

GB 2022 Cultural intelligence

by Gb Gb

Submission date: 25-May-2022 11:35AM (UTC+0700)

Submission ID: 1843716857

File name: 2022_Cultural_intelligence.pdf (736.75K)

Word count: 12357

Character count: 71301

Cultural intelligence increase student's innovative behavior in higher education: the mediating role of interpersonal trust

Mediating role
of
interpersonal
trust

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Received 9 November 2020
Revised 8 March 2021
Accepted 29 April 2021

Abstract

Purpose – This paper aims to explore Indonesian students' perceptions of student exchanges or studies abroad regarding cultural intelligence's influence on innovative behavior through interpersonal trust.

Design/methodology/approach – This study has used a quantitative research approach. Data analysis uses an approach structural equation modeling-partial least squares (SEM-PLS) supported by program computer software Smart-PLS 3.0. An online questionnaire was distributed to 224 respondents, but only 214 were qualified. In this study, the respondent is Indonesian students who have been completed or are currently conducting student exchanges or studying abroad in the Asia and Australia region.

Findings – This pilot study reveals that high cultural intelligence students positively affect their individuals' innovative behavior. Moreover, interpersonal trust levels would mediate the influence of cultural intelligence on individual innovative behavior students. These results indicate that most Indonesian citizen students who took part in student exchanges or studying abroad had high cultural intelligence.

Originality/value – This study focused on influence cultural intelligence on individuals' innovative behavior, which is referred to as cross-cultural interaction. Also, this study focused on Indonesian citizen students who took part in student exchanges or studying abroad. This kind of research has not been thoroughly or even not been discussed in academic research. Therefore, it was necessary to put this issue into a science education and management science.

Keywords Indonesia, Cultural intelligence, Innovative behavior, Interpersonal trust, Higher education

Paper type Research paper

Introduction

In particular, educational institutions can be considered a microcosm of globalization occurring throughout the world (Keung and Rockinson-Szapkiw, 2013). Preparing students to have readiness and competence in facing competition in work is every educational institutions duty. Innovation in education is an absolute prerequisite for producing competitive human resources (Helmy and Pratama, 2018). Innovations are essential for organizations to sustain an advantage in highly competitive environments. Innovation helps organizations to achieve competitive advantage and organizational success (Afsar *et al.*, 2014). Individuals' student innovative behavior is considered an essential competency for the 21st century and has been related to organizational effectiveness (Dyer *et al.*, 2008). Innovative behavior has been flagged as a critical driver for long-term success in business, industry and entrepreneurship (Dyer *et al.*, 2008, 2011), and recently, higher education (Barak and Usher, 2019; Law and Geng, 2018). However, innovative behavior is rarely discussed in individual students in the world of higher education.

This paper forms part of a special section "Inclusive higher education in cross-cultural settings", guest edited by Anugamani Srivastava, Sucheta Agarwal and Malini Ganapathy.



International Journal of
Educational Management
Vol. 36 No. 4, 2022
pp. 419-440
© Emerald Publishing Limited
0951-354X
DOI:10.1108/IJEM-11-2020-0510

Innovation has also become the most discussed topic in higher education. Since it is evident that traditional education methods are far less effective in developing talented employees who contribute to a modern society characterized by rapid change and uncertainty, colleges and universities need to transform their education programs' methods and content (Lundvall, 2008). For innovation in higher education institutions, a student exchange program can be considered an entirely appropriate choice.

A student exchange program is where students from a secondary school or university study abroad at one of their institution's partner institutions. A student exchange program may involve international travel but does not necessarily require students to study outside their home country. Student exchanges are held to form student attitudes about respecting cultural diversity, views, religions and beliefs, other's opinions or findings, working together and having social sensitivity and concern for the community and the environment (Kemendikbud, 2020).

In the process, student exchange programs or studying abroad require individuals to explore different cultures. One of the essential individual competencies is understanding cultural differences and possess requisite cultural intelligence (CQ) (Afsar *et al.*, 2020). Lacking CQ might result in knowledge hiding and conflicts (Bogilovic *et al.*, 2017), making innovation more challenging.

CQ refers to an individual's capability to function and manage effectively in culturally diverse situations and settings (Van Dyne *et al.*, 2012). People who are used to their own culture find it difficult to switch norms or beliefs rapidly to accommodate other cultures. A culture is a powerful bond. People tend to feel more comfortable in a similar culture because unfamiliar signs or symbols might cause anxiety (Afsar *et al.*, 2020). Like other intelligence (cognitive, emotional or social) associated with accomplishing tasks, CQ is reported as another critical predictor of attitudinal or work outcomes. However, because the significance of CQ has been emphasized in the global context, most scholars have studied situations where people have relocated to unfamiliar cultural environments for work or study (e.g. international entrepreneurs, expatriate managers and international students) (Bucker *et al.*, 2014; Huff *et al.*, 2014; Lough, 2011; MacNab and Worthley, 2012).

The relationship between CQ and innovative behavior might not be straightforward. Therefore, this study selects the interpersonal trust as mediating mechanisms in explaining the effect of CQ on innovative behavior. Built on the philosophies of affective events theory (Weiss and Cropanzano, 1996), this study argue that interpersonal trust, as a result of CQ, could also act as a mediator between CQ and innovative work behavior. In particular, individuals with a high level of CQ are more likely to trust their colleagues (Rockstuhl and Ng, 2015). Consequently, higher interpersonal trust levels should lead to higher innovative behavior levels (Lee, 2008).

No matter where a business organization is located globally, the work environment is becoming increasingly diverse. It is also the case that some individuals are more effective than others when working in multicultural environments (Crowne, 2008). Organizations that understand this dynamic often require their workers to have practical communication skills by achieving more positive multicultural situations (Aldhaheri, 2017). This has resulted in people with diverse language, customs and ethnic backgrounds, which will encourage interpersonal trust. While diversity has been shown to have several benefits, including enhanced employee creativity and competence, it can also lead to miscommunication, dysfunctional adaptation behaviors and the creation of barriers, reducing the positive aspects that diversity can bring (Al-Jenaibi, 2012). A few studies have examined school principals' innovation (Orphanos and Orr, 2014; Somsueb *et al.*, 2019; Da'as *et al.*, 2020). Nevertheless, innovative behavior is not well documented in student exchange research, studies abroad and cross-culture.

