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Evaluating an Intensive Program to Increase Cultural Intelligence: A Quasi-Experimental Design

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Abstract

This study used a quasi-experimental design to compare the effects of an intercultural development program on students' Cultural Intelligence (CQ) compared with students in a summer research program who did not receive the intervention. Social Learning Theory guided a 9-week student-centered cultural learning course focused on attention, retention, and reproduction of each CQ domain. After the course, students had opportunities to practice their CQ abilities while studying abroad. Pre-assessment CQ determined an individualized learning plan. Reflective journaling and cultural mentoring were used to maximize student CQ growth. Using multi-level modeling, we observed a statistically significant increase in three CQ domains compared to the comparison control group: cognitive ($p<.01$), metacognitive ($p<.01$), and behavioral CQ ($p<.01$). Motivation CQ scores did not significantly improve ($p=0.08$). Our results suggest that a university intercultural development program that intentionally combines a cultural learning course with a study abroad experience may improve students' CQ.

Keywords:

Cultural Intelligence, Intercultural effectiveness, CQ development, Study abroad, Cultural metacognition, Bridging cultural differences

Introduction

Cultural Intelligence (CQ) is a set of capabilities that indicate an individuals' overall ability to interact in culturally appropriate ways (Ang & Van Dyne, 2008). CQ is situated within the theoretical framework of multiple intelligences, including cognitive, emotional, and social intelligence (Sternberg & Detterman, 1986). Research demonstrates that

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individuals with high CQs can recognize and adapt to intercultural situations (Presbitero, 2017; Shu et al., 2017) and rise to leadership faster and are more effective leaders (Lisak & Erez, 2015; Solomon & Steyn, 2017). Although CQ is a malleable skill set, people do not improve their CQ through intercultural experience alone (Varela & Gatlin-Watts, 2014).

One promising solution to improve students' CQ is found in the university setting, where some students are trained to become more culturally competent (Baker & Delpechitre, 2016; Bücker & Korzilius, 2015; Eisenberg et al., 2013; Hodges et al., 2011; MacNab et al., 2012; Rosenblatt et al., 2013; Shokef & Erez, 2008). Most student CQ training occurs through focused coursework or a study abroad experience (Buchtel, 2014; Bücker & Korzilius, 2015; Eisenberg et al., 2013; Fischer, 2011; Rosenblatt et al., 2013). A handful of research studies have examined the effect of cultural learning courses on students' overall CQ as well as all four CQ capabilities. These courses have been taught as traditional lectures (Buchtel, 2014; Eisenberg et al., 2013; Ramsey & Lorenz, 2016) and/or experiential learning projects (Alexandra, 2018; Erez et al., 2013; Ko et al., 2013; MacNab et al., 2012; Rosenblatt et al., 2013; Taras et al., 2013), or a combination of these formats (Bücker & Korzilius, 2015; Fischer, 2011). Fewer studies have examined the effects of study abroad programs on CQ capabilities (Chao et al., 2017; McRae et al., 2016; Varela & Gatlin-Watts, 2014; Wood & St. Peters, 2013). To our knowledge, only one study has examined the effects of a study abroad program after completing a brief cultural learning course (Engle & Crowne, 2013).

Literature Review and Development of Research Questions

Cultural Intelligence (CQ)

CQ refers to a person's ability to interact effectively in culturally diverse encounters (Early & Ang, 2003). CQ consists of four related yet distinct domains: motivational, cognitive, metacognitive, and behavioral CQ. Motivational CQ is a person's interest, tenacity, and confidence in interacting with people from other cultures (Earley & Ang, 2003). Cognitive CQ refers to a person's knowledge and understanding of intercultural similarities and differences, including cultural-specific and general rules, rituals, and norms (Earley & Ang, 2003). Metacognitive CQ is a person's ability to plan for intercultural interactions, reflect on these interactions and adapt their behavior when interacting in multicultural environments (Earley & Ang, 2003). Behavioral CQ is a person's awareness of multicultural interactions and how to adjust their behavior to meet the needs of these interactions (Earley & Ang, 2003). Behavioral CQ is important because it refers to a person's ability to interact successfully in an intercultural environment. Whereas the other three domains are more focused on a person's mental capacity to interact, behavioral CQ refers to how they act. A person could have the self-efficacy (motivational CQ), intercultural knowledge (cognitive CQ), and strategies (metacognitive CQ) necessary to succeed. Still, if they cannot translate those capabilities into appropriate behavior (behavioral CQ) then intercultural interactions may suffer. Overall, individuals with higher CQ can enter unfamiliar environments, interpret that culture's cues, and adapt their behavior to work effectively (Shu et al., 2017). Furthermore, individuals with higher CQ understand that cultural misunderstandings will occur, and consequently, they delay judgment until they can comprehend the situation more fully (Brislin et al., 2006).

