European Proceedings of
International Conference on Education & Educational Psychology
EpICEEPSY

www.europeanproceedings.com

e-ISSN: 2672-8141

DOI: 10.15405/epiceepsy.22123.7

ICEEPSY 2022
13th International Conference on Education and Educational Psychology

DOES EXPOSURE TO AN INTERNATIONAL ENVIRONMENT INCREASE OUR CULTURAL INTELLIGENCE?

Elok D. Malay (a)*, Sabine Otten (b), Robert J. Coelen (c)
*Corresponding author

(a) Center for Internationalization of Education, University of Groningen, Leeuwarden, Netherlands
& Faculty of Psychology, Universitas Indonesia, Depok, Indonesia
e.d.malay@rug.nl/elokdianike@ui.ac.id
(b) Faculty of Behavioral and Social Science, University of Groningen, Groningen, Netherlands,
s.otten@rug.nl
(c) Center for Internationalization of Education, University of Groningen, Leeuwarden, Netherlands,
r.j.coelen@rug.nl

Abstract

This study aimed to investigate the impact of two kinds of exposure to the international environment on international students' cultural intelligence (CQ). We examined whether students who had the experience of living abroad for a minimum period of six months or those who had participated in international education would have higher CQ than their fellow students who did not have such experiences. An online survey measured the CQ of 359 degree-seeking college students from Indonesia in several countries with CQS (Cultural Intelligence Scale). T-test analysis was conducted to compare the CQ scores between students with different experiences of international exposure. Pearson product-moment and one-way ANOVA analyses were also performed to examine the relationship of CQ with age and level of education. The results indicated no significant difference in CQ between students based on their prior experience living abroad or participating in international education. However, students who had lived abroad before scored higher on CQ's metacognitive and motivational aspects. Older students and students in higher levels of education also showed higher CQ scores. These results provide further discussion on the impact of exposure to the international environment on students' CQ. Some types of exposure to international environment appears to assist the development of some aspects of the CQ of international students. However, the extent of the effects might further depend on other factors. Furthermore, the results also suggested that more agencies could act as alternatives strategies to develop students' intercultural competencies.

Keywords: Cultural intelligence, education, intercultural competence, international students, international exposure

https://doi.org/10.15405/epiceepsy.22123.7
Corresponding Author: Elok D. Malay
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2672-8141

1. Introduction

In today's globalized and interconnected world, we will inevitably encounter cultural diversity in every aspect of our life. One of the competencies viewed as very important as the key to success in the current world is intercultural or cross-cultural competency (Andresen & Bergdolt, 2017; Bremer, 2006; Deardorff, 2004; Wang et al., 2015). In general, intercultural competence could be defined as the ability to function appropriately and effectively across different cultural contexts (Hammer et al., 2003; Leung et al., 2014; Wang et al., 2015). Research has shown that many constructs are used to refer to this competency (Leung et al., 2014), including cultural intelligence (Wang et al., 2015), multicultural competency (Dunn et al., 2006), intercultural sensitivity (Hammer et al., 2003), or ethnocultural empathy (Wang et al., 2003).

Among the conceptions of intercultural competence that has been studied most in recent years is cultural intelligence (Andresen & Bergdolt, 2017; Leung et al., 2014; Li, 2020; Matsumoto & Hwang, 2013; Ott & Michailova, 2018). Adopting the view that intercultural competence is a capability, Earley and Ang defined cultural intelligence (CQ) as an individual's ability to adapt successfully to new or unfamiliar cultural settings (Earley, 2002; Earley & Ang, 2003). Later, the definition was elaborated into someone's ability to detect, assimilate, reason, and act appropriately based on cultural cues in cultural diversity situations (van Dyne et al., 2012). However, despite the attention this concept gained, most studies conducted on CQ have been in the context of international business or management. On the other hand, the studies of CQ in the context of education are still very limited (Ramsey & Lorenz, 2016).

There is also the need to better understand the antecedents of CQ of international students. Many studies on CQ have positioned it as the outcome or results of education, especially international education. However, as international students physically move from their home country to another country to pursue their studies (UNESCO UIS, 2020), their level of CQ would play an important role even earlier in their process. Higher CQ would help their interaction with the locals or other international students in the different social and cultural environments they face in their host country. Available studies have shown that international students' CQ positively relates to their adjustment (Gebregergis et al., 2019; Shu et al., 2017). A better adjustment would lead these students to perceive higher satisfaction, experience better psychological conditions, and achieve better academic performance (Brunsting et al., 2018; Korobova & Starobin, 2015; Rienties & Tempelaar, 2013; Yu & Wright, 2016). Therefore, understanding factors that could positively develop international students' CQ would be beneficial in supporting their adjustment.

Among the factors hypothesized to be the antecedents of individuals' CQ in available literature is exposure to the international or intercultural environment (Fang et al., 2018; Ott & Michailova, 2018). However, the relationship between the two constructs remains inconclusive. Even though some studies supported that exposure to the international environment would positively increase CQ and its dimensions (Crowne, 2013b; Engle & Crowne, 2014; Frías-Jamilena et al., 2018), another study indicated otherwise (MacNab & Worthley, 2012). Their findings suggested that nor traveling or working and living abroad experiences related to CQ. Yet, other studies provided empirical support for a partial or conditional relationship between the two constructs (Nguyen et al., 2018; Varela & Gatlin-Watts, 2014; Wood & st. Peters, 2014). These variations may be caused by the variation in the operationalization of international exposure.

https://doi.org/10.15405/epiceepsy.22123.7
Corresponding Author: Elok D. Malay
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2672-8141

In examining the relationship between CQ and international exposure, some studies focused on short-term exposure, such as traveling abroad or joining short-term study programs, but others focused on more extended such as studying for a full degree or full-time work. While some studies focused on one kind of experience abroad (for example, working experience), others zoomed in on different experiences (such as traveling). In addition, the aforementioned studies were conducted on diverse populations, from students to expatriate workers. Therefore, this study would focus on whether certain types of exposures to the international environment would affect international students' CQ.

