CQ (i.e., meta-cognitive, cognitive, motivational, and behavioral CQ) can best predict writing ability?

4. Method

4. 1. Setting and participants

This study was carried out in English language institutes in Mashhad, Iran. The sample consisted of one hundred and four learners studying English language at the advanced level. Although the papers were distributed among more than two hundred students, the complete ones were 104. The age of the participants ranged between twenty to twenty five years old. Both male and female learners participated in this study. The sample, which is an available sample to the researchers, seems to be representative of Iranian EFL students, yet having different socio-cultural backgrounds. Most learners in language institutes have a tendency toward English culture due to their familiarity with the English language and behave differently while trying to be like western individuals. These changes are represented both in the way they speak as well as the way they appear. As for textbooks taught in the institutes, various language textbooks are taught and contain cultural points mostly about famous people and actors. As for writing tasks, textbooks have a limited number of writing tasks. The focus of language teaching is more on speaking and listening and less on reading and writing, therefore, learners are really weak at writing skill which is often the most difficult skill. Both language textbooks and teachers pay little attention to the mastery of writing skill and spare the least amount of time in practicing writing with especial focus on fluency, complexity, and accuracy of the writing task. In research, most Iranian researchers select other language skills because they know their learners fear writing and have poor writing proficiency.

4. 2. Instruments

4. 2. 1. Cultural Intelligence Scale

The cultural intelligence scale developed and validated by Ang et al. (2007) was used in this research. This questionnaire consists of 20 items based on different subscales of cultural intelligence: 4 items related to meta-cognitive CQ (items 1, 2, 3, and 4), 6 items to cognitive CQ (items 5, 6, 7, 8, 9, and 10), 5 items to motivational CQ (items 11, 12, 13, 14, and 15), and 5 items to behavioral CQ (items 16, 17, 18, 19, and 20). The items of this questionnaire are formed on the basis of a five- Likert scale, from strongly disagree (5) to strongly agree (1).

4. 2. 2. Writing Task

We asked the participants to write a complaint letter in a period of 40 minutes. We assumed that the complaint letter reflects an argumentative genre which is related to the learners' knowledge of how to persuade an addressee to change his decision. The topic included complaints on a problematic cell-phone to be replaced by a new one.

Fluency was computed based on the total number of syllables produced divided by the total number of minutes a learner takes to complete the task (Chenoweth & Hayes, 2001).

In order to assess the complexity of learners' writing, three factors were taken into account: syntactic complexity, syntactic variety and Mean Segmental Type Token Ratio (MSTTR). Syntactic complexity is measured by the ratio of clauses to T-units in writing production. Syntactic variety is the total number of different grammatical verb forms including tense, modality, and voice (Richards et al., 1985, as cited in Amani, 2007). Mean Segmental Type Token Ratio (MSTTR) is measured by dividing the participants writing productions into segments of 40 words. Then the type-token ratio of each segment is calculated by dividing

the total number of different words to the total number of words in the segment. The MSTTR was measured for each individual participant by adding the mean scores for his or her segment and dividing the total by the total number of segments in the writing task.

For measuring accuracy according to Malvern & Richards (2002, as cited in Amani, 2007), we considered error free clauses. The percentage of clauses which did not have any errors was computed.

4. 3. Procedure

The study was conducted in language institutes in Mashhad, Iran. This process of data collection had two phases; in the first phase, learners were asked to write the complaint letter in a time limit of forty minutes. The second researcher explained the purpose of the study for the group and asked their active participation in the test. The second phase which was filling the cultural intelligence questionnaire was administered to all the volunteer learners if they marked on their writing task paper by signing "yes". The second researcher was present at the time of administration of both the writing task and the questionnaire. English directions related to questionnaire were provided for learners before administration and repeated in Persian (the learners' native language) so that no ambiguity was remained to fill in the questionnaire. The participants who wanted to be informed of the results of their personal questionnaire and writing had written their phone number on their papers. This was done to motivate the learners to participate.