Social Learning Theory and Assessment

Bandura's Social Learning Theory integrates behavioral and cognitive theories of learning into a comprehensive theory that explains how individuals learn new social behaviors by observing and imitating others (Bandura, 1977). This process involves observing a behavior, extracting information from the observation, and evaluating its consequences (Bandura, 1977). Social learning has cognitive and behavioral processes that can be accomplished by observing real-world actions and/or demonstrating these behaviors through verbal and non-verbal instruction. How much a learner absorbs is dependent on three central elements: attention, retention, and reproduction.

During the attention phase, a person must notice new behaviors and pay attention to what is being portrayed (Bandura, 1977). People tend to be more attentive to behaviors that are important to them or provide some intrinsic reward. People may pay attention in a new cultural environment to learn how people in that culture behave in everyday situations. Learning is facilitated in the retention phase through memorization and rehearsal of newly acquired behaviors, which can be called up and reproduced during future cultural interactions (Bandura, 1977). Typically, this involves mental and behavioral rehearsals of newly learned behaviors to retain information. The more a person rehearses these behaviors, the more the learning is enhanced. Reproduction is the most effective phase for learning (Bandura, 1977) and involves enacting the rehearsed behavior and performing any necessary self-corrective adjustments (Black & Mendenhall, 1990). Reproduction can occur in controlled environments or real-world situations, as long as the person can accurately refer back to the retention phase and take corrective action.

Social Learning Theory has been applied to explain learning in various environments, such as healthcare and education. Healthcare researchers have applied Social Learning Theory to health behavior interventions to get pre-diabetic patients to improve self-care (Chen et al., 2015), to promote healthy behaviors (Bravender et al., 2013; Rosenstock et al., 1988), and to help patients with cancer reduce anxiety and depression (Hauffman et al., 2017; Koropchak et al., 2006). In education, the theory has been applied to help coaches better train their athletes (Connolly, 2017) and help educators adapt their teaching to virtual environments (Smith & Berge, 2009). Likewise, Social Learning Theory holds promise for helping individuals improve their CQ because the learning structure it proposes aligns closely with both the CQ format and the objectives of cultural training courses and study abroad experiences. The attention and retention phases of Social Learning Theory match closely with three of the CQ domains (motivation, cognitive, and metacognitive CQ), whereas the reproduction phase aligns with the metacognitive and behavior CQ domains. Additionally, Social Learning Theory helps explain the effects of cultural training courses and study abroad experiences on CQ through observations of whom/what students pay attention to, how they retain/rehearse information, and how they reproduce behavior while interacting with the new environment.

Cultural learning courses allow students to engage in the attention and retention phases of Social Learning Theory while in a controlled university environment. This format enables instructors to plan curriculum around each of these phases. For example, during the attention phase, an instructor may teach an interactive lecture on general cultural differences in non-verbal communication (cognitive CQ). Then, during the retention phase, the instructor has students pair up and practice different forms of non-verbal communication and discuss each form's appropriateness in diverse social encounters

(cognitive and metacognitive CQ). In turn, by equipping students with these CQ tools, self-efficacy (motivational CQ) may also increase as students become more comfortable and competent with intercultural interactions. Social Learning Theory explains CQ development in cultural training courses as a social learning process that involves attention to informational and experiential intercultural content and retention of the knowledge gained from this information and activities. Furthermore, university courses allow instructors to provide feedback and guidance throughout the course to help students apply newly acquired knowledge and skills using effective strategies.

Studying abroad allows students to further engage in the reproduction phase of Social Learning Theory by enacting behavior in a cultural setting where that action is required. After these real-world encounters, students can reflect on their interactions through journaling and one-on-one meetings with their instructor, make any necessary corrective actions, and repeat the process. Thus, Social Learning Theory provides a framework to explain how an intercultural development program comprised of both a cultural learning course and a study abroad experience can help students increase their CQ through attention, retention, and reproduction of knowledge, skills, and metacognitive strategies.

Current Study

Our study aims to answer two research questions:

> RQ 1: Do students participating in a program consisting of a cultural learning course with a study abroad experience improve their overall CQ compared to students participating in an on-campus, non-cultural development focused program?
>
> RQ 2: Do students participating in a program consisting of a cultural learning course with a study abroad experience significantly improve in each CQ domain (motivational, cognitive, metacognitive, and behavioral CQ) compared to students participating in an on-campus, non-cultural training summer program?

Methods

Study Design

This is a quasi-experimental study comparing an intercultural development program (9-week cultural learning course followed by a 3-week study abroad experience) to a comparison group participating in an on-campus summer program. The primary outcome of the study was students' CQ development over time. CQ was measured twice: before and after participating in either program. Data for the cultural learning program came from 3 faculty-led study abroad programs (New Zealand, Australia, and Japan) that combined a didactic cultural learning course in the spring semester along with a 3-week summer study abroad experience. Our comparison group consisted of students participating in a faculty-led scholars program.