Indonesia has a motto, "Bhinneka Tunggal Ika", which means different things remain one thing. The meaning of the motto Bhinneka Tunggal Ika implies that although the Indonesian nation consists of various ethnic groups, cultures, customs, races and religions, in total, it is a unity and oneness. Cultural diversity in Indonesia is due to geographical factors as an island

country. Diversity also occurs because of Indonesia's location on the world trade route, so that interactions with other nations' cultures are closely related. Quoted from the Central Statistical Agency (BPS) based on the population census in 2010, there were 1.331 ethnic groups in Indonesia (Detiknews, 2019).

Meanwhile, quoted from the Ministry of Education and Culture's website, the Ministry of Education and Culture's Language Agency has mapped and verified 652 regional languages in Indonesia. This amount does not include dialects and subdialects. The Summer Institute of Linguistics said that the number of languages in Indonesia is 719 regional languages, and 707 are still actively spoken. Meanwhile, United Nations Educational, Scientific and Cultural Organization has only listed 143 regional languages in Indonesia based on the status of the vitality or vitality of the language (Detiknews, 2019).

The Indonesian education sector is culturally diverse and reflective of the global nature of the population. One of the cultural contexts that we highlight in this discussion is language. In Indonesia, many different languages are identical in each region. The current condition of the Indonesian language is inseparable from cultural contexts in general. The cultural context constitutes relative general contexts that prevailed in our society (Levinson, 2000). Through this context, language is also placed as a cultural phenomenon. It means language is one of the cultural elements which also as a tool to express cultural values of the society speakers.

Understanding of society culture elements became one of the essential things in learning a particular language. Hence, in the contexts of learning, cultural aspects must be integrated systematically in learning a language so foreign speakers can learn and appreciate behaviors and values of the social culture, which are prevailed in society (Saddhono, 2015). In higher education, this study will test and prove that Indonesian students can explore their CQ so that they can adapt as a form of innovative behavior by being exposed to different cultures in their countries when exchanging or studying abroad (Asia and Australia region).

Prior research focused on CQ effects on various work-related outcomes, such as cross-cultural adjustment (e.g. Templer *et al.*, 2006; Wu and Ang, 2011), and expatriates' job performance (e.g. Ang *et al.*, 2007; Lee and Sukoco, 2010), the antecedents of expatriation behavior (e.g. Felker and Gianecchini, 2015; Vaiman *et al.*, 2015; Schlagel and Sarstedt, 2016), while little attention has been devoted to researching influence on innovation behavior (e.g. Afsar *et al.*, 2020).

In research conducted by Afsar *et al.* (2020), with participants from multinational corporations in Saudi Arabia, the results indicate that CQ can significantly affect employee's innovative work behavior. It further reveals that both work engagement and interpersonal trust partially mediates the effect of CQ on innovative work behavior. However, research in CQ on individual innovative behavior of college students through an interpersonal trust has never been studied before. This study adds to the literature on intelligence by examining an under-explored type of intelligence (i.e. CQ) with an individual student's innovative behavior in higher education. It reveals interpersonal trust as the psychological mechanism that can link CQ to innovative behaviors.

Tying together the concepts of CQ, innovative behavior and interpersonal trust, the ultimate aim of this research paper is to explore how CQ increase individual student Indonesian citizenship innovative behavior who have been completed or are currently conducting student exchanges or studying abroad mediated by interpersonal trust in the higher education sector. The first section highlights this research background: CQ in an individual student Indonesian citizenship context. The second section reviews the theoretical background surrounding CQ, innovative behavior and interpersonal trust. The development of hypotheses relevant to CQ, student's innovative behavior and interpersonal trust has been presented in the subsequent section. The fourth section presented research and methodological issues adopted for this research. The results of empirical findings and discussion were presented before conclusion section.

Theoretical background*Cultural intelligence*

The origins of CQ can be found in "Intelligence Theory". Intelligence is defined by Sternberg and Detterman (1986) as the "capability to adapt effectively to the environment". Earley and Ang (2003) used this idea but extended it to be specific to a cultural context. They also utilized Sternberg and Detterman (1986) multiple loci of intelligence theory which proposes that intelligence is related to different loci within the body, such as "biology, cognition, motivation and behavior" (Ang *et al.*, 2014). "Biology" refers to the interaction between the brain's structural and process aspects (Ang *et al.*, 2014). "Cognition" refers to both cognitive and metacognitive processes or, in other words, a person's perception of their own and others' knowledge (Ang *et al.*, 2014). "Motivation" refers to the cognitive processes of drive and choice (Ang *et al.*, 2014), and "Behavioral" refers to the range of actions a person uses, such as motor skills, verbal and nonverbal actions (Van Dyne *et al.*, 2012).

CQ originates from the need to understand effectiveness in an intercultural social context (Earley and Ang, 2003). CQ is a person's "capability for successful adaptation to new cultural settings, that is, for unfamiliar settings attributable to cultural context" (Earley and Ang, 2003, p. 9). Following Schmidt and Hunter (2000) definition of general intelligence, CQ is a specific form of intelligence focused on capabilities to grasp, reason and behave effectively in situations characterized by cultural diversity (Ang *et al.*, 2012, p. 337).

There are different conceptualizations of CQ. According to Earley and Ang (2003), CQ comprises three components (cognitive, motivational and behavioral). To achieve high CQ, an individual must simultaneously possess all components, but how these components interact was not specified. Moreover, metacognitive and cognitive components were described jointly in Earley and Ang (2003) conceptualization of CQ. Later on, Ang *et al.* (2007) proposed that CQ has four components (metacognitive, cognitive, motivational and behavioral).

Metacognitive CQ reflects mental processes that individuals use to acquire and understand cultural knowledge, including knowledge of and control over individual thought processes (Flavell, 1997), relating to culture (Ang *et al.*, 2007, p. 337). Relevant capabilities include planning, monitoring and revising mental models of cultural norms for people's countries or groups. Those with high metacognitive CQ are consciously aware of others' cultural preferences before and during interactions and adjust their mental models during and after interactions (Brislin *et al.*, 2006; Triandis, 2006).

Cognitive CQ reflects knowledge of the norms, practices and conventions in different cultures acquired from education and personal experiences. This includes knowledge of the economic, legal and social systems of different cultures and subcultures (Triandis, 1994), and knowledge of necessary cultural values frameworks (Hofstede, 2001). Those with high cognitive CQ understand similarities and differences across cultures (Brislin *et al.*, 2006).