4. 4. Data Analysis

The data gained from cultural intelligence questionnaire was analyzed by Analysis of Moment Structures (AMOS) software to conduct confirmatory factor analysis (CFA). First, a model was designed according to Ang et al.'s (2007) questionnaire in which cognitive, meta-cognitive, behavioral and motivational CQ form total CQ. The candidates' writings were scored based on determined formulas. To gain the writing score, we determined total writing score of each individual out of twenty. Writing ability in this study consists of fluency, complexity and accuracy, so we divided the number of total score, i.e., twenty into three parts almost equally. That would give fluency seven points, accuracy seven points but only nine scores for complexity. Complexity has three parts including syntactic complexity, syntactic variety, and lexical variety; each part was given three points as a score. At the end, scores of fluency, accuracy, complexity and writing as a total score with the information related to cultural intelligence (CQ) questionnaire were given to the Statistical Package for Social Sciences (SPSS) version 16. To find the level of cultural intelligence for Iranian advanced learners of English, descriptive statistic was provided. The data gained from CQ questionnaire is ordinal but according to Hatch & Lazaraton (1990), if there is a normal distribution of data in a questionnaire, data can be estimated as interval by Pearson correlation formula. In order to find the relationship between cultural intelligence and writing ability and their subscales, the Pearson correlation formula was used and standard regression was also conducted to see whether cultural intelligence and subscales are predictors of writing ability or not.

5. Results

Confirmatory Factor Analysis (CFA) requires the specification of a factor model, consisting of the number of factors and zero or non-zero factor loading. CFA explains how well the hypothesized model shows the relationship among the variables (Hepner & Sechrest, 2002). The primary task in testing CFA is to determine goodness of fit between the data and a hypothesized model (Byrne, 1994). The comparative fit index (CFI) range from 0 to 1.00,

with a value greater than 0.90 being generally taken to indicate an acceptable fit to the data and Steiger's root mean square error of approximation (RMSEA). χ^2 shows the statistical goodness-of-fit of the observed matrix compared to the expected matrix predicted by the hypothesized model (Loehlin, 1998). While other indices are considered as goodness-of-fit indices, RMSEA is a "badness-of-fit" index which is a population-based index, not sensitive to sample size (Sechrest, Davis, Stickle & McKnight, 2000).

In the CQ model, the CFI of .85, TLI of .83, CMIN/DF of 1.45, and RMSEA of .08 indicated that there should be some modification in the model. The initial model indices indicated poor fit to data which means the model is not representative of the observed data. The modification for the model fit was conducted such as some correlation paths between errors and deletion of two questions. Question 4 from the meta-cognitive CQ and question 5 from cognitive CQ were deleted due to low factor loadings. Therefore; the final model turned out to fit well to the observed data. The CMIN/DF=1.22, TLI=.94, CFI=.95, and RMSEA=.04 indicate almost very good fit to the data. The final model with modification in the initial model is indicated in Figure 1.

Figure 1
Confirmatory factor analysis for cultural intelligence questionnaire

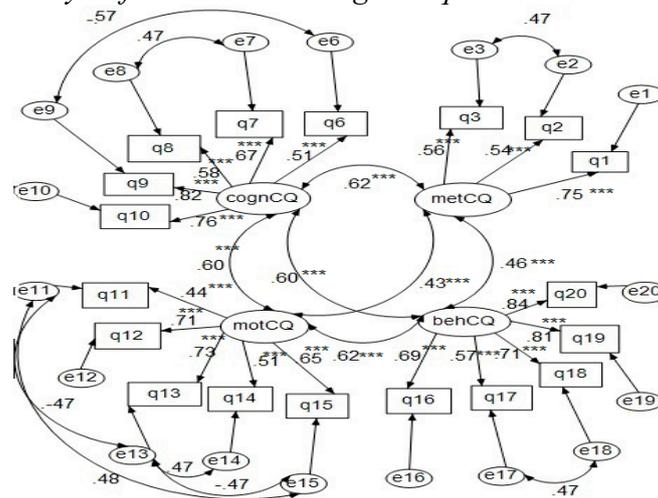


Table1
Descriptive Statistics of the instruments

	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
metaCQ	10.00	27.00	19.9615	3.69708	-.296	-.447
cogCQ	6.00	40.00	24.0385	6.42193	-.089	-.348
motvCQ	13.00	38.00	27.1442	5.12450	-.394	.052
behvCQ	5.00	35.00	24.9038	5.56780	-.477	1.057
CQ	47.00	134.00	95.9615	15.31223	-.218	.526
Flnc	.83	7.00	2.6842	1.02896	.965	1.913
Cmpl	3.16	5.03	4.1808	.44919	.180	-.716
Acr	2.90	7.00	5.8264	.97248	-.520	-.424
Writsc	10.10	17.20	12.6915	1.49240	.373	-.261