Participants

This study consisted of students participating in the intercultural development program (experimental group) and a comparison group of students working in a faculty-

led summer scholars program. Students in both groups were approached to participate in the study, consented, and assured that their data was not available to the program instructors until after final grades were submitted to the university. All participants were assigned a study ID number, and once the study data were collected, they were de-identified. All students provided written informed consent. Electing to not participate in the study did not affect a student's ability to enroll in either the intercultural development program or the on-campus summer scholars program. The institutional review board at Purdue University approved this study.

Measure

Students' CQ data were collected through the Cultural Intelligence Center, which provides CQ assessments to groups and individuals. The Cultural Intelligence Center administered the Cultural Intelligence Scale (CQS) (Ang et al., 2007), a 20-item questionnaire that uses a 7-point Likert system to gather responses from strongly disagree to strongly agree with questions that assess the four capabilities of CQ. For example, 'I am confident that I can socialize with locals in a culture that is unfamiliar to me.' (motivational CQ); 'I know the cultural values and religious beliefs of other cultures.' (cognitive CQ); 'I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.' (metacognitive CQ); and 'I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it.' (behavioral CQ). After the students completed the Time 1 assessment, they received a CQ report from the Cultural Intelligence Center. An example of the report can be found on their website (Center). Research using this construct demonstrates that it is generalizable across samples (Van Dyne et al., 2008). It has shown adequate internal consistency and test-retest reliability with an alpha coefficient of 0.72 (AL-Dossary, 2016), which is above the minimum threshold (Nunnally & Bernstein, 1994). Furthermore, the CQS has strong construct validity (Matsumoto & Hwang, 2013). Convergent and discriminative validity for the CQS was assessed using average variance extraction (AL-Dossary, 2016; Moyano et al., 2015). The results observed that motivational CQ (mean = 0.51) and metacognition CQ (mean = 0.51) demonstrated adequate convergent validity, while cognitive and behavioral CQ were slightly lower. Discriminate validity was assessed with the squared correlation between the four CQ domains, which indicated that the average of any two constructs was greater than the squared correlation between them. Thus, discriminate validity is supported.

Data were also collected on students' age, ethnicity, gender identity, year in school, previous overseas experience, and grade point average.

Design of the Intercultural Development Program - Cultural Learning Course and Study Abroad Experience

We collected data from three intercultural development programs (experimental group) designed to develop students' intercultural understanding to increase their CQ. The course and study abroad programs were led by the same three instructors who are experienced in intercultural development training. All three programs followed the same protocol consisting of a 9-week cultural development course followed by a 3-week study abroad experience (New Zealand, Australia, or Japan).

Intervention Protocol

Cultural Learning Course

The 9-week cultural learning course was held on-campus during the spring semester. Students completed a CQ pre-assessment before the cultural learning course. Based on students' CQ Time 1 assessment, the Cultural Intelligence Center provided personalized feedback reports highlighting their CQ strengths and areas for development. Then, students received individualized guidance from the instructors on using the report to prepare a personal development plan to improve CQ.

We used Social Constructivist pedagogy (Adams, 2006) to create a student-centered experience that fostered attention, retention, and reproduction of behaviors and skills (Bandura, 1977). Social Constructivist Learning has seven guiding principles: 1) students determine how they will learn, 2) experience in and appreciation for multiple perspectives, 3) learning is rooted into a realistic context, 4) learning is student-centered, 5) embedded learning through collaboration amongst students, 6) multiple modes of teaching, and 7) reflecting and metacognition (Honebein, 1996).

We recognized the need for our students to reproduce culturally appropriate behaviors during a three-week study abroad experience, which occurred after the cultural learning course. Our cultural learning course helped students attend to the cultural information we provided in our 9-week in-person didactic program. The course provided content and exposure to cultural skills through direct observation of class members and professors role-playing cultural interactions. In Social Learning Theory, the attention phase requires participants to engage in the classroom, notice new behaviors, and pay attention to the behaviors displayed (Bandura, 1977). We have augmented this observation by coupling our in-class activities with guided reflections both inside and outside the classroom through journaling. To further ensure retention of this information, we had our students perform guided reflections and participate in ongoing informal and formal assessments. The course design aims to appropriately reproduce these skills and behaviors (Bandura, 1977) in a real-world environment. By providing numerous opportunities for rehearsing culturally appropriate behaviors coupled with our reflection activities and assessment, the more the learning is retained (Bandura 1977).

The course focused on four cultural development domains: cultural self-awareness, cultural other awareness, managing emotions, and bridging cultural differences (Vande Berg, 2016). Cultural self-awareness is the recognition and awareness of how culture shapes one's worldview, including personal values, beliefs, perceptions, and behaviors. Similarly, cultural other-awareness is the recognition and awareness of how culture impacts other people's worldview and behavior. Managing emotions is a skill that relates to an individual's ability to recognize, accept, and express their own emotions without becoming overwhelmed. Finally, bridging cultural divides is the application of cultural self- and other-awareness as well as managing emotions into a strategy to prevent or overcome potentially impeding cultural interactions. These cultural development domains were chosen for their fit with the CQ construct and Social Learning Theory. Cultural self- and other-awareness align with motivational and cognitive CQ and are facilitated by the attention phase while managing emotions aligns with metacognitive CQ and is facilitated by the retention phase, and bridging cultural divides aligns with behavioral CQ and is strengthened through the reproduction phase.