Meanwhile, motivational CQ reflects the capability to direct attention and energy toward learning about and functioning in situations characterized by cultural differences. Kanfer and Heggstad (1997, p. 39) argued that such motivational capacities "provide cognitive control of effect, cognition, and behavior that facilitate goal accomplishment". Those with great motivational CQ direct attention and energy toward cross-cultural situations based on intrinsic interest (Deci and Ryan, 1985) and confidence in their cross-cultural effectiveness (Bandura, 2002).

Then, behavioral CQ reflects the capability to exhibit appropriate verbal and nonverbal actions when interacting with people from different cultures (Ang *et al.*, 2007, p. 338). Those with high behavioral CQ exhibit situational and appropriate behaviors based on their broad range of verbal and nonverbal capabilities, such as exhibiting culturally appropriate words, tone, gestures and facial expressions (Gudykunst *et al.*, 1988).

Furthermore, research that measures these four dimensions of CQ is broadly carried out by Schlagel and Sarstedt (2016). They assess the measurement invariance of the commonly

used four-dimensional CQ scale across five countries (China, France, Germany, Turkey and the US) by means of a complete model logic, using partial least squares structural equation modeling (PLS-SEM). Their findings indicate that this study should be aware of the potential lack of measurement invariance regarding the standard measurement of CQ.

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Innovative behavior

Innovation theorists often describe the innovation process as composed of two main phases: initiation and implementation (Zaltman *et al.*, 1973; Axtell *et al.*, 2000). The division between the two phases becomes the point at which the idea is first adopted. For example, the point at which the decision to implement the innovation is made. The first stage ends with an idea's production, while the second stage ends as soon as the idea is implemented (King and Anderson, 2002).

Innovative behavior is defined as "problem recognition and the generation of ideas or solutions, either novel or adopted" (Scott and Bruce, 1994, p. 581). It is a process in which new ideas are generated, created, developed, applied, promoted, realized and modified by individuals to benefit performance in their roles (Koneremann, 2012). Innovative behavior includes identifying and evaluating problems, seeking solutions, and completing a challenging and workable task (Tang and Werner, 2017). Dyer *et al.* (2008, 2011) identified four behavioral patterns which are the basis for the manager and executive's innovative behavior: (1) questioning – asking challenging questions; (2) observing – intensely observing the world while seeking new ideas; (3) experimenting – engaging in active experimentation to explore options and to generate novel designs and (4) idea networking – creating networks of individuals with diverse backgrounds and perspectives that could lead to new ideas and insights. Innovation is crucial to an organization's success, and individual creativity and innovativeness are essential to organizational-level innovation (DiLiello and Houghton, 2006).

Innovative behavior is the cognitive process that related to innovation and results in innovative outcomes (Xu and Chen, 2010). For an individual to display innovative behavior, he or she must be creative, although a creative person does not need to exhibit innovative behavior (Afsar *et al.*, 2015). Some individuals can generate practical ideas, but they do not take the burden of pursuing those ideas to convert them into realities due to some hurdles they have to face while implementing those ideas. An individual can display innovative behavior only if idea generation works in tandem with idea implementation (Shalley *et al.*, 2004; Zhou and Shalley, 2003).

There are some novel ideas range from initiating innovations in new products, services or by proposing improvements in existing procedures or processes and discovering efficient and effective alternative solutions for carrying out tasks (Zhou and Shalley, 2003). In the educational realm, Barak *et al.* (2020) and Thurlings *et al.* (2015) have asserted that innovative behavior should be central to the teaching profession because it is essential for further developing educational professions as school organizations and the development of knowledge-based societies. In line with this, innovative behavior is required to each student. This behavior may help students complete any assignments given to them effectively and efficiently. Nevertheless, innovative behavior is not well documented in the research about individual students and educational administration. Hence, this study builds student's innovative behavior indicators based on the four dimensions of (Jong and Hartog, 2010) innovative work behavior, namely, exploring ideas, generating ideas, fighting for ideas and implementing ideas.

Interpersonal trust

According to Vang (2009), interpersonal trust is the trust built by related parties. Interpersonal trust is a psychological state that consists of the intention to accept the

vulnerability of the other party's actions based on the expectation that the other will perform a particular action, regardless of the ability to monitor or control the other party (Six, 2005). Furthermore, Deutsch (1960) states that there are two components of interpersonal trust: confidence in the ability and intention to relate. Trust incurred because of the intention to have a relationship is a multidimensional concept (Paine, 2008). The trust dimensions include competence, integrity, dependability or reliability, openness and honesty, and satisfaction (Wong, 2009).

As a core relational construct, trust is often conceptualized in terms of one's perceived risk of vulnerability within a connection (Rousseau et al., 1998). Thus, trust is "the willingness of a party to be vulnerable to the actions of another party" (Mayer et al., 1995, p. 712). It is an expression of confidence by a party that their vulnerability will not be exploited and that they will not be harmed by the other party's behaviors or actions (Jones and George, 1998). Trust is a willingness to rely on the other party's competence and believe that the other party would not exploit weaknesses for their own advantage (Johnson and Grayson, 2005). Interpersonal trust is "the extent to which a person is confident in, and willing to act on the basis of, the words, actions, and decisions of another" (Kanawattanachai and Yoo, 2002, p. 43).

This study explores two kinds of interpersonal trust: affective and cognitive trust (McAllister, 1995). Meanwhile, affective trust is the confidence one places in a team member based on one's feelings of caring and concern illustrated by that coworker. Cognitive trust is based on one's willingness to rely on a team member's expertise and reliability; based on such as work teams, both affective and cognitive trust increase team members' ability to work together.

Development of hypotheses

Although this paper studies a straightforward relationship, previous research has not investigated the innovative behavior of Indonesian students who are doing student exchanges or studying abroad. Figure 1 presents the relationship between variable CQ, student's innovative behavior and interpersonal trust.

Cultural intelligence and student's innovative behavior

CQ makes individuals conscious of other cultures' knowledge and cultural differences, which provides them with new approaches to new ideas, opinions, concepts and scripts (Ang et al., 2007), to expand the creative potential to innovate. Individuals with high behavioral CQ appropriately change their verbal and nonverbal behaviors if a cross-cultural situation requires this (Earley and Ang, 2003).