Table 1 gives the descriptive statistics of the instruments used, that is, CQ and its components, writing ability and its subscales. The number of participants' mean and standard deviation of the data can be seen in the table. The level of cultural intelligence of the sample was about 96. In addition, skewness and kurtosis in the table are in the range of -2 to +2 which shows that there is a normal distribution of the data.

This study tries to investigate the relationship between writing ability and CQ. As the data gained are interval, the Pearson product moment correlation formula was used. The relationships between variables are presented.

Table 2
Correlations between CQ, and writing ability

	metCQ	cogCQ	motCQ	behCQ	CQ	flnc	cmpl	acr	Wrtsc
metCQ		.5**	.25**	.32**	.63**	.08	-.12	.14	.11
cogCQ			.45**	.39**	.82**	.3**	.04	.07	.26*
motCQ				.47**	.73**	.09	.04	.05	.11
behCQ					.75**	.08	-.06	.07	.08
CQ						.17	0	.09	.18
Flnc							.02	.11	.76**
Cmpl								-.24*	.16
Acr									.65**
Wrtsc									1

Note 1: Correlations marked with an asterisk (*) were significant at $p < .05$.

Correlations marked with an asterisk (**) were significant at $p < .01$

Note 2: metCQ stands for meta-cognitive CQ, cogCQ for cognitive CQ, motCQ for motivational CQ, behCQ for behavioral CQ, flnc for fluency, cmpl for complexity, acr for accuracy, & wrtsc for writing score.

As Table 2 shows, there is a significant relationship between cognitive CQ and fluency and between cognitive CQ and writing ability at 0.01 level of confidence, although there is no significant correlation between CQ and writing ability. To further examine the predictive power of subscales, standard regression was run.

The question that is dealt with in this part is whether CQ can predict writing ability and fluency, accuracy, or complexity.

Table 3
Model Summary of R Square of Coefficient between writing ability and CQ

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.335 ^a	.112	.067	1.44162
a. Predictors: (Constant), behvCQ, metaCQ, motvCQ, cogCQ, CQ				

In this table, r equals .33 and R square equals .11. Since r square can be interpreted in terms of percentage of predicted variation; therefore, it can be said that scores on CQ and its subscales can predict 33 percent of the variance in writing ability.

Table 4
Variability of Writing scores based on CQ

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	25.738	5	5.148	2.477	.037 ^a
	Residual	203.669	98	2.078		
	Total	229.407	103			
a. Predictors: (Constant), behvCQ, metaCQ, motvCQ, cogCQ						
b. Dependent Variable: writing score						

The analysis of variance (ANOVA) indicates whether the regression equation is significant. This table shows that this model is a good one. CQ and subscales can be good predictors of writing ability at .05 level of significance.

Table 5
Coefficient between CQ and writing ability

Model		Unstandardized Coefficients		Standardized coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.073	1.027		11.753	.000
	CQ	-.197	.092	-2.017	-2.142	.035
	metaCQ	.165	.093	.410	1.774	.079
	cogCQ	.265	.097	1.141	2.742	.007
	motvCQ	.185	.093	.636	1.984	.050
	behvCQ	.192	.098	.717	1.970	.050
a. Dependent Variable: writsc						

Note: metaCQ stands for meta -cognitive CQ, cogCQ for cognitive CQ, motvCQ for motivational CQ, behvCQ for behavioral CQ.

In linear regression, the size of the coefficient for each independent variable indicates the size of the effect that the variable has on the dependant variable. CQ and all subscales except meta-cognitive CQ are good predictors of writing ability. Among them, cognitive CQ is the best predictor of writing ability.

5. 1. Predicting fluency, complexity, and accuracy based on CQ and its subscales

This part demonstrates the predictive power of CQ and its subscales in relation to fluency, complexity, and accuracy.