Course topics included: cultural value dimensions; differences in nonverbal communication, communication styles, learning styles, conflict styles; mindfulness, emotional regulation, and connecting empathically; describing, interpreting, and evaluating (D.I.E.); comfort, learning, and panic zones; and reflecting on cultural interactions. Each class consisted of lectures, role-playing, and simulation exercises and were debriefed using Thiagi's Six-Step Debriefing Process (Thigarajan, 2004). The debrief focuses on: How did you feel? What happened in the activity? What did you learn? How does this relate to the real world? How would you use this overseas? A growing body of research on college students demonstrates the positive effects of debriefing on meaningful learning and retention (Fanning & Gaba, 2007; Levett-Jones & Lapkin, 2014; Ryoo & Ha, 2015; Shinnick et al., 2011). The use of debriefing provided students in the intercultural development program with an opportunity to question their cultural assumptions, reflect on their learning and adjust their cultural knowledge and strategies (Thomas, 2006) before going abroad.

Focusing on these debrief questions served several purposes. First, by reflecting on these questions, students can consciously reflect on the steps of Social Learning Theory. For example, the first two debrief questions help the students reflect on the attention phase by asking them to focus on the newly learned knowledge or strategies, while the third through sixth questions aid in the retention phase. Second, these debrief sessions serve as a training tool for reflective journal assignments that students complete overseas. By conducting Thiagi debrief sessions while still on campus, we provided students with a framework for written reflection assignments. Then, when students needed to reflect abroad, they could always rely on these questions as a basis for reflecting on their experiences and development. Students were taught how to write reflective journals during the cultural learning course to ensure they could dedicate their attention and energy to the mental processes engaged in reflection and not on learning the structure and mechanical process of journal writing. Throughout the course, students received feedback on how they could improve their reflective journals. Later, during the study abroad experience, students were required to write reflective journals based on their cultural interactions and experiences in the host country.

Cultural Mentors

After completing the didactic course, our students participated in a 3-week study abroad experience that provided opportunities to practice and consolidate their cultural abilities. Students worked on goals based on their individualized overseas learning plan set by themselves with consultation from their mentor during the study abroad experience. The mentors focused on the four interconnecting cultural mentoring behaviors: setting the student's expectations for the study abroad experience, teaching the students cultural knowledge of the host country's culture, helping students explore and understand their own culture and how it compares and contrasts to the host country's culture, and helping students to make connections between cultural experiences they had before and during their study abroad experience (Niehaus et al., 2018). Students were provided with prompts for journaling as well as individual cultural mentoring to provide maximal learning. During their time in the host country, they were called upon to reproduce the cultural skills they practiced in the classroom with people of other cultures.

Study Abroad

The 3-week study abroad experiences provided opportunities to engage with local people and to explore the culture allowing for the reproduction of skills taught in the didactic course. Coupled with guided reflection, students enhanced their retention and reproduction in ongoing interactions. Overseas outings included visits to historical sites, non-profit organizations, university campuses, and local community events. In addition to structured activities, instructors assigned "drop off" assignments (Maloney & Asbury, 2018), where they met local people and reproduced their CQ skills. Each student had different assignments depending on their individual intercultural and personal goals they developed. Several times a week, students were required to reflect on the intercultural interaction assignments in a journal that focused on breadth, depth, clarity, accuracy, and fairness (Ash & Clayton, 2009). The cultural mentors met weekly with individual students to discuss their reflections and cultural experiences. After the students returned to the United States, they submitted a final reflection paper and completed a CQ post-assessment.

Comparison Group (Summer Scholars Program)

We approached a summer scholars program at Purdue University to serve as the comparison group for this study. This program was recruited to test the effects of the intercultural development program against a group of students who received an alternative summer experience. The students in the summer scholars program serve as a source of counterfactual information to determine the difference between the outcome of students in the intercultural development program to those who participate in a more traditional summer, on-campus experience. Each student received a $2,500 scholarship for summer classes and was required to complete nine credit hours of coursework. These students were also required to work in a faculty mentor's laboratory for a total of 140 hours throughout the 12-week summer session. No formal cultural education was provided; however, some students may have participated in intercultural interactions with fellow students, graduate students, and professors as they would naturally occur in a university campus environment.