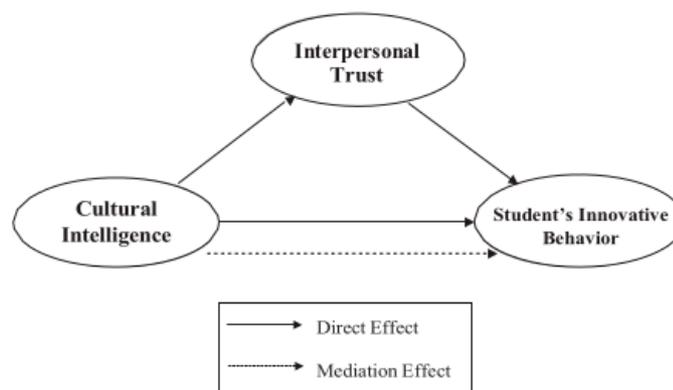


Figure 1.
Research model

CQ also helps to boost one's confidence to interact with people from different cultural backgrounds, conducive to establish high-quality relationships with peers, supervisors and experts. Hence, individuals learn about new perspectives and create better ideas (Brislin *et al.*, 2006). When individuals are highly culturally intelligent, it is more likely they will decrease the social categorization process (Rockstuhl and Ng, 2008). In turn, the social exchange between culturally diverse colleagues will be enhanced, triggering individual creativity (Bogilovic *et al.*, 2017).

Elenkov and Manev (2009) assert that CQ integrates knowledge from different cultures and translates into creative behaviors. CQ is needed to integrate knowledge from others and convert it to use by engaging in innovative behaviors (Korzilius *et al.*, 2017). Innovative behaviors need social support to implement the new idea, and CQ ensures an effective support system from others (Huang, 2009). Although which dimensions of CQ are salient may not be conclusively known, its impact on attitudinal or behavioral outcomes seems undeniable in multicultural interaction settings (Afsar *et al.*, 2020).

However, it is plausible to expect all subdimensions of CQ to affect innovative behavior because CQ is likely to become a personal resource when someone interacts with other people with diverse cultures (Afsar *et al.*, 2020). Thus, individuals with high CQ are likely to display innovative behavior in their daily lives than those with low behavioral CQ. Therefore

H1. Cultural intelligence will be positively related to individual student innovative behavior.

Cultural intelligence and interpersonal trust

CQ makes individuals to better understand how others think and behave (Gregory *et al.*, 2009). It is essential in building harmonious interpersonal relationships. Trusting each other is crucial for effective exchanges, and without it the constant and chronic jeopardy in individual and team outcomes is evident. Negative reactions, pessimism and misunderstandings that might result from social categorization processes decrease when individuals develop a better understanding of their partners' cultural backgrounds (Trong and Rowley, 2016). In cross-cultural interactions, a better connection and collaborative relationship are established due to trust (Johnson and Cullen, 2017).

CQ creates the premises to achieve effective interpersonal and collaborative relationships between people from different cultural environments (Afsar *et al.*, 2020). Individuals with high metacognitive CQ are aware of their cross-cultural knowledge; they frequently control their cultural knowledge accuracy and adjust their knowledge bases in response to new information or changes in the environment (Triandis, 2006). When necessary, they update their cultural knowledge based on their experience and expand their knowledge through interactions with individuals from different cultural backgrounds and reflect on these interactions (Brislin *et al.*, 2006). Regarding multicultural team effectiveness, high metacognitive, cognitive and behavioral CQ encourages interpersonal trust in multicultural teams (Moynihan *et al.*, 2006; Gregory *et al.*, 2009; Rockstuhl and Ng, 2008; Ang *et al.*, 2007). As individuals with high CQ may assume that they can cope better with interpersonal trust issues demands, they should be more inclined to open and trust everyone. In contrast, individuals with low CQ are likely to believe that they cannot deal with interpersonal trust challenges since they cannot use and adjust their cultural knowledge; thus, their openness and trust in everyone are lower. Thus,

H2. Cultural intelligence will be positively related to interpersonal trust.

Interpersonal trust and student's innovative behavior

High interpersonal trust creates an environment of confidence, freedom and belonging; all suspected to be highly conducive to enhancing an individual's innovativeness (Afsar *et al.*, 2020).

Informal knowledge is shared among peers due to interpersonal trust that improves social relationships and teamwork (Alsharo *et al.*, 2017). Innovative behaviors involve risk, uncertainty and vulnerability (Afsar *et al.*, 2019), and these elements are embedded in interpersonal trust (Mayer *et al.*, 1995). Trust creates openness and sincerity in an interpersonal relationship, creating a collaborative atmosphere, controlling the risk, uncertainty and vulnerability (Lei *et al.*, 2019).

The high level of trust among individuals will create a collaborative climate to strengthen the exploitation of knowledge and experimentation, which are the core values and real conditions for innovation (Alsharo *et al.*, 2017; Donate and Guadamillas, 2015). Interpersonal trust increases the emotional space needed for creativity (Bidault and Castello, 2009). When two individuals trust each other, they are more willing to share information or knowledge with the other party (Twyman *et al.*, 2008). They are likely to expect few cultural conflicts in cross-cultural situations, as they have adapted to different cultural settings in the past and are likely to do so in the future, thus having a high enough interpersonal trust level. Moreover, individuals with high interpersonal trust are likely to display innovative behavior in their daily lives than those with low interpersonal trust. Hence this study hypothesizes:

H3. The interpersonal trust will be positively related to individual student innovative behavior.

The mediating role of interpersonal trust

Cultural knowledge and consciousness makes individuals confident because of healthy interpersonal relationships, and they interact openly and collaboratively with experts from other cultures (Afsar *et al.*, 2020). The self-efficacy and a belief to try out new and novel things would not create conflicts due to high-quality relationships and a better understanding of others' cultures will support innovative endeavors among individuals (Fischer, 2011).

Additionally, it is easy for an individual with CQ to convince others about the implementation of the idea due to better understanding of their concerns, doubts and uncertainties through effective interpersonal relationships that they develop with others (Malek and Budhwar, 2013). Individuals with high CQ are more conscious of cultural differences and they possess good mastery of other cultures' knowledge, which provides them with many approaches to new ideas, solutions, concepts and scripts (Fischer, 2011). Indeed, the high level of trust among individuals will create a collaborative climate to strengthen the exploitation of knowledge and experimentation, which are the core values and real conditions for innovation (Alsharo *et al.*, 2017; Donate and Guadamillas, 2015). Interpersonal trust increases the emotional space needed for creativity (Bidault and Castello, 2009). When two individuals trust each other, they are more willing to share information or knowledge with the other party (Twyman *et al.*, 2008). Individuals with high interpersonal trust are more likely to believe that they possess the necessary creativity to use their cultural knowledge and skills to respond to a demanding cross-cultural situation effectively. These individuals are likely to exhibit better innovation behavior patterns and vice versa. Hence,

H4. The relationship between cultural intelligence and student's innovative behavior will be mediated by interpersonal trust.