This study concentrated on two kinds of exposure to the international environment. The first was the experience of living abroad for a longer time. Unlike previous studies, which set duration mostly under six months (Fang et al., 2018), this study would set six months as the minimum duration of living abroad. Following the previous cross-cultural transition model (Wang et al., 2018; Ward et al., 1998), this study assumed that living abroad for at least six months would provide more opportunities for individuals to be exposed by different culture(s) and environment(s). Also, different from previous research, this study did not limit the living abroad situation to one type of purpose, such as studying or working. Any reasons for individuals to live abroad, such as migrating or joining their family who lives abroad, was also be included. This study's second type of international exposure was the experience of attending international education. While studying abroad is a kind of international exposure, it is not the only form of international education. Attending an international school in someone's home country may also expose students to an international environment. A previous study indicated that students' intercultural sensitivity was positively related to students' experience in attending international schools (Straffon, 2003). However, no study was available on the relationship between attending international education and students' CQ. To sum up, this study wanted to investigate whether prior experience of living abroad and attending international education might have an effect on international students' CQ.

2. Literature Review

2.1. Cultural Intelligence (CQ): Definition and Aspects

A review of literature on studies of CQ (Ott & Michailova, 2018) showed that there are two most widely used conceptualizations of CQ: the one introduced by Earley and Ang (2003) and the other one by Thomas (2006). Both conceptualizations define CQ as an ability to function or interact effectively in culturally different settings (Ang et al., 2007; Thomas et al., 2008). They both also view CQ as a multidimensional construct. However, they also have some differences. For the rest of this study, we will focus on the definition and conceptualization of CQ developed by Earley and Ang (2003), which then further developed (Ang et al., 2007; Ang & van Dyne, 2009b; van Dyne et al., 2012).

At the beginning of its introduction, cultural intelligence (CQ) was defined as an individual's ability to adapt successfully to new cultural settings (Earley & Ang, 2003). This definition has further refined to the ability to "function and manage effectively in culturally diverse settings" (Ang et al., 2007, p. 337) and has been elaborated more into "an individual's ability to detect, assimilate, reason, and act on cultural cues appropriately in situations characterized by cultural diversity" (van Dyne et al., 2012, p. 297). CQ complements but is distinct from other kinds of intelligence, such as IQ or general mental ability, emotional

https://doi.org/10.15405/epiceepsy.22123.7
Corresponding Author: Elok D. Malay
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2672-8141

intelligence, social intelligence, or practical intelligence (Ang & van Dyne, 2009b; Crowne, 2013a; Thomas et al., 2008; van Dyne et al., 2012)

CQ consists of four components: cognitive, metacognitive, motivational, and behavioral (Ang et al., 2007; Ang & van Dyne, 2009b; Rockstuhl & van Dyne, 2018; van Dyne et al., 2012). These four components capture different types of capabilities, but together, they form the entire cultural intelligence construct (Engle & Nash, 2015). Cognitive CQ reflects knowledge of the norms, practices, and conventions in different cultures acquired from education and personal experiences (Ang et al., 2007). It indicates someone's general knowledge and knowledge structures about cultures and cultural differences (van Dyne et al., 2012). Metacognitive CQ reflects an ability to process our cognition to acquire, understand, and evaluate cultural knowledge (Ang et al., 2007; Earley & Ang, 2003). Metacognitive CQ could also be described as an individual's level of conscious cultural awareness during multicultural interactions (van Dyne et al., 2012). Motivational CQ indicates the capability to direct attention and energy toward learning, functioning, and performing in intercultural situations with cultural differences (Ang et al., 2007; van Dyne et al., 2012). Lastly, behavioral CQ refers to the capability to exhibit appropriate verbal and nonverbal actions when interacting with people from different cultures (Ang et al., 2007). Behavioral CQ is the ability to adjust one's behaviors to fit different cultural contexts, whether verbal behavior, non-verbal behavior, or speech acts (van Dyne et al., 2012).

Most studies have treated and measured CQ as a single factor resulting from the aggregate score from the four dimensions. However, recent studies have pointed out the potential loss of valuable information in the single factor approach (Engle & Nash, 2015) and the benefit of the bi-factorial model approach (Rockstuhl & van Dyne, 2018). In this model, the analysis includes not only CQ as one single score but also each score of its four dimensions. Studies have shown that the relationship between CQ and other variables may differ from the relationship between its dimension with the variables (Huff et al., 2014; Shu et al., 2017). To better understand the relationship between CQ and the two investigated factors, this study would include the bifactorial model measurement of CQ.

2.2. Antecedents of CQ

Available studies on CQ have indicated the role of personal characteristics, especially personality traits, as the antecedents of CQ (Ang et al., 2006; Fang et al., 2018; Harrison, 2012; Ott & Michailova, 2018; Presbitero, 2016). While some degree of inconsistency also exists regarding the relationship between the two factors, most studies have supported those certain personality traits related more positively to CQ and its dimensions (Ang, et al., 2006; Presbitero, 2016). Other personal characteristics, such as individual self-efficacy, also positively impacted CQ (MacNab & Worthley, 2012). However, as CQ is conceptualized as a capability, naturally, it can be developed or enhanced by individual or external intervention.

Educational interventions, such as cross-cultural training or experiential learning or courses in class, have also been proposed and supported as factors that could develop individual's CQ (Fang et al., 2018; Ott & Michailova, 2018; Presbitero & Toledano, 2018; Reichard et al., 2014, 2015). While there was not yet single conclusion on what educational intervention would develop CQ most effectively, most of the studies showed that systematically developed educational interventions would affect individual's CQ, at least partially.

https://doi.org/10.15405/epiceepsy.22123.7
Corresponding Author: Elok D. Malay
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2672-8141

Another factor often hypothesized to affect individual's CQ is the direct exposure to international or intercultural environment that can take forms as visiting other country for travelling, studying abroad for a short-term or longer-term program, or working abroad (Fang et al., 2018; Ott & Michailova, 2018a). Some studies have provided support for the positive effect of direct exposure to international environment to individual's CQ (Crowne, 2013b; Engle & Crowne, 2014; Frías-Jamilena et al., 2018). Some other studies provided support for only partial or conditional relationship between the two constructs (Nguyen et al., 2018; Varela & Gatlin-Watts, 2014; Wood & st. Peters, 2014). However, there is also study that did not support the relationship between direct international exposure and CQ (MacNab & Worthley, 2012). Moreover, there is still lack of empirical investigation on the impact of long-term (more than six months) staying abroad and attending international education on individuals' CQ. Therefore, the question of whether living abroad for a longer period of time or attending international education could increase the CQ of international students is still unanswered.