Table 6
Model Summary of R Square of Coefficient between CQ and fluency, complexity, and accuracy

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.395	.156	.113	.96907
2	.231	.053	.005	.44810
3	.184	.034	-.015	.97996
1. fluency, 2. complexity, 3. accuracy				

In this table, R Square in part 1 is .15 which means 15% of variance in fluency can be predicted by CQ and its subscales. Part 2 and 3 indicate that only 5% and 3% of variance consequently in complexity and accuracy are due to CQ and its subscales.

Table 7
Analysis of Variance (ANOVA) in fluency, complexity, and accuracy

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	17.020	5	3.404	3.625	.005 ^a
	Residual	92.031	98	.939		
	Total	109.052	103			
2	Regression	1.105	5	.221	1.101	.365 ^a
	Residual	19.677	98	.201		
	Total	20.782	103			
3	Regression	3.299	5	.660	.687	.634 ^a
	Residual	94.111	98	.960		
	Total	97.410	103			

This table indicates that the model is only suitable enough for writing fluency and CQ can only predict fluency in writing.

Table 8
Coefficients of CQ and writing ability subscales (fluency, complexity, accuracy)

Coefficient						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.554	.691		3.699	.000
	CQ	-.163	.062	-.2419	-2.634	.010
	metaCQ	.121	.063	.436	1.938	.055
	cogCQ	.223	.065	1.389	3.424	.001
	motvCQ	.146	.063	.727	2.328	.022
	behvCQ	.160	.066	.867	2.441	.016
2	(Constant)	4.286	.319		13.422	.000
	CQ	.040	.029	1.366	1.405	.163
	metaCQ	-.057	.029	-.472	-1.979	.051
	cogCQ	-.031	.030	-.438	-1.019	.311
	motvCQ	-.033	.029	-.378	-1.142	.256
	behvCQ	-.047	.030	-.583	-1.550	.124
3	(Constant)	5.234	.698		7.496	.000
	CQ	-.074	.062	-1.170	-1.190	.237
	metaCQ	.101	.063	.385	1.600	.113
	cogCQ	.073	.066	.484	1.116	.267
	motvCQ	.072	.063	.381	1.140	.257

	behvCQ	.079	.066	.453	1.193	.236
1. fluency, 2. complexity, 3. accuracy						

Note: metaCQ stands for meta cognitive CQ, cogCQ for cognitive CQ, motvCQ for motivational CQ, & behvCQ for behavioral CQ.

As the above table demonstrates, CQ and its subscales merely predict fluency at the level of .05. All subscales except meta-cognitive are predictors of fluency.

6. Discussion

This study was performed in order to find out if there is a relationship between cultural intelligence (CQ) and writing ability defined in terms of fluency, complexity, and accuracy. Also, it was intended to investigate if CQ and its subscales have predictive power and if any, which one is a better predictor of writing ability. The confirmatory factor analysis (CFA) for cultural intelligence questionnaire was conducted, too. The results of CFA for the CQ questionnaire show that two of the questions should be deleted to have goodness of fit for the model to be representative of the observed data. CQ questionnaire had high reliability (.87) in this study. The level of cultural intelligence of Iranian EFL learners is 97 out of 140 which indicates it is more than average. Learners' low exposure to a different culture and the degree of the exposure influences the CQ level. This exposure may have different manifestations such as TV programs, reading about a different culture, travelling and interacting with people from another culture. Iranian learners have limited access to English culture due to several factors one of them is the limited cultural content of English textbooks and classroom tasks. Other factors are lack of ample opportunities to travel abroad, and limited number of tourists traveling to Iran.

In this study, the concept of cultural intelligence is regarded as the ability to have effective communication in cross-cultural contexts and also in contexts characterized by different subcultural norms. In other words, in this research those with high CQ are also considered as being able to have successful interaction with people having different thoughts, feelings, and preferences but have the same national culture.