Methods

Design and participants

This study was a quantitative research. This research uses technique nonprobability sampling, with purposive sampling and judgment sampling approaches. It used both primary and secondary data. The primary data were collected from online questionnaires

using Google Forms, and the secondary data were collected from scientific articles, books and other sources that dealt with theories of CQ, innovative behavior and interpersonal trust. This method is considered appropriate because it meets research needs based on certain elements and the population studied (Malhotra *et al.*, 2012).

This study's population is students' Indonesian citizenship who have been completed or are currently conducting student exchanges or studying abroad in Asia and the Australian region. There are no special conditions in determining the selected destination country. However, we consider data from countries with different characteristics in terms of formal institutions (rules, laws and regulations), as well as informal institutions (cultural norms and values) (Berry *et al.*, 2010; Schlagel and Sarstedt, 2016).

This study selected those students who had experienced culturally diverse interactions and cross-cultural education for more or less than six months (one semester) as the "qualifying" respondents. Such diversity is indispensable for testing research hypotheses that are posited to be applicable across different organizational contexts. Student samples are more homogenous than nonstudent samples (Van de Vijver and Leung, 1997), thus reduce the impact of influencing factors other than national context, such as socioeconomic status, education, work experience and age (Schlagel and Sarstedt, 2016).

For convenience in data collection, data collection does through online-based questionnaires. Questionnaires were created via Google Forms and were spread out through online social media such as Email, Instagram and WhatsApp. The respondents were selected based on an initial investigation to confirm that they had fit the predetermined criteria, including through data from the Instagram account "Overseas Indonesian Students Association (OISAA)" in the Asia and Australia region. The qualified respondents were allowed to give their responses in the provided questionnaires. Bachelor and postgraduate students were asked to complete the online-based questionnaires individually. Study participation was voluntary (i.e. the participants received no incentives).

Roscoe (1975) proposes the following rules of thumb for determining sample size: sample sizes larger than 30 and less than 500 are appropriate for most research (Sekaran and Bougie, 2016, p. 264). In this study, 224 respondents students were collected, but only 214 were qualified: Kazakhstan ($n = 1$); Japan ($n = 5$); South Korea ($n = 21$); China ($n = 21$); Brunei Darussalam ($n = 4$); Malaysia ($n = 68$); Singapore ($n = 7$); Thailand ($n = 37$); Philippines ($n = 8$); India ($n = 12$); United Arab Emirates ($n = 9$) and Australia ($n = 21$). The respondents in each country are due to the difference in the number of students participating in student exchange programs or studying abroad in that country. A total of four demographic components were presented using the frequency test. The four demographic profiles were gender, age, education background and cross-cultural interaction frequency. The selected respondents qualified the criteria of the sample the researcher had predetermined. As a result, 38.8% were male and 61.2% female. With details, 38.8% were 16–20 years, 48.6% were 21–25 years, and 12.6% were 26–30 years. Overall, 74.8% of them are undergraduate study, and 25.2% of them are postgraduate study. Concerning the cross-cultural interaction level, 27.6% of respondent state that they are engage occasionally, 24.3% are constant, and 48.1% are frequently engage in cross-cultural interaction.

Measures and data analysis

CQ was measured by 20-item scale developed by Ang *et al.* (2007). This scale encompasses (1) metacognitive CQ (4 items); (2) cognitive CQ (6 items); (3) motivational CQ (5 items) and (4) behavioral CQ (5 items). This study uses a 6-item scale to measure interpersonal trust. Affective-based trust was measured through 3-items, and for cognition-based trust, 3-items were adapted from the 11-item scale of affective and cognitive dimensions of trust by McAllister (1995). This study assessed individuals' innovative behavior from innovative work behavior with a 10-item scale (idea exploration 3-item, idea generation 2-

item, idea championing 3-item and idea implementation 2-item) developed by Jong and Hartog (2010).

This study developed the questionnaire in the Indonesian language and then translated it into English. Pilot tests and short interviews with the respondents during these pretests reflected a clear understanding of each country. The items were rated on a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree), with respondents indicating their agreement or disagreement with each statement (Sekaran and Bougie, 2016, p. 215).

To estimate the model relationships, this study draw on PLS-SEM. PLS is a composite-based approach to SEM that relaxes the strong assumption that a common factor explains all the variance between a block of indicators (Schlagel and Sarstedt, 2016). The method imposes no restrictions on the covariance between the same construct indicators but instead forms composites as linear combinations of their respective indicators. These linear combinations then serve as proxies for the conceptual variables under investigation (Henseler et al., 2014).

Further, this study focus on predicting individual students' innovative behavior through the four CQ dimensions, which calls for PLS-SEM use as a prediction-oriented SEM approach (Rigdon, 2012). Our analysis uses the SmartPLS 3 software to estimate the model parameters (Schlagel and Sarstedt, 2016). In line with Hair et al. (2016) recommendations, we used path weighting, a maximum of 300 iterations, and a stop criterion of 10^{-7} in the PLS-SEM algorithm settings.

The PLS-SEM analysis generally consists of two submodels: the measurement model, often called the outer model, and the structural model, often called the inner model (Ghozali and Latan, 2015). The measurement model shows how the manifest or observed variable represents the latent variable to be measured. The measurement model is used to assess the validity and reliability of the model. Measurement models with reflexive indicators are evaluated through convergent validity (value of loading factor or outer loadings and average variance extracted (AVE)) or discriminant validity of latent construct-forming indicators, as well as composite reliability (CR) and Cronbach's alpha (CA) for the indicator block (Ghozali and Latan, 2015). Meanwhile, the structural model shows the strength of the estimation between latent or construct variables. The structural model aims to predict the relationship between latent variables. The structural model is evaluated by looking at the percentage of variance described by looking at the R-Square value for endogenous latent constructs, Q^2 predictive relevance and the significant value to determine the effect between variables bootstrapping procedure (Ghozali and Latan, 2015). The PLS analysis also provides three quality indexes or fit indexes, namely, the communality index, redundancy index and goodness-of-fit (GoF) index. It aims to validate the measurement model, structural model and overall model (Ghozali and Latan, 2015).