3. Research Question(s) and Hypotheses

This study will investigate whether exposure to the international environment in the form of living abroad for more than six months or the experience of attending international education would affect international students' cultural intelligence (CQ).

(a) Does the prior longer-term experience of living abroad increase international students' CQ?

(b) Does the experience of attending international education increase international students' CQ upon attending international education a second time?

In addition, this study will also investigate the effect of students' age and study level on their CQ.

Based on the previous literature review, we hypothesized that:

(a) International students with the experience of living abroad for minimum of six months will have higher CQ than students who do not have the experience.

(b) International students with an earlier experience of attending international education would have higher CQ than students who do not have the experience.

4. Methods

4.1. Design and Procedures

This study used a cross-sectional design study by conducting a one-time online survey of Indonesian students studying in higher education abroad. While previous studies on the topic with students focused on students from the same university or program (Crowne, 2013; Engle & Crowne, 2014; Macnab & Worthley, 2012; Nguyen et al., 2018; Varela & Gatlin-Watts, 2014), this study focuses on international students from the same national background, Indonesia, studying in various universities abroad. The students were approached with snowball sampling by contacting the person-in-charge from the Indonesian students association (PPI) in ten countries: Malaysia, Singapore, Australia, China, Japan, South Korea, United States of America (USA), United Kingdom (UK), Germany, Netherlands, and Saudi Arabia. These countries were chosen as they are among the top destinations for Indonesian students who study abroad. The PPI then

https://doi.org/10.15405/epiceepsy.22123.7
Corresponding Author: Elok D. Malay
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2672-8141

announced the survey to the Indonesian students' community in their respective communities or city. The survey announcement was also shared with several people in the targeted countries (fellow students and a lecturer) whom then re-shared the announcement with Indonesian students (their friends or students).

4.2. Measurement Scale

4.2.1. Cultural Intelligence

Students' cultural intelligence was measured using the Indonesian language version of the Cultural Intelligence Scale (CQS) developed by Ang, van Dyne, and colleagues (Ang et al., 2007). The CQS used in this study was the short CQS consisting of 20 items (Ang & van Dyne, 2009a) that asked individuals to rate on a 7-point Likert scale about how agreeable the statements in the items were to their ability. The short CQS is time efficient but still able to measure each of CQ's dimensions: cognitive (6 items), metacognitive (4 items), motivational (5 items), and behavioral (5 items). It has also shown good psychometric properties in previous studies and relatively fair to good validity, reliability, and generalizability characteristics compared to other similar purpose instruments (Chen & Gabrenya, 2021). In this study, the CQS showed high reliability index (α=0.91). Every dimension of the CQS also demonstrated good reliability index (α.cognitive=0.86; α.metacog=0.84; α.motivation=0.87; α.behavioral=0.86).

4.2.2. International exposure: living abroad

To assess their experience in living abroad, we asked a question about whether the participants had ever lived abroad (outside of their home country) before their current situation for more than six months ("yes" or "no"). If they chose "yes" as an answer, they would be given the following question of why they had lived abroad before. The answer choices included pursuing full-degree education, joining an exchange study program, joining/living with family members, working, and other reasons not mentioned.

4.2.3. International exposure: attending an international education

Participants responded to a question of whether they have experienced international education in their previous school/study ("yes" or "no"). If they answered "yes," we then proceeded to ask whether they experienced international education in their previous higher education, middle or high school, or both.

4.2.4. Demographic factors

At the end of the survey, participants were also asked questions about their age, gender, level of education (bachelor's, master's, or doctoral program), and the name of the host country where they lived.

4.3. Participants

364 Indonesian students studying in diverse universities abroad filled out the online survey. After checking and filtering out invalid responses, only data from 359 participants could be processed further in

https://doi.org/10.15405/epiceepsy.22123.7
Corresponding Author: Elok D. Malay
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2672-8141

this study. However, because of random incomplete responses to a different question, only 355 and 246 data could be analyzed for statistical analysis in the first and second hypothesis testing, respectively.

The 359 students in this study were 18 to 52 years old, with an average age of 29 (M=29.42, SD=7.29). There were more students (60.7% were female, 37.3% were male, and 1.9% did not answer the gender question). Most of the students who participated in this survey were master's students (40.4% were master's program students). Meanwhile, 35.9% were doctoral students, and 22.6% were bachelor's degree students.

4.4. Data Analysis

To test the hypotheses regarding the effect of studying in international education and living abroad on international students' cultural intelligence (CQ), we conducted independent sample t-tests. Our hypotheses would be supported if:

(a) There were significant CQ score differences between students who had the experience of living abroad for more than six months and students who had never lived abroad.

(b) There were significant CQ score differences between students who had attended international education before and those who had never experienced it.

We also conducted the independent sample t-test to compare the scores of each CQ dimension in the groups.

Additional statistical analyses were conducted to check the relationship between CQ (overall and each dimension) with age and level of study. We conducted Pearson product-moment analysis to check the correlation between CQ and age. Meanwhile, to examine the relationship between CQ and level of study, we run One-way ANOVA to compare the CQ between bachelor's, master's, and doctoral degree students. All the statistical analyses were conducted with IBM SPSS 28.0 software.

5. Results

5.1. The prior experience of living abroad and CQ

Three hundred and fifty-five students answered the question of whether they had experienced living abroad for more than six-month duration before. Most students (68.17%) stated that they had no prior experience living abroad for more than six months. Only 31.83% of the students had ever lived abroad for a longer period prior to their current situation as international students.