Statistical Analysis

To examine change over time in both the intercultural development program and comparison group, we estimated a multi-level model of change using STATA version 15.1. We used multi-level modeling because it is a robust technique to analyze data on individual change (Raudenbush & Bryk, 2002). For this study, the power of multi-level modeling provides three direct benefits over other forms of analysis. First, this study collected data at two points of time – often two points of time are inadequate for studying individual growth over time; however, multi-level modeling corrects for few time points (Raudenbush & Bryk, 2002). Second, scaling instruments to have constant variance over time can cause difficulties when measuring change over time and the determinants of change – multi-level modeling accounts for this variance (McCoach, 2008). Third, the T1 and T2 data for both study groups were not collected at the same points in time. The intercultural development program experienced a more prolonged period between pre-post data collection than in the comparison group – multi-level modeling does not require the same measurement schedule for all groups in the analysis (McCoach, 2008)

This dataset has a two-level hierarchical linear structure comprised of student questionnaire responses from two points of time at level 1 (TIME) and the participant's study arm at level 2 (GROUP). The models are multi-level and multivariate in that they contain repeated measures that are nested within individual participants across the study.

The combined effects of the repeated measures (TIME) and the study arm (GROUP) of the participants on CQ were estimated using four multi-level models. We built our final model in a series of steps that began with building an unconditional means model, which only included the intercept and contained no predictors. This unconditional means model served as a baseline comparison for subsequent models. Next, we fit a multi-level model of change with a linear slope parameter of time. TIME, our level 1 predictor, was defined as 0 for the pre-program assessment and 1 for the post-program assessment. Then, we fit a model of change with the level 2 variable, GROUP, which was defined as 0 for study abroad program participants and 1 for on-campus program participants. Finally, we fit our ultimate model by integrating the interaction effect between TIME and GROUP to determine if students participating in the intercultural development program experienced a statistically significant CQ improvement compared to students in the comparison group.

Our final model is:

Level 1:

$$CQti = \pi 0i + \pi 1i(TIME - TIME1)ti + eti$$

Level 2:

$$\pi 0i = \beta 00 + \beta 01\ (GROUPi) + r0i$$

$$\pi 1i = \beta 10 + \beta 11\ (GROUPi) + r1i$$

Results

Of the 115 students who participated in the study, 53 (46.17%) were in the intercultural development group, and 62 (53.83%) were in the comparison group. Participants in the intercultural development program were 64.15% female; 67.92% White, 20.75% Asian, 20.75% Black, 1.89% LatinX , 3.77% more than one race, and 1.89% other. Students were 67.9% from the College of Health and Human Sciences, 11.3% from Science/Polytech, 9.4% from Liberal Arts, 7.5% from Engineering, and nearly 2% from Management. See Table 1 for full demographic information.

Table 1. Student Demographics

	Study Abroad (n=53)	Comparison (n=62)
Gender		
Female	34 (64.15%)	36 (58.06%)
Male	19 (35.85%)	26 (41.94%)
Ethnicity		
Asian	11 (20.75%)	9 (14.52%)
Black	2 (3.77%)	3 (4.84%)
LatinX	1 (1.89%)	4 (6.45%)
More than 1 Race Reported	2 (3.77%)	5 (8.06%)
Other	1 (1.89%)	3 (4.84%)
White	36 (67.92%)	38 (61.29%)
College		
Engineering	4 (7.55%)	21 (33.87%)
Health and Human Sciences	36 (67.92%)	9 (14.52%)
Liberal Arts	5 (9.43%)	3 (4.84%)
Management	1 (1.89%)	2 (3.23%)
Other	7 (13.2%)	27 (43.54%)

Table 2 shows the mean changes in CQ from Time 1 to Time 2 for both the *intercultural development and comparison groups*. Students in the *intercultural development program* improved their CQ across all four domains. The effect sizes for their CQ development were small for motivational CQ, medium for cognitive CQ, and large for metacognitive and behavioral CQ. Students in the *comparison group* decreased in motivation CQ and slightly increased in cognitive, metacognitive, and behavioral CQ. The effect sizes for their CQ development were very small for cognitive and behavioral CQ and medium for metacognitive CQ. See Table 3.

Table 2. Mean and SD for Cultural Intelligence Over Time

	Intercultural Development M (SD)		Comparison M (SD)	
	T1	T2	T1	T2
Motivational	5.86 (0.66)	5.98 (0.56)	5.64 (0.78)	5.56 (0.90)
Cognitive	3.90 (1.23)	4.80 (0.85)	4.40 (1.09)	4.53 (1.19)
Metacognitive	5.36 (0.77)	6.16 (0.58)	5.09 (0.83)	5.39 (0.88)
Behavioral	4.77 (1.03)	5.75 (0.76)	4.45 (1.05)	4.57 (1.17)

Table 3. Effect Sizes

	Effect Size (Cohen's d)	
	Intercultural Development	Comparison
Motivational	0.200	0.095
Cognitive	0.851	0.114
Metacognitive	1.174	0.351
Behavioral	1.084	0.108

Note: very small=0.1, small=0.2, medium=0.5, large=0.9, very large=1.2

To compare the CQ development between students in the *intercultural development program* and the *comparison group*, we estimated a multivariate multi-level model of change. Table 3 shows the unconditional means model results, revealing that 56.0% of the variance in CQ was attributable to between-group differences, and 44.0% of the variance was attributable to within-group differences. We tested Time as both a fixed ($p<.01$) and random effects (N.S.). Time was significant as a fixed effect but not as a random effect, so the final model only included Time as a fixed effect. The multi-level model of change, including a linear effect of Time on Group, accounted for 41.0% of the between-group variance of CQ growth from Time 1 to Time 2.