Result

Measurement model

The following table presents the results of measurement model (outer model). Based on Table 1, presents outer loadings of all items, CR, CA, AVE of all constructs. Specifically, all items' with outer loadings were above 0.50; the CR of each construct ranged from 0.867 to 0.953 and was above 0.70; the CA ranged from 0.816 to 0.948 and was over 0.70; and AVE for each construct ranged from 0.502 to 0.536 and was over 0.50. These results presented that the measures have good convergent validity. In addition, the Variance Inflation Factor (VIF) values ranged from 1.397 to 3.292 (below 10), indicating the absence of multicollinearity. When the data entered into SmartPLS 3, where convergent validity was performed, no data error was detected.

From the results of respondents' answers based on the Likert-scale answer selection criteria, we then interpreted using the three-box method, then the range of five must be

Variable and scale item all indicators	Loadings	AVE	CR	CA	Mean
5 <i>Cultural intelligence</i>		0.502	0.953	0.948	3.80
I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds	0.758				4.12
I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me	0.722				4.09
I am conscious of the cultural knowledge I apply to cross-cultural interactions	0.684				4.03
I check the accuracy of my cultural knowledge as I interact with people from different cultures	0.773				3.91
I know the legal and economic systems of other cultures	0.661				3.19
I know the rules (e.g. vocabulary, grammar) of other languages	0.699				3.53
I know the cultural values and religious beliefs of other cultures	0.734				3.92
I know the marriage systems of other cultures	0.632				3.23
I know the arts and crafts of other cultures	0.685				3.56
I know the rules for expressing nonverbal behaviors in other cultures	0.727				3.60
I enjoy interacting with people from different cultures	0.706				4.48
I am confident that I can socialize with locals in a culture that is unfamiliar to me	0.727				4.11
7 I'm sure I can deal with the stresses of adjusting to a new culture	0.719				3.94
I enjoy living in cultures that are unfamiliar to me	0.735				3.99
I am confident that I can get accustomed to the shopping conditions in a different culture	0.707				3.94
I change my verbal behavior (e.g. accent, tone) when a cross-cultural interaction requires it	0.644				3.74
I use to pause and silence differently to suit different cross-cultural situations	0.674				3.49
I vary the rate of my speaking when a cross-cultural situation requires it	0.726				3.68
I change my nonverbal behavior when a cross-cultural situation requires it	0.754				3.79
I alter my facial expressions when a cross-cultural interaction requires it	0.676				3.69
<i>Interpersonal trust</i>		0.523	0.867	0.816	3.79
I can freely share my ideas, feelings and hopes	0.625				4.03
I can talk freely about I am having difficulties and know that they will want to listen	0.732				3.84
If I shared my problems, I know they would respond constructively and caringly	0.772				3.64
I can rely on someone not to make my duty more difficult by careless something	0.750				3.48
Most people, even those who are not close friends, trust, respect himself as a good friend and colleagues in completing tasks	0.659				3.92
Other colleagues of mine who must interact with this individual at here consider him or her to be trustworthy	0.785				3.81
11 <i>Agent's innovative behavior</i>		0.536	0.920	0.902	3.92
I pay attention to issues that are not part of my duty	0.570				3.21
I wonder how things can be improved	0.725				4.07
I search out new tasking methods, techniques or instruments	0.743				3.97
I generate solutions for problems	0.677				4.05
I find new approaches to execute tasks	0.735				4.07
I make other people enthusiastic for innovative ideas	0.748				3.88
I attempt to convince people to support an innovative idea	0.782				3.93
I systematically introduce innovative ideas into learning practices	0.745				3.87
I contribute to the implementation of new ideas	0.809				3.99
I put effort into the development of new things	0.765				4.14

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of
interpersonal
trust

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Table 1.
Specified
measurement model

divided by three resulting in a range of 1.33 (1.00–2.33 = low; 2.34–3.67 = moderate; 3.68–5.00 = high) and then used as the basis for the interpretation of the average value of the variable (Ferdinand, 2006). Based on respondents' assessment regarding research variables (cultural intelligence = 3.80; interpersonal trust = 3.79; student's innovative behavior = 3.92), all the latent variables are high categories.

In addition, all indicators have an average value of the answer that is good enough to measure their own variables: Metacognitive CQ indicator = 4.04 (high); cognitive CQ indicator = 3.51 (moderate); motivational CQ indicator = 4.09 (high); behavioral CQ indicator = 3.68 (high). Affective-based trust indicator = 3.84 (high); cognition-based trust indicator = 3.74 (high). Idea exploration indicator = 3.75 (high); idea generation indicator = 4.06 (high); idea championing indicator = 3.89 (high); idea implementation indicator = 4.07 (high).

The analysis also showed that the strongest indicator of CQ is the motivational CQ indicator, an average of 4.09. On the variable of interpersonal trust, the strongest indicator as a measure of interpersonal trust is the affective-based trust indicator, an average of 3.84. On the variable of student's innovative behavior, the strongest indicator as a measure is the idea implementation indicator, an average of 4.07.

Structural model

This study rate the structural model (inner model) by seeing values of R -square and Q -square. The R -square calculation results between the student's innovative behavior and interpersonal trust variable have relatively different values and show a relationship that is classified as moderate and weak. The R -square value of the student's innovative behavior is 0.516. This value indicates that the student's innovative behavior variable described by CQ and interpersonal trust is 51.6%, while other variables outside this model explain the rest. The R -square value for the interpersonal trust variable is 0.227. This value shows that CQ's described interpersonal trust variable is 22.7%, while other variables outside this model explain the rest.

Based on the calculation of the Q -square value, it can be stated that the model has a predictive relevance value of 0.832888 or 83.28%. This indicates that the research model has a strong predictive relevance value. The predictive-relevance formulation above:

$$Q_p^2 = 1 - (\sqrt{1 - R_1^2}) \times (\sqrt{1 - R_2^2})$$

$$Q_p^2 = 1 - (\sqrt{1 - 0.516^2}) \times (\sqrt{1 - 0.227^2})$$

$$Q_p^2 = 1 - (\sqrt{0.733}) \times (\sqrt{0.948})$$

$$Q_p^2 = 1 - (0.856 \times 0.973)$$

$$Q_p^2 = 0.832888$$

Assessing the inner model is also by looking at the significant value to determine the effect between variables through the bootstrapping procedure. Hypothesis testing was conducted using a T -test (T -statistics) at each direct effect path partially and indirectly effect path simultaneity. The following Table 2 presents the results of the hypothesis testing of direct effects and indirect effect:

CQ positively and significantly affects the student's innovative behavior variable with p -Value = 0.000 (<0.05) with a coefficient value of 0.590. The positive-marked coefficient means the students' high CQ; then, the higher their innovative behavior and vice versa. In the previous discussion, CQ is suspected positively related to student's innovative behavior.