Further investigation showed various reasons why the students (N= 113) had lived abroad, as illustrated in Table 1. The majority (57.52%) of the students who answered previously lived abroad to undertake their full-degree study program. Other reasons for their prior living abroad were because they joined an exchange study program (11.50%), followed their family or spouse who lived abroad (11.50%), or for working purposes (0.88%). The rest of them (14.14%) lived abroad for a combination of the reasons mentioned earlier (for example: pursuing a full-degree study program abroad and following their family, attending a full-degree study program while also working, and so on) or other reasons (4.42%).

https://doi.org/10.15405/epiceepsy.22123.7
Corresponding Author: Elok D. Malay
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2672-8141

Table 1. The reasons for students living abroad previously

Reasons	n	%
Undertaking full-degree study program (1)	65	57.52
Joining an exchange study program (2)	13	11.50
Following/living with family (parents, relatives, spouse, etc.) (3)	13	11.50
Working (4)	1	0.88
Other reasons (not-specified) (5)	5	4.42
(1) & (2)	3	2.65
(1) & (3)	4	3.54
(1) & (4)	4	3.54
(2) & (4)	2	1.77
(2) & (5)	1	0.88
(3) & (4)	1	0.88
(1), (2), & (3)	1	0.88

The statistical analysis results, as presented in Table 2, show that both groups of students showed above-average scores in their overall CQ (M>12.50) and all dimensions (M > 4.00). Even though the number of students in both groups was not equal, the Levene test results showed that the assumption of equal variances in both groups' data distribution for every CQ score was met (p>0.05).

Table 2. Means, Levene F-test, and t-test analysis for the comparison between students who have the experience living abroad and students who did not

	M (SD)		F (p)	t (1-sided p) df=353
	Lived abroad before (N=113)	Never lived abroad (N=242)		
CQ	21.17 (2.94)	20.72 (2.84)	0.02 (0.88)	1.35 (0.09)
Metacognitive CQ	5.65 (0.83)	5.47 (0.82)	0.62 (0.43)	1.85 (0.03*)
Cognitive CQ	4.73 (1.09)	4.63 (0.98)	1.19 (0.27)	0.87 (0.19)
Motivational CQ	5.57 (0.89)	5.39 (0.93)	1.21 (0.27)	1.68 (0.05*)
Behavioral CQ	5.22 (1.12)	5.23 (0.92)	2.70 (0.10)	-0.06 (0.48)

Table 2 also showed that while the general CQ score from students who have the experience of living abroad is higher (M=21.12, SD=2.94) than students who had never lived abroad (M=20.64, SD=2.80), the difference was not significant (t(343) = 1.46, p=0.07). The two groups of students were not significantly different either on their cognitive CQ (t(343) = 0.94, p=0.17) and behavioral CQ (t(343) = 0.07, p=0.47).

However, students who had lived abroad previously showed significantly higher scores (t(343) = 1.85, p=0.03) on metacognitive CQ (M=5.64, SD=0.83) compared to students who did not have the experience (M=5.46, SD=0.82). They also showed significantly higher score (t(343) = 1.75, p=0.04) on motivational CQ (M=5.55, SD=0.89) than the students who had never lived abroad (M=5.37, SD=0.93). Therefore, although there was no significant effect of prior living abroad experience on international students' overall CQ, cognitive CQ, and behavioral CQ, it impacted their metacognitive CQ and motivational CQ.

https://doi.org/10.15405/epiceepsy.22123.7
Corresponding Author: Elok D. Malay
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2672-8141

5.2. The experience of attending international education and CQ

Out of 359 participants, only 256 participants answered the question of whether they had experience studying in international education before. As shown in Table 3, 40.63% of those students had attended international education in their previous education. But, most of them (59.38%) did not attend any international education. Furthermore, the table shows that among the participants who had the experience of attending international education, the majority (74.04%) experienced it in their previous level of higher education. A smaller portion of the students (19.23%) experienced it in their middle or high school, and an even smaller portion (5.77%) experienced it in their middle/high school and previous higher education.

Table 3. Students' prior experience of attending international education

Experience	n	%
No experience attending international education program	152	59.38
Have prior experience of attending international education program	104	40.63
Attending the international education in:		
previous level of higher education	77	74.04
middle or high school education	20	19.23
both	6	5.77

The Table 4 below shows that both students with and without the experience of attending international education had above-average scores of overall CQ (M>12.50). Their scores in all CQ dimensions were also above-average (M > 4.00). The data distribution in both groups' CQ scores could be considered equally distributed (p F-test >0.05).

Table 4. Means, Levene F-test, and t-test analysis for the comparison between students who have the experience attending international education and students who did not

	M (SD)		F (p)	t (p 1-sided)
	Attended	Never attended		
CQ	20.99 (3.10)	20.95 (2.79)	0.50 (0.48)	- 0.10 (0.46)
Metacognitive CQ	5.58 (0.81)	5.52 (0.84)	0.00 (0.98)	- 0.58 (0.28)
Cognitive CQ	4.61(1.09)	4.73 (0.97)	0.52 (0.47)	0.95 (0.17)
Motivational CQ	5.51 (0.97)	5.45 (0.92)	0.15 (0.69)	- 0.50 (0.31)
Behavioral CQ	5.29 (1.07)	5.25 (0.95)	0.23 (0.63)	- 0.32 (0.38)

Furthermore, the t-test analysis results showed that there was no significant difference ($t(254) = -0.10$, $p=0.46$) in the overall CQ score between students who had attended international education ($M=20.99$, $SD=3.10$) and those who had no experience in attending one ($M=20.95$, $SD=2.79$). Significant differences between the two groups were neither found in the comparison of their metacognitive CQ ($t(254) = - 0.58$, $p=0.28$), cognitive CQ($t(254) = 0.95$, $p=0.17$), motivational CQ($t(254) = -0.50$, $p=0.31$), and behavioral CQ ($t(254) = -0.32$, $p=0.38$). Therefore, prior experience attending international education showed no significant influence on international students' CQ in general and all dimensions.

https://doi.org/10.15405/epiceepsy.22123.7
Corresponding Author: Elok D. Malay
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2672-8141

5.3. Age and Level of Study and CQ

5.3.1. Age and CQ

The results of the correlational analysis suggested that age was significantly and positively related to overall CQ (r(347)=0.17, p=0.001). Age also positively related to metacognitive CQ (r(347)=0.19, p=0.00), motivational CQ (r(347)=0.15, p=0.005), and behavioral CQ (r(347)=0.11, p=0.04). However, it did not correlate significantly with cognitive CQ (r(347)=0.085, p=0.11).