Confirming our hypothesis, results from the multi-level model of change indicate that students participating in the *intercultural development program* experienced a statistically significant increase in their CQ compared to students in the *comparison group* ($p<.01$). See Table 4 for the step-by-step linear growth model building procedure for CQ over time.

Table 4. Linear Growth Model for Overall Cultural Intelligence Over Time

	Unconditional (SE)	Level 1 (SE)	Level 2 (SE)	Interaction (SE)
Fixed Effects				
Time		.039*	0.39*	0.12
Group			0.37*	0.08
Time*Group				0.58*
Intercept	5.12*	4.93*	4.76*	4.89*
Random Effects				
Intercept Variance	0.34*	0.38*	0.35*	0.37*
Time		0.08		
Residual Variance	0.27*	0.20*	0.20*	0.16*
ICC	0.56			
AIC	504.7	471.6	465.6	441.4
BIC	513.40	491.71	478.81	457.25

Note: *p<.01

Additionally, we estimated an interaction model for each of the four CQ capabilities. These multi-level models of change indicate that in relation to the *comparison group*, students participating in the *intercultural development group* experienced a statistically significant increase in cognitive (p<.01), metacognitive (p<.01), and behavioral CQ (p<.01) domains, but did not experience a statistically significant increase in motivational CQ (p=0.08). See Table 5 for the full results of the interaction models for each CQ over time.

Table 5. Linear Growth Model for Cultural Intelligence Over Time by CQ Domain

	Motivation Interaction (SE)	Cognitive Interaction (SE)	Metacognitive Interaction (SE)	Behavior Interaction (SE)
Fixed Effects				
Time	-0.07 (0.74)	0.13 (0.12)	0.31 (0.09)*	0.12 (0.12)
Group	0.23 (0.14)	-0.50 (0.21)*	0.28 (0.15)	0.31 (0.19)
Group*Time	0.19 (0.11)	0.76 (0.20)*	0.49 (0.13)*	0.87 (0.18)*
Intercept	5.64 (0.09)*	4.40 (0.14)*	5.09 (0.10)*	4.45 (0.13)*
Random Effects				
Intercept Variance	0.39 (0.06)*	0.77 (0.14)*	0.37 (0.07)*	0.57 (0.11)*
Residual Variance	0.17 (0.02)*	0.45 (0.06)*	0.24 (0.03)*	0.47 (0.06)*

Note: *p<.01

Furthermore, we wanted to determine if there were any differences in CQ development among the students participating in the *intercultural development program* depending on the cultural mentor to whom they were assigned. To examine this association, we compared the students assigned to each cultural mentor against one another. We estimated an interaction model between the cultural mentor groupings and CQ over time. We observed no differences in CQ development for students across cultural mentor groups. While we did not measure the extent to which the cultural mentors provided the same level of guidance/feedback during the study abroad experience, this finding suggests that students in the intercultural development program increased their CQ across all four domains, regardless of the cultural mentor to whom they were assigned.

Table 6. Cultural Mentor Interaction by CQ Domain

	Motivation Interaction (SE)	Cognitive Interaction (SE)	Metacognitive Interaction (SE)	Behavior Interaction (SE)
Fixed Effects				
Time	.004 (0.12)	0.94 (0.24)*	0.70 (0.14)*	0.88 (0.19)*
Program Characteristics				
Cultural Mentor	-.001 (0.08)	0.29 (0.15)	.007 (0.09)	0.17 (0.13)
Cultural Mentor*Time	0.09 (0.08)	-0.04 (0.16)	0.08 (0.09)	0.09 (0.13)
Intercept	5.86 (0.13)*	3.56 (0.23)*	5.35 (0.14)*	4.56 (0.19)*
Random Effects				
Intercept Variance	0.21 (0.58)	0.44 (0.15)	0.26 (0.07)	0.39 (0.12)

Note: *p<.05

Discussion

This study compared the effects of a combined didactic cultural learning course with a short-term, faculty-led, individualized learning plan and a study abroad experience on undergraduate students' CQ. Our results suggest that our combined program is associated with increased students' overall CQ compared to students who stayed on campus during the summer session. Three of the four capabilities of CQ also increased: cognitive, metacognitive, and behavioral CQ; however, we found no difference in motivational CQ. Our motivational CQ results were consistent with previous work involving undergraduate students (Buchtel, 2014; Eisenberg et al., 2013; Fischer, 2011; McRae et al., 2016; Varela & Gatlin-Watts, 2014). This result is not surprising given that our students' pre-assessment motivational CQ was relatively high in both the *intercultural development program* and *comparison groups*. More research is needed to determine if undergraduate students, in general, tend to have high motivational CQ or if students who are predisposed to have a higher motivational CQ are more likely to study abroad.