A result indicates that ³ CQ has a significant positive effect on student's innovative behavior so that H1 is supported.

CQ has a positive and significant effect on the interpersonal trust variable with p -value = 0.000 (<0.05) with a coefficient value of 0.476. The positive-marked coefficient means the students' higher CQ; then, the higher their interpersonal trust and vice versa. Hypothesis 2 posits that CQ is positively associated with interpersonal trust, so that this H2 is supported.

Interpersonal trust positively and significantly affects the student's innovative behavior variable with p -Value = 0.001 (<0.05) with a coefficient value of 0.216. The positive-marked coefficient means the higher interpersonal trust the students have; then the higher of individual student's innovative behavior and vice versa. Likewise, H3 posits that interpersonal trust is positively associated with student's innovative behavior. This hypothesis is supported.

Interpersonal trust mediates CQ on student's innovative behavior variable with p -Value = 0.002 (<0.05) with a coefficient value of 0.103. Given the positive-marked coefficient indicates that the higher CQ the student has; will result in the higher student's innovative behavior; if it is mediated by ¹⁴ student interpersonal trust that is also higher. Lastly, H4 states that interpersonal trust would mediate the link between CQ and student's innovative behavior. This relationship is supported.

Quality indexes

Each part of the model requires the measurement model, the structural model and the overall model. Model fit can be seen using the GoF value to measure how well the resulting model fits. Table 3 presents the results of the GoF calculation.

The GoF index shows the power of predictions over the overall model. GoF is not issued by SmartPLS but must be calculated manually. The GoF is the geometric mean of the mean commonality for the outer model and the R -square mean for the inner model. The GoF is equal

Relationship	Coefficient	T-stats	p-value
<i>Direct effect</i>			
Cultural intelligence and student's innovative behavior	0.590	9.924	0.000
Cultural intelligence and interpersonal trust	0.476	9.742	0.000
Interpersonal trust and student's innovative behavior	0.216	3.491	0.001
<i>Indirect effect</i>			
Cultural intelligence and interpersonal trust and student's innovative behavior	0.103	3.110	0.002

Note(s): Level significance (5%): t -statistics ≥ 1.96 ; p -value ≤ 0.05

Table 2.
Hypothesis testing for
direct effect and
indirect effect

Variable	Communality	R-square
Cultural intelligence	0.502	-
Interpersonal trust	0.523	0.227
Student's innovative behavior	0.536	0.516
Amount	1.561	0.743
Average	0.520	0.372
Index (GoF)	0.439	

Note(s): The value of communality is taken from the AVE value

Table 3.
Index goodness-of-
fit (GoF)

to the square root of the average communality times the square root of the average R -square. The GoF value has an interval between zero to one. A good GoF value is close to 1, and at least 0.33 indicates a reasonable path model estimate. The GoF index for this research model is 0.44. Thus, Table 3 shows the validity of the measurement model, structural model and the overall model that explains the relationship between the three variables in this study's good predictive power (fit).

Discussion

In student exchanges or studying abroad, the challenges that are often faced are differences in the language and culture of certain ethnic groups. This often results in the phenomenon of using the language of their respective tribes in every daily activity; of course, this will impact the effectiveness of communication patterns between parties.

Based on this research, a good understanding of CQ is needed from each individual. This study found that for students who have or are carrying out student exchange or studying abroad, CQ positively influences finding new approaches (trust) to execute tasks and generate and implement solutions for a problems in the sense of innovative behavior. According to Maddux and Galinsky (2009), experience living abroad stimulates individuals to find creative solutions. The current study confirms that CQ plays an essential role in enhancing students' innovative behavior. This is in line with what has been stated by Ang *et al.* (2007), CQ makes individuals conscious of other cultures' knowledge and cultural differences, which provides them with new approaches to new ideas, opinions, concepts and scripts, to expand creative potential in order to innovate.

The analysis also showed that the strongest CQ variable indicator as a measure of CQ is motivational CQ. While on the variable of innovative behavior, the strongest indicator as a measure is idea implementation. Motivational CQ refers to an individual's interest in learning about new situations and cultures and enjoyment in interacting with diverse people (Afsar *et al.*, 2020). Innovation process as being composed of two main phases: initiation and implementation. The first stage ends with an idea's production, while the second stage ends as soon as the idea is implemented (Zaltman *et al.*, 1973; Axtell *et al.*, 2000; King and Anderson, 2002).

Besides, this study also confirms that when an individual has good CQ, it is proven to have a positive effect on interpersonal trust. Trusting each other is crucial for useful exchanges, and without the constant and chronic jeopardy in individual and team outcomes is evident. Because of cultural awareness, individuals with great CQ do not make inaccurate and superficial judgments during intercultural interactions and respect salient ethnic differences (Ang *et al.*, 2007). They adjust their mental models and adapt to cross-cultural situations effectively, thus gaining a more in-depth and better understanding of partners from diverse cultural backgrounds (Afsar *et al.*, 2015). This mental compatibility and adjustment would counter the adverse effects of social categorization, thereby increasing interpersonal trust.

In addition to the motivational CQ indicator, metacognitive CQ is also one of the most robust measures in the variable CQ. Individuals with high metacognitive CQ are aware of their cross-cultural knowledge, they continuously control the accuracy of their cultural knowledge and can adjust their knowledge bases in response to new information or changes in the environment, makes individuals better understand how others think and behave, and which is essential in building harmonious interpersonal relationships (Triandis, 2006; Gregory *et al.*, 2009).

The study results confirm that when an individual student has good interpersonal trust, it will positively affect his innovative behavior. Trust can enhance feelings of efficacy and capability at work (Rockstuhl and Ng, 2015), thus allowing individuals (and groups) to engage in more proactive and risk-taking behaviors (Mayer *et al.*, 1995), which can facilitate

learning at and through work (Bunderson and Sutcliffe, 2003), and enhance their innovative behaviors.