The correlational findings indicated that there is a significant relationship between cognitive CQ and fluency and also between Cognitive CQ and writing ability. As the literature lays stress on the importance of culture in writing, the CQ questionnaire of Ang et al. (2007) turned out to be a predictor of the writing ability and fluency in writing. Having said that, the cognitive CQ, which is the individual knowledge of the rules and structure of the other culture, is the best predictor of writing and fluency. In fact, this finding is consistent with Peivandi (2011), who found that "cognitive CQ is the best predictor of writing ability" (p. 47) which is also emphasized by Myles (2002). Knowledge of cultural norms, behaviors, and customs is required for good writing.

In sum, according to the results of the study, there are significant correlations between cultural intelligence and cognitive CQ with writing ability and also writing fluency. The concept through which we can explain the association between CQ and writing ability is cognitive empathy that is the ability to take into account others' perspectives. Those with high level of CQ are able to put themselves in the shoes of their audience. Consequently, they can write in a way suitable to their potential audience's thoughts and feelings. In fact, those who are culturally intelligent know the mind of their readers when writing something and can predict the potential reaction of their audience.

Individuals who have cognitive CQ are aware of other's values and thoughts and they can write in a way which is proper to their special audience. Myles (2002) and Salimi, Dadaspour & Asadollahfam (2011) also emphasized the cognitive complexity of writing; therefore, attention to the cognitive facet of writing should be taken into account by language instructors.

According to Olive, Favart, Beauvais & Beauvais, (in press), writing practice makes the writing processes more efficient and fluent, and also reduces demands on working memory; therefore writing processes are becoming more automatized and fluency increases. It appears that, high cultural knowledge about the addressee from different cultures can also decrease the cognitive demands of working memory, and as a result fluency increases while writing. Learners who are culturally intelligent are aware of their potential readers' cultural values and thoughts, therefore, they need less time to focus on appropriate forms and expressions and have less difficulty in writing smoothly; as a result their writing fluency increases in comparison with those with low level of cultural intelligence. Additionally, if their cognitive CQ, their knowledge of norms and behaviors of the other culture in communication, develops, they become fluent in writing and less cognitive efforts are needed to find proper writing style in accordance to their addressees.

7. Conclusion

This study and its results have several noteworthy implications for English teachers and other researchers. In accordance with the literature on culture which puts lots of emphasis on the role of culture in language learning, this study also found the important result of the relationship of cultural intelligence (CQ) and writing ability based on fluency, complexity, and accuracy. As Atkinson (2003) proposed, "L2 writing needs to devote greater attention to the more-or-less tacit and unthinking social and cultural practices" (p. 52). L2 writing is more than just a deconceptualized set of skills or processes by which one completes academic or job-related, or other tasks (Atkinson, 2003). Teachers and textbook designers should place more emphasis on cultural points in teaching and the textbook curriculum to introduce and increase cultural competence in the learners.

References

- Ang, S. & Van Dyne, L. (2008). *Handbook of cultural intelligence: Theory, measurement, and applications*. Armonk, NY: M. E. Sharpe.
- Ang, S., Van Dyne, L. & Koh, C. (2006). Personality Correlates of the Four Factor Model of Cultural Intelligence. *Group and Organization Management*, 31(1), 100-123.
- Ang, S., Van Dyne, L., Koh, C., Ng, K. Y., Templer, K. J. & Tay, C. (2007). Cultural intelligence: its measurement and effects on cultural judgment and decision making, cultural adaptation, and task performance. *Management and organizational Review*, 3(3), 335-371.
- Amani, S. (2007). *An investigation of the effects of planning on fluency, complexity and accuracy in narrative writing of Iranian EFL students*. Unpublished Master's thesis, Ferdowsi University of Mashhad, Mashhad, Iran.
- Ansari, M. I., Radmehr, R. & Shalikh, M. (2012). Analysis the Relationship between Cultural Intelligence and Transformational Leadership (The Case of Managers at the trade office). *International Journal of Business and Social Science*, 3(14), 252-261.
- Atkinson, D. (2003). Writing and culture in the post-process era. *Japan Journal of Second Language Writing*, 12, 49-63.
- Bentler, P. M. (1989). *EQS Structural Equations Program Manual*. Los Angeles: BMDP Statistical Software.