We found statistically significant improvements in cognitive, metacognitive, and behavioral CQ with medium (cognitive CQ) to large (metacognitive CQ and behavioral CQ) effect sizes. To our knowledge, only one previous study also examined the effects of a pre-

departure cultural learning course followed by a study abroad in relation to a comparison group (Engle & Crowne, 2013). During their time abroad, students focused on providing service to local people based on their area of study. They increased in all four CQ domains compared to a comparison group that experienced no growth. However, their study did not report effect sizes for their findings, making a direct comparison to our results difficult. Future CQ research should include effect sizes to help facilitate comparisons across studies and allow future meta-analyses to be conducted.

Understanding the effect sizes of intercultural development programs are important because CQ has many direct benefits to school and workplace performance. Research shows that those with a higher CQ have lower levels of ethnocentrism (Young et al., 2017) and are better prepared to adjust their behavior in cross-cultural situations (Guðmundsdóttir, 2015; Presbitero & Toledano, 2017; Young et al., 2017) commonly found in the university and workplace settings. CQ has been linked to an increased task (Presbitero & Toledano, 2017) and work performance (Wang, 2016) as well as innovativeness (Lorenz et al., 2018). Additionally, those with higher CQ are more willing to share their knowledge (Collins et al., 2015) with colleagues and are more likely to emerge as group leaders (Lisak & Erez, 2015). Therefore, our program's success is promising for helping undergraduate students increase their CQ through intercultural development programs.

Authors' Contemplation on the Intercultural Development Program

Our program focused on teaching culture through a combined on-campus cultural learning course followed by a study abroad experience. It was grounded in *Social Learning Theory* (Bandura, 1977), which stipulates that in skills training and development (such as improving CQ), three central elements must be present: *attention, retention,* and *reproduction*. This pedagogical approach fits with all four CQ domains. To further impact the learning, we were also mindful of the Social Constructivist Learning Theory's seven guiding principles, including metacognition/reflection. Together, these elements form a comprehensive lens for examining cultural intelligence growth. Based on our experience, we discuss two main program components (reflective journaling and cultural mentors) that we considered essential to our student's CQ development, contemplate their limitations of these components, and provide suggestions for future implementations.

Reflective Journaling

Students were taught how to write reflective journals during the cultural learning course to ensure they could dedicate their attention and energy to the mental processes required for reflection and not on the learning structure and mechanical process of journal writing. Throughout the course, students received feedback on how they could improve their reflective journal writing. Later, during the study abroad experience, students were required to write reflective journals based on their cultural interactions and experiences in the host country.

During the study abroad, all students were instructed to reflect on their cultural experiences abroad; however, each student's journal entries were unique. Weekly, students met with their cultural mentor to review their journal and guide them through the study abroad. These meetings focused on discussing cultural interactions as well as non-culture-related personal development. Based on these interactions, students and cultural mentors worked together to create personalized journal assignments. Some of the

assignments focused on cultural interactions, while others did not. Accordingly, the content of each student's journal content varied widely. The combination of writing journal reflections and weekly meetings were designed to provide the mentors with a deep view into their students' learning process; however, personalizing the reflective journal to each student created two important limitations. First, personalizing each student's journal experience was time-consuming and placed a large burden on the instructors. This was problematic because these study abroad leaders were already stretched thin with other responsibilities, such as teaching course content, managing group dynamics, and program management/logistics (among many other duties). Second, by personalizing the journaling, the students did not have comparable journal writing prompts and experiences. Thus, while reflective journaling is considered an effective tool for learning, the analyses in this paper are unable to determine the true effects of journaling on students' CQ development.

To address both of these problems, programs should consider implementing a standardized journal plan that every student uses. A standardized set of journal instructions would provide a clearer indication of the effects of reflective journaling on CQ development in study abroad and can even allow for students to be randomized into separate journal plans to determine if different activities and reflections are associated with specific CQ domains. Several standardized journal plans exist to aid students' self-development (Sass, 2013a) as well as facilitate learning through reflection on service-learning study abroad programs (Sass, 2013b). However, these plans were not designed to increase CQ during the short-term, faculty-led study abroad program. Thus, they were not proper candidates for use in this study. Currently, we are unaware of any standardized journal plan designed specifically to impact CQ on short-term study abroad programs.

A standardized reflective journal plan should contain the following four components: 1) engage in first impressions (cognitive CQ; SLT *attention* phase), 2) interact with locals and strategize (metacognitive & behavioral CQ; SLT *retention* and *reproduction* phases), 3) compare and contrast what they have learned at the mid-point of the study abroad time (cognitive & metacognition CQ; SLT *attention* & *retention*), and 4) engage in self-reflection. At the beginning of the study abroad program, the journal entries should focus on documenting first impressions and students' anticipations for their experience. To gather first impressions, students can be guided to answer questions that allow them to recall the general and specific cultural information (SLT *retention*) they learned about during their classroom instruction (cognitive CQ) and compare it to some of their first impressions of the people they interact with upon arrival in the host country.