On the variable of interpersonal trust, the strongest indicator of interpersonal trust is the affective-based trust indicator. Affective trust is the confidence one places in an individual or team member based on one's feelings of caring and concern illustrated by that coworker (McAllister, 1995). High interpersonal trust creates an environment of confidence, freedom and belonging; it is suspected to be highly conducive to enhance the innovativeness of an individual; the high level of trust among individual will create a collaborative climate to strengthen the exploitation of knowledge and experimentation, which are the core values and real conditions for innovation (Afsar *et al.*, 2020; Alsharo *et al.*, 2017; Donate and Guadamillas, 2015).

The innovative attitude of the students is not only driven by their understanding toward the culture of the other country, but rather on the urge to survive "how to survive", and adaptability to text-books, learning styles, learning standards, atmosphere and the environment. This is what is considered to have an impact on the innovative attitude of the individual students. One proof of the desire to survive and adapt is through the implementation of "interpersonal trust", students who have an adequate level of CQ have been empirically proven to influence mutual trust, especially for students of different nationalities.

The study confirmed that interpersonal trust mediated the relationship between CQ and student's innovative behavior. It indicated that trustworthiness was more likely to help others by engaging in innovative behaviors. Because of the complex nature of innovative behaviors, the relationship between cultural intelligence and individual students' innovative behavior is further explained by trust in other parties.

As innovation is risky and uncertain, and it needs social support and approval, trustworthiness is essential mediating mechanism through which CQ can enhance innovative behavior (Afsar *et al.*, 2020). The study results support Rockstuhl and Ng (2015) proposition, in which they suggested that individual's cultural adaptation, was positively related to communication quality and trust. Individuals with high CQ are more conscious of cultural differences and they possess good mastery of other cultures' knowledge, which provides them with new approaches to new ideas, solutions, concepts and scripts (Fischer, 2011). Additionally, it is easy for an individual with high CQ to convince others about implementing the idea due to a better understanding of their concerns, doubts and uncertainties through effective interpersonal relationships that they develop with others (Malek and Budhwar, 2013).

Theoretical and practical implications

Although considerable attention has been paid to investigating the influence of culture intelligence on the education sector (e.g. Aldhaheri, 2017) and the influence of innovative behavior on the education sector (e.g. Da'as *et al.*, 2020), research about the influence of culture intelligence on innovative behavior with mediating of interpersonal trust on students who have or are carrying out student exchange or studying abroad never discussed in previous academic research. Therefore, this study advances the educational and management literature by studying CQ's influence on individual students' innovative behavior through interpersonal trust in students who have participated or still participated in student exchanges or study abroad.

There are some of theoretical and practice contributions of this study. First, this paper provides a novel perspective on CQ's influence on individual students' innovative behavior through interpersonal trust in the higher education sector. As a result, this paper contributes to extending the theoretical paradigm in the management and higher education sector by indicating that student innovative behavior can be improved in the cultural intelligent

context (i.e. metacognitive, cognitive, motivational and behavioral) through an interpersonal trust (i.e. affective-based trust and cognition-based trust). Besides, based on the results of this study, it can be used as a reference for one higher education institution (particularly in Indonesia) in considering providing cultural insights provision in the destination country of student exchange. Thus, it enables students to communicate and adapt to their new environment.

Multicultural education constitutes a process or education strategy in cultural diversity, including nation plurality, language, ethnic and social group. This multicultural education was directed at realizing knowledge, awareness and cultural attitude, which considers cultural diversity and differences (Saha, 1997). Three major factors influenced the need for multicultural education: (1) ethnic pluralism constitutes recently developing social reality, and it influenced community life; (2) each needs knowledge and belief about ethnic and ethnic groups and (3) the belief and knowledge about ethnic and cultural group limits many people perspective and it makes something different (Banks, 1991). There are five multicultural education dimensions as the essential references in developing multicultural-based learning. They are content integration, knowledge construction process, prejudice reduction, equitable pedagogy, and empowering school or university culture and social structure (Banks, 2002).

Adopting from Saddhono (2015), the following is the integration of a CQ process that can support the innovative behavior of individual students such as identifying the cultural themes of the country in terms of job types, social issues, health and other cultural values within the country which is learned in various pictures, bulletin board display, slide, film, video, audio and written texts. Furthermore, the CQ level also could gathered from having an in-depth dialog related to the themes and cultural phenomena of the country, and the focuses are as follows: (1) phenomenon description which was presented, (2) theme features analysis and (3) determining reaction based on culture perspective.

Meanwhile, language learning transition focuses on teaching students about the language aspects, such as language function, notion, structure, register and vocabulary. Language learning should accommodate several aspects and components adapted to the linguistic theory, which is implemented in student's practical communication. Evaluating and examining various sources using language competencies that already mastered building and modifying the beginning perception about the target culture can verify target culture perception. Finally, maintaining an excellent interpersonal relationship of trust is also expected to be socialized by universities to students. The trust that a person gives to other individuals is based on feelings of care and concern, and trust is based on one's willingness to rely on other individuals' expertise and reliability. Hence, the students' innovation behavior can have a good impact on increasing their achievement and career success in the future.

13 Citations and future directions

Although the topics discussed in this study is rare or have not been studied before, this study has some limitations. First, the limited scope of the study – solely on the Asia and Australia region – raises concerns about how representative the population is. This study can be considered a pilot study, and so any conclusions drawn must be used with caution.

It is recommended that future studies research will be more interesting if it uses a sample not only of the Indonesian student but also those from various countries. Therefore, it endeavors to expand the scope of study beyond the Asian and Australian regions to increase overall understanding. As discussed in previous research findings, innovative behavior has been shown to act as antecedents to increase employee performance and organizational performance (e.g. Rahman *et al.*, 2020; Shanker *et al.*, 2017). In this study, we have not discussed the impact of student's innovative behavior on their academic performance. Hence, we invite scholars to fill this gap by future directions research to test the impact of students'

innovative behavior who have implemented student exchanges or studies abroad on their academic performance or career success.

Conclusion

Innovative behaviors are critical for individual and organizational success. An individual's competence to understand others' cultural preferences, values, norms, beliefs, languages and differences is important in culturally diverse places today. This study examined CQ's role in students' individual innovative behavior that student exchange programs or studying abroad in the Asia and Australia context. The results show that high CQ students would engage and apply more frequently in innovative behaviors. Moreover, interpersonal trust levels would mediate the effect of CQ on student's innovative behavior.

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