5.3.2. Level of study and CQ

Table 5. Means, F-test, and Mean difference analysis for the comparison between bachelor's, master's, and doctoral students

	M			F	M difference (p)		
	1* (n=81)	2* (n=145)	3* (n=129)	(p)	(1-2)*	(1-3)*	(2-3)*
CQ	19.95	21.18	21.09	5.51 (p=0.00)	-1.23 (p=0.01)	-1.14 (p=0.01)	0.09 (p=0.97)
Metacognitive CQ	5.21	5.58	5.67	8.64 (p=0.00)	-0.37 (p=0.00)	-0.46 (p=0.00)	-0.09 (p=0.65)
Cognitive CQ	4.58	4.73	4.63	0.66 (p=0.52)	- 0.15 (p=0.53)	-0.05 (p=0.93)	0.10 (p=0.70)
Motivational CQ	5.14	5.60	5.47	6.87 (p=0.00)	- 0.46 (p=0.00)	- 0.33 (p=0.03)	0.13 (p=0.45)
Behavioral CQ	5.02	5.26	5.32	2.42 (p=0.09)	- 0.24 (p=0.19)	- 0.30 (p=0.09)	- 0.06 (p=0.88)

* 1=bachelor students, 2=master students, 3=doctoral students

As illustrated in Table 5, the average CQ scores of Bachelor's, Master's, and Doctoral students were different with bachelor's students consistently showed lower scores. The one-way ANOVA analysis confirmed that the difference in the overall CQ between at least two groups of students in comparison (F(2, 352) = 5.51, p=0.00) was significant. The Post-hoc test using the Tukey HSD test indicated that the CQ score for Master's students was significantly higher than Bachelor's students (M diff = 1.23, p=0.01). Doctoral students also showed significantly higher CQ score than Bachelor's students (Mdiff = 1.14, p = 0.01). However, there was no significant difference in the overall CQ between Master's and Doctoral students (Mdiff = 0.86, p=0.97).

Significant different between at least two of the three groups were also shown on their metacognitive CQ (F(2, 352) = 8.64, p=0.00) and motivational CQ (F(2, 352) = 6.86, p=0.00). Similar with their overall CQ, the metacognitive CQ and motivational CQ scores of Master's and Doctoral students were significantly higher than Bachelor's students. However, there was no significant difference between Master's and Doctoral students. On the other hand, there was no significant difference between the three groups in their cognitive CQ (F(2, 342) = 0.65, p=0.53) and behavioral CQ (F(2, 342) = 1.82, p=0.16).

https://doi.org/10.15405/epiceepsy.22123.7
Corresponding Author: Elok D. Malay
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2672-8141

6. Conclusion & Discussion

Somewhat different from our proposed hypothesis and previous studies, the results of our first hypothesis testing did not provide adequate support for the idea that international experiences enhance students' CQ. Students who had lived abroad did not show higher overall CQ, cognitive CQ, and behavioral CQ than their fellow students who did not have such experience. There was no direct effect of living abroad for a longer period on international students' CQ, except for their metacognitive and motivational CQ. However, the results still provided partial support to our first hypothesis. Students who had lived abroad for a minimum of six months have higher metacognitive and motivational CQ than students who did not.

The positive relationship between the experience of living abroad and the metacognitive and motivational dimensions of CQ was relatively in line with a previous study (Wood & St. Peters, 2014). Varela & Gatlin-Watts (2014) also indicated the positive relationship between the length of staying abroad and metacognitive CQ. As metacognitive CQ deals with someone's awareness and ability to govern their cognition in acquiring or processing cultural knowledge, the result may suggest that students who have experienced living abroad were more aware and used to detecting cultural differences. They also had more experience regarding what to do when they needed to understand cultures different from theirs. Besides, they might be more motivated toward more learning or better performing in intercultural situations as they have already experienced the benefits of doing so.

However, this study's results also differ from both previous studies (Wood & St. Peters, 2014; Varela & Gatlin-Watts, 2014) regarding the relationship between international exposure and cognitive CQ. Unlike the previous studies, this study did not support the relationship between the two constructs. Different from previous studies that focused on students who had come back to their home country, this study's participants' current situation of residing abroad as international students might explain this difference. Even though the items in the cognitive part of CQS do not refer to specific other culture(s), the students might had associate them with the cultures in their current host country. If they lived in different country before, they would still rate their knowledge on the cultures of the current host country as low or high as their fellow students who had never lived abroad for longer period. Another possible explanation to the result is that the students who had never lived abroad before had prepared themselves for their current sojourning experience. As their current situation may have been their first experience living abroad, they could have studied even more about other cultures to prepare themselves, that might result with similar level of cognitive CQ.

Another possible explanation for the results is the quality of the students' exposure of international environment during their previous experience abroad. As Crowne (2013) suggested, international exposure's positive impact on someone's CQ would depend on the depth and breadth of their exposure to other cultures. The differences in the reason and situations of the students when they lived abroad previously may affect the intensity and quality of their interaction with international environment. For example, students who lived abroad to join an exchange study program would interact with international environment in shorter period than students who undertook a full-degree program. On the other hand, the students who joined exchange program and lived together with the locals would have more opportunities to develop deeper interaction than students who lived abroad with their parents and stayed in their "expatriates bubbles", for instance. Literature have also provided us with evidences on the lack of deeper interaction

https://doi.org/10.15405/epiceepsy.22123.7
Corresponding Author: Elok D. Malay
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2672-8141

between the local and international students (Leask & Carroll, 2011; Kudo & Simkin, 2003; McKenzie & Baldassar, 2017) or the local and certain expatriate communities (Fechter, 2007; van Bakel et al., 2016). Consequently, there would always be chances that these students had limited exposure to people from different cultures even though they lived abroad. A previous study on Indonesian students abroad (Suharti & Pramono, 2016) also indicated that the experience of education and vacation abroad did not affect their cultural intelligence. Their probing to the students suggested the tendency of Indonesia students to form co-national clusters in their living situation that limited their interaction with the local or international communities. Suppose that was also the case for the participants in this study. It may help explain why the experience of living abroad did not increase their CQ significantly higher than their fellow students who had never lived abroad.