- Bonzo, J. D. (2008). To assign a topic or not: Observing fluency and complexity in intermediate foreign language writing. *Foreign Language Annals*, 41(4), 722-735.
- Byrne, B. M. (1994). *Structural Equation Modeling with EQS and EQS/Windows: Basic Concepts, Applications, and Programming*. Thousand Oaks, CA: SAGE.
- Cavanaugh, N. L. (2007). *Cultural intelligence: Factors and measurement*. Unpublished Master's thesis. Massachusetts Institute of Technology.
- Chenoweth, N. A. & Hayes, J. R. (2001). Fluency in writing. Generating text in L1 and L2. *Written Communication*, 18(1), 80-98.
- Crowne, K. A. (2008). What leads to cultural intelligence. *Business Horizons*, 51, 391-399.
- Davis, K. D. (2009). Sex, gender and cultural intelligence in the Canadian Forces. *Commonwealth & Comparative Politics*, 47(4), 430-455.
- Earley, P. C. & Ang, S. (2003). *Cultural intelligence: Individual interactions across cultures*. Palo Alto, CA: Stanford University Press.
- Hepner, K. A. & Sechrest, L. (2002). Confirmatory factor analysis of the Child Health Questionnaire-Parent Form 50 in a predominantly minority sample. *Quality of Life Research*, 11, 763-773.
- Kuiken, F. & Vedder, I. (2007). Task complexity and measure of linguistic performance in second language writing. *IRAL*, 45, 261-284.
- Loehlin, J., C. (1998). *Latent Variable Models: An Introduction to Factor, Path and Structural Analysis*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Myles, J. (2002). Second language writing and research: the writing process and error analysis in student texts. Retrieved on September 9, 2012, from <http://tesl-ej.org/ej22/a1.html>
- Ng, K.-Y., Van Dyne, L. & Ang, S. (2009). From experience to experiential learning: Cultural intelligence as a learning capability for global leader development. *Academy of Management Learning & Education*, 8(4), 511-526.
- Nunan, D. (2011). *Second language teaching and learning*, Boston: Heinle & Heinle.
- Olive, T., Favart, M., Beauvais, C. & Beauvais, L. (in press). Children's cognitive effort and fluency in writing: effects of genre and of handwriting automatisation. *Learning and Instruction*.
- Ong, J. & Zhang, L. J. (2010). Effects of task complexity on the fluency and lexical complexity in EFL students argumentative writing. *Journal of Second Language Writing*, 19, 218-233.
- Peivandi, A. (2011). *The relationship between CQ and IQ in writing ability of adult Iranian EFL learners*. Unpublished Master's thesis, Ferdowsi University of Mashhad, Mashhad, Iran.
- Rahimpour, M. & Hosseini, P. (2010). The impact of task complexity on second language written narrative. *English Language Teaching Journal*, 3(3), 198-205.
- Ramsey, J. R., Leonel, J. N. & Gomes, G. Z. (2011). Cultural intelligence's influence on international business traveler's stress. *Cross Cultural Management: An International Journal*, 18(1), 21-37.
- Salimi, A., Dadaspour, S. & Asadollahfam, H. (2011). The Effect of Task Complexity on EFL learners' Written performance. *Procedia - Social and Behavioral Sciences*, 29, 1390-1399.
- Schreiber, J. B., Stage, F. K., King, J., Nora, A. & Barlow, E. A. (2006). Reporting structural equation modeling and confirmatory factor analysis results: a review. *The Journal of Educational Research*, 99(6), 323-337.
- Sechrest, L., Davis, M. F., Stickle, T. R. & McKnight, P. E. (2000). Understanding 'method' variance. In L. Bickman (Ed.), *Research Design: Donald Campbell's Legacy*, (pp. 63-87). Thousand Oaks, CA: SAGE.

- Van Dyne, L., Ang, S. & Koh, C. (2008). Development and validation of the CQS: The cultural intelligence scale. In S. Ang & L. Van Dyne (Eds.), *Handbook on cultural intelligence: Theory, measurement and applications*, (pp. 16-38). Armonk, NY: M.E. Sharpe.
- Vedadi, S. (2007/1386). *A review on the relation between CQ and the educational administration performance of Qom Islamic science International Center*. Unpublished paper, Islamic Azad University of Kermanshah.
- Weigle, C. S. (2009). *Assessing writing*. New York: Cambridge University Press.