The results of the second hypothesis testing also did not provide adequate support for the assumption that students who had attended international education would have higher CQ than students who did not. Instead, both groups were not different in their overall CQ and the four CQ dimensions. These results may be explained by the wide variation of international education's definition. As literature suggested (Hayden & Thompson, 1995), there are differences between international education and international school. While a school claims as an international school, it might not provide enough international environment exposure to its students. In this study, we did not probe the students about their experience participating international education. Therefore, we did not know if it was in the form of studying abroad with local people in the host country, studying in an international school in their home country with culturally diverse students, studying in an international school with culturally homogenous students, or else. Each situation would give different exposure to an international or intercultural environment. Ultimately, if the students did not experience the optimum exposure to an international environment during their study, their CQ development would not be so different from their fellow students who had no prior experience in attending international education. Hence, explaining the results of this study.

There were other variations in the participants' experience in attending international education. The first variation was the duration of the education they received. Some participants could have attended international education for a shorter period (e.g., only during high school) than others (for example, in both high school and Bachelor's study). Another variation was the time gap between their prior experience and current international study situation. Some participants might have received international education for a longer past period (for example, a doctoral student who experienced it during middle school) than others (for example, a doctoral student who experienced it during their Master's degree study). These variations might explain why the experience of attending international education did not cause significant difference between the students' CQs.

Referring to previous studies (Kadam et al., 2020), the results of this study may also be explained by the effect of non-contact exposure, such as movies or social media, on CQ. In the current era, almost everyone, including the students, could have unlimited access to different cultures and international commmunity via the available media. It would be easier for them to educate themselves and be exposed to different cultures even without having the experience of going or living abroad. There is high chance that these non-contact exposures might develop their CQ as much as their fellow students who had previously lived abroad or attended international education. Follow up investigation on this topic is needed.

Moreover, in line with the additional analysis of this study, more factors could also affect students' CQ. As age correlated positively with overall CQ, metacognitive CQ, motivational CQ, and behavioral CQ, older students might show higher CQ scores even if they did not have the experience of living abroad or participating in international education. The life experience that came with their age might be an intervening variable in their CQ development. Students at the higher levels of study showed higher overall, metacognitive, and motivational CQ compared to Bachelor's students. While this might connect with their age, their education level might also increase their awareness and interest in different cultures. Therefore, Doctoral students who did not have a prior period abroad or attended international education might show similar, or even higher, CQ than Bachelor's students with such experiences.

Lastly, CQ could also be affected by other factors, including personality traits (Ang et al., 2006; Presbitero, 2016), self-efficacy (MacNab & Worthley, 2012), educational intervention (Eisenberg et al., 2013; Wang et al., 2021), and cultural beliefs (Chao et al., 2017). Students who did not have prior experience of living abroad or attending international education might develop the same or even higher CQ when more supportive factors, such as higher openness traits or more positive self-efficacy, are present. Eisenberg et al. (2013) also indicated that the relationship between international experience and CQ would be significant only before an educational intervention (cross-cultural management course). Therefore, once the international students experienced educational interventions to develop their CQ, their different prior exposures might have no significant effect.

On the one hand, this study provides us with some optimism that the efforts to develop international students' CQ could be effective even without direct experience abroad. A systematically prepared educational intervention for CQ development at the beginning of their study abroad might assist international students to achieve better adjustment. On the other hand, agreeing to previous studies (Leask & Carroll, 2011; Spencer-Oatey & Dauber, 2019) the results also raised the need for further reflection and investigation on the current practice of international education. We might need to evaluate whether it has facilitated our students to experience the diversity and intercultural interactions needed to develop their CQ.

Acknowledgments

The first author would like to express gratitude to Indonesia Endowment Fund of Education (LPDP-BUDI) as the scholarship provider for author's Ph.D. project which support this study to be conducted.

References

Andresen, M., & Bergdolt, F. (2017). A systematic literature review on the definitions of global mindset and cultural intelligence–merging two different research streams. *International Journal of Human Resource Management*, *28*(1), 170–195. https://doi.org/10.1080/09585192.2016.1243568

Ang, S., Dyne, L., van, Koh, C., Ng, K. Y., Templer, K. J., Tay, C., & Chandrasekar, N. A. (2007). Cultural Intelligence: Its Measurement and Effects on Cultural Judgment and Decision Making, Cultural Adaptation and Task Performance. *Management and Organization Review*, *3*(3), 335–371. https://doi.org/10.1111/j-l 740-8784.2007.00082.X

Ang, S., & van Dyne, L. (2009a). Appendix A: Cultural Intelligence Scale (CQS). In *Handbook of Cultural Intelligence: Theory, Measurement, and Applications* (p. 389). Taylor & Francis Group.

Ang, S., & van Dyne, L. (2009b). Chapter 1: Conceptualization of Cultural Intelligence-Definition, Distinctiveness, and Nomological Network. In S. Ang & L. van Dyne (Eds.), *Handbook of Cultural Intelligence: Theory, Measurement, and Applications*. Taylor & Francis Group.

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. https://doi.org/10.1177/1059601105275267

Bremer, D. (2006). Wanted: Global workers. *International Educator*, *15*(3), 40.

Brunsting, N. C., Zachry, C., & Takeuchi, R. (2018). Predictors of undergraduate international student psychosocial adjustment to US universities: A systematic review from 2009-2018. *International Journal of Intercultural Relations*, *66*(June), 22–33. https://doi.org/10.1016/j.ijintrel.2018.06.002

Chen, X., & Gabrenya Jr, W. K. (2021). In search of cross-cultural competence: A comprehensive review of five measurement instruments. *International Journal of Intercultural Relations*, *82*, 37-55. https://doi.org/10.1016/j.ijintrel.2021.02.003

Crowne, K. A. (2013a). An empirical analysis of three intelligences. *Canadian Journal of Behavioural Science/Revue Canadienne Des Sciences Du Comportement*, *45*(2), 105–114. https://doi.org/10.1037/a0029110

Crowne, K. A. (2013b). Cultural exposure, emotional intelligence, and cultural intelligence: An exploratory study. *International Journal of Cross Cultural Management*, *13*(1), 5–22. https://doi.org/10.1177/1470595812452633

Deardorff, D. K. (2004). Internationalization: In search of intercultural competence. *International Educator*, *Spring*, 13–15.

Dunn, T. W., Smith, T. B., & Montoya, J. a. (2006). Multicultural Competency Instrumentation: A Review and Analysis of Reliability Generalization. *Journal of Counseling & Development*, *84*, 471–483. https://doi.org/10.1002/j.1556-6678.2006.tb00431.x

Earley, P. C. (2002). Redefining interactions across cultures and organizations: Moving forward with cultural intelligence. *Research in Organizational Behavior*, *24*, 271–299. https://doi.org/10.1016/S0191-3085(02)24008-3

Earley, P. C., & Ang, S. (2003). *Cultural Intelligence: Individual Interactions across Cultures*. Stanford University Press. https://books.google.nl/books?hl=en&lr=&id=g0PSkiOT8ggC&oi=fnd&pg=PR11&dq=cultural+intelligence&ots=OtwrhD7aF8&sig=Di0vB-jKwUgSXJNzU0tYiDGxlag&redir_esc=y#v=onepage&q=cultural intelligence&f=false

Engle, R. L., & Crowne, K. A. (2014). The impact of international experience on cultural intelligence: An application of contact theory in a structured short-term programme. *Human Resource Development International*, *17*(1), 30–46. https://doi.org/10.1080/13678868.2013.856206

Engle, R. L., & Nash, B. (2015). Does It Matter If Researchers Use Individual Dimension Constructs or Only Aggregated Constructs of Cultural Distance and Cultural Intelligence? *Journal of International Business Research*, *14*(2), 47–65.

Fang, F., Schei, V., & Selart, M. (2018). Hype or hope? A new look at the research on cultural intelligence. *International Journal of Intercultural Relations*, *66*(September 2017), 148–171. https://doi.org/10.1016/j.ijintrel.2018.04.002

Frías-Jamilena, D. M., Sabiote-Ortiz, C. M., Martín-Santana, J. D., & Beerli-Palacio, A. (2018). Antecedents and consequences of cultural intelligence in tourism. *Journal of Destination Marketing and Management*, *8*, 350–358. https://doi.org/10.1016/j.jdmm.2017.07.006

Gebregergis, W. T., Huang, F., & Hong, J. (2019). Cultural intelligence, age and prior travel experience as predictors of acculturative stress and depression among international students studying in China. *Journal of International Students*, *9*(2), 511–534. https://doi.org/10.32674/jis.v9i2.964

Hammer, M. R., Bennett, M. J., & Wiseman, R. (2003). Measuring intercultural sensitivity: The intercultural development inventory. *International Journal of Intercultural Relations*, *27*(4), 421–443. https://doi.org/10.1016/S0147-1767(03)00032-4

Harrison, N. (2012). Investigating the impact of personality and early life experiences on intercultural interaction in internationalised universities. *International Journal of Intercultural Relations*, *36*(2), 224–237. https://doi.org/10.1016/j.ijintrel.2011.03.007

Hayden, M., & Thompson, J. (1995). International Schools and International Education: A relationship reviewed. *Oxford Review of Education*, *21*(3), 327–345. https://doi.org/10.1080/0305498950210306

Huff, K. C., Song, P., & Gresch, E. B. (2014). Cultural intelligence, personality, and cross-cultural adjustment: A study of expatriates in Japan. *International Journal of Intercultural Relations*, *38*(1), 151–157. https://doi.org/10.1016/j.ijintrel.2013.08.005

Kadam, R., Rao, S., Abdul, W. K., & Jabeen, S. S. (2020). A comprehensive examination of antecedents of cultural intelligence amongst students: Testing the moderation effect of third culture kids. *International Journal of Educational Management*, *34*(2), 245–262. https://doi.org/10.1108/IJEM-10-2018-0331

Korobova, N., & Starobin, S. S. (2015). A comparative study of student engagement, satisfaction, and academic success among international and American students. *Journal of International Students*, *5*(1), 72–85.

Leask, B., & Carroll, J. (2011). Moving beyond 'wishing and hoping': Internationalisation and student experiences of inclusion and engagement. *Higher education research & development*, *30*(5), 647-659. https://doi.org/10.1080/07294360.2011.598454

Leung, K., Ang, S., & Tan, M. L. (2014). Intercultural Competence. *The Annual Review of Organizational Psychology and Organizational Behavior*, *1*, 489–519. https://doi.org/10.1146/annurev-orgpsych-031413-091229

Li, M. (2020). An examination of two major constructs of cross-cultural competence: Cultural intelligence and intercultural competence. *Personality and Individual Differences*, *164*(May), 110105. https://doi.org/10.1016/j.paid.2020.110105

MacNab, B. R., & Worthley, R. (2012). Individual characteristics as predictors of cultural intelligence development: The relevance of self-efficacy. *International Journal of Intercultural Relations*, *36*(1), 62–71. https://doi.org/10.1016/j.ijintrel.2010.12.001

Matsumoto, D., & Hwang, H. C. (2013). Assessing Cross-Cultural Competence: A Review of Available Tests. *Journal of Cross-Cultural Psychology*, *44*(6), 849–873. https://doi.org/10.1177/0022022113492891

Nguyen, A. M. T. D., Jefferies, J., & Rojas, B. (2018). Short term, big impact? Changes in self-efficacy and cultural intelligence, and the adjustment of multicultural and monocultural students abroad. *International Journal of Intercultural Relations*, *66*(July), 119–129. https://doi.org/10.1016/j.ijintrel.2018.08.001

Ott, D. L., & Michailova, S. (2018). Cultural Intelligence: A Review and New Research Avenues. *International Journal of Management Reviews*, *20*(1), 99–119. https://doi.org/10.1111/ijmr.12118

Presbitero, A. (2016). Cultural intelligence (CQ) in virtual, cross-cultural interactions: Generalizability of measure and links to personality dimensions and task performance. *International Journal of Intercultural Relations*, *50*, 29–38. https://doi.org/10.1016/j.ijintrel.2015.11.001

Presbitero, A., & Toledano, L. S. (2018). Global team members' performance and the roles of cross-cultural training, cultural intelligence, and contact intensity: the case of global teams in IT offshoring sector. *International Journal of Human Resource Management*, *29*(14), 2188–2208. https://doi.org/10.1080/09585192.2017.1322118

Ramsey, J. R., & Lorenz, M. P. (2016). Exploring the impact of cross- cultural management education on cultural intelligence, student satisfaction, and commitment. *Academy of Management Learning and Education*, *15*(1), 79–99. https://doi.org/10.5465/amle.2014.0124

Reichard, R. J., Dollwet, M., & Louw-Potgieter, J. (2014). Development of Cross-Cultural Psychological Capital and Its Relationship with Cultural Intelligence and Ethnocentrism. *Journal of Leadership and Organizational Studies*, *21*(2), 150–164. https://doi.org/10.1177/1548051813515517

Reichard, R. J., Serrano, S. A., Condren, M., Wilder, N., Dollwet, M., & Wang, W. (2015). Engagement in cultural trigger events in the development of cultural competence. *Academy of Management Learning and Education*, *14*(4), 461–481. https://doi.org/10.5465/amle.2013.0043

Rienties, B., & Tempelaar, D. (2013). The role of cultural dimensions of international and Dutch students on academic and social integration and academic performance in the Netherlands. *International Journal of Intercultural Relations*, *37*(2), 188–201. https://doi.org/10.1016/j.ijintrel.2012.11.004

Rockstuhl, T., & van Dyne, L. (2018). A bi-factor theory of the four-factor model of cultural intelligence: Meta-analysis and theoretical extensions. *Organizational Behavior and Human Decision Processes*, *148*(July), 124–144. https://doi.org/10.1016/j.obhdp.2018.07.005

Shu, F., McAbee, S. T., & Ayman, R. (2017). The HEXACO personality traits, cultural intelligence, and international student adjustment. *Personality and Individual Differences*, *106*, 21–25. https://doi.org/10.1016/j.paid.2016.10.024

Spencer-Oatey, H., & Dauber, D. (2019). Internationalisation and student diversity: how far are the opportunity benefits being perceived and exploited? *Higher Education*, *78*(6), 1035-1058. https://doi.org/10.1007/s10734-019-00386-4

Straffon, D. A. (2003). Assessing the intercultural sensitivity of high school students attending an international school. *International Journal of Intercultural Relations*, *27*(4), 487–501. https://doi.org/10.1016/S0147-1767(03)00035-X

Suharti, L., & Pramono, A. (2016). Cultural intelligence among Indonesian students: Role of international experiences and their impact on the development of social network and adaptive performance. *Journal of Advances in Humanities and Social Sciences*, *2*(3), 182–194. https://doi.org/10.20474/jahss-2.3.6

Thomas, D. C., Elron, E., Stahl, G., Ekelund, B. Z., Ravlin, E. C., Cerdin, J. L., Poelmans, S., Brislin, R., Pekerti, A., Aycan, Z., Maznevski, M., Au, K., & Lazarova, M. B. (2008). Cultural intelligence: Domain and assessment. *International Journal of CrossCultural Management*, *8*(2), 123–143. https://doi.org/10.1177/1470595808091787

UNESCO UIS. (2020). *International or internationally mobile students*. uis.unesco.org/en/glossary-term/international-or-internationally-mobile-students

van Dyne, L., Ang, S., Ng, K. Y., Rockstuhl, T., Tan, M. L., & Koh, C. (2012). Sub-Dimensions of the Four Factor Model of Cultural Intelligence: Expanding the Conceptualization and Measurement of Cultural Intelligence. *Social and Personality Psychology Compass*, *4*, 295–313. https://doi.org/10.1111/j.1751-9004.2012.00429.x

Varela, O. E., & Gatlin-Watts, R. (2014). The Development of the Global Manager: An Empirical Study on the role of Academic International Sojourns. *Academy of Management Learning and Education*, *13*(2), 187–207. https://doi.org/doi.org/10.5465/amle.2012.0289

Wang, K. T., Heppner, P. P., Wang, L., & Zhu, F. (2015). Cultural intelligence trajectories in new international students: Implications for the development of cross-cultural competence. *International Perspectives in Psychology: Research, Practice, Consultation*, *4*(1), 51–65. https://doi.org/10.1037/ipp0000027

Wang, Y. W., Davidson, M. M., Yakushko, O. F., Savoy, H. B., Tan, J. A., & Bleier, J. K. (2003). The Scale of Ethnocultural Empathy: Development, validation, and reliability. *Journal of Counseling Psychology*, *50*(2), 221–234. https://doi.org/10.1037/0022-0167.50.2.221

Wood, E. D., & st. Peters, H. Y. Z. (2014). Short-term cross-cultural study tours: impact on cultural intelligence. *International Journal of Human Resource Management*, *25*(4), 558–570. https://doi.org/10.1080/09585192.2013.796315

Yu, B., & Wright, E. (2016). Socio-cultural adaptation, academic adaptation and satisfaction of international higher degree research students in Australia. *Tertiary Education and Management*, *22*(1), 49–64. https://doi.org/10.1080/13583883.2015.1127405