Second, throughout the study abroad experience, students should be encouraged to engage with local people to apply the CQ skills they learned during the course (metacognitive CQ; SLT *retention*) and try various approaches to interacting with locals (behavioral CQ; SLT *reproduction*). After students engage with locals, they should reflect on how they expected the interaction to go along with an assessment of how well the interaction went. It is vital for this step that students focus on both moments that went well and moments where the interaction could have improved. Focusing merely on successful moments doesn't allow for a student to examine other avenues or approaches to interacting; whereas, solely focusing on what went wrong in an interaction could negatively impact a student's motivational CQ. By focusing on both the positive and negative moments, students can strategize and create an action plan for future interactions. Some specific journal prompts could be, *What information can you use from your experience and journal reflection to be more successful in your next interaction? For the parts of your interaction that went*

well, how will you try to replicate these behaviors in your next exchange, and *What is a goal you can set for yourself to meet the next time you complete a cultural interaction?* Through focusing on these types of experiences and journal prompts, students will engage in the *retention and reproduction* phases of the Social Learning Theory while simultaneously focusing on all four CQ domains.

Third, after students have been in the country for a while and had the chance to engage in multiple intercultural interactions, it can be beneficial for them to focus on what they have learned up until that point (cognitive CQ; SLT *retention*). The midway point of a study abroad provides an excellent opportunity to review what students learned in class and through other sources, such as international newspapers or blogs, and examine how well the information they learned matches with what they experience overseas. Typically, it is at the midway point of the study abroad where students can further refine their knowledge of local behavior and review their progress on their intercultural goals.

Fourth, as a study abroad program comes to an end, students should be prompted to reflect on their study abroad journey and provide a self-evaluation of their experience. This is a good opportunity for students to revisit their journals from the first impressions prompts at the beginning of the program. Furthermore, students can be instructed to focus on the following types of questions: *What are the main takeaways that you learned in your time on this study abroad? Were your cultural interactions challenging enough to promote growth? Reflect on the ease or difficulty of your experiences.; Were you able to accomplish the goals that you set for yourself? Did you challenge yourself enough on this trip?* and *What things would you do differently if you were to make this trip again?* Finally, students should begin to apply their intercultural experiences from the study abroad to their life back home. For example, students could consider *what steps will you take to keep growing when you are no longer abroad? How will you adapt your strategy you used on your trip to fit in a different environment (home, school, work, etc.)?;* and *Previously, you wrote about what you would change if you were to make this trip again. What will you do to ensure that when you go back, those changes happen?*

Cultural Mentors

Each student was assigned a faculty member who served as a cultural mentor. Mentors were used as a part of this process because data highlights that students who meet with a cultural mentor "very often" or "often" show greater intercultural development than students who do not (Vande Berg, 2009). Additionally, there has been some data within the health science fields showcasing how role-modeling reinforces the Social Learning Theory phases for enhanced learning (Horsburgh & Ippolito, 2018). Cultural mentors served as bridge makers across cultural divides and differences (Blake-Beard, 2009). This active cultural mentoring from a trained cultural mentor is considered an essential element to ensure success in helping students develop interculturally during study abroad experiences (Paige & Vande Berg, 2012). The reflection was a carryover skill from the didactic course and when partnered with the experiential opportunities and individual coaching, we believe that this triad aided in the cultural development observed in our study. Yet, providing individual cultural mentorship may not be possible for every instructor or study abroad program.

Table 7. Twenty-one-day journal

	Pre-Departure (1/1) Write about the norms and cultural systems of the country you will visit based on what you have discovered in class as well as through other sources (i.e., international bloggers, foreign newspapers, people who have been to the country before, etc.). CQ: Knowledge SLT: Attention, Retention						
Day Prompt Topic Cultural Intelligence (CQ) Domain Social Learning Theory (SLT) Phase	**Day 1** (1/1) Write your first impressions of the country and the people you have met and observed. CQ: Cognitive, Metacognitive	**Day 2** (1/1) Discuss your goals for the program and the ways you plan to achieve these goals. What will you do and where will you go? CQ: Cognitive, Metacognitive, Behavior SLT: Attention, Retention	**Day 3** (1/4) Observe and interact with people within the culture to test assumptions. CQ: Behavior SLT: Attention, Retention	**Day 4** (2/4) Receive feedback and create an action plan for future interaction. CQ: Metacognitive SLT: Reproduction	**Day 5** (3/4) Observe and interact with people in the culture to test assumptions. CQ: Behavior SLT: Attention, Retention	**Day 6** (4/4) Receive feedback and create an action plan for a future interaction. CQ: Metacognitive SLT: Reproduction	**Day 7** (1/1) Compare and contrast your hometown to the town you are in right now? CQ: Cognitive SLT: Attention, Retention
Day Prompt Topic Cultural Intelligence (CQ) Domain Social Learning Theory (SLT) Phase	**Day 8** (1/1) Take some time today to observe some locals as they interact. CQ: Cognitive, Metacognitive SLT: Attention, Retention	**Day 9** (1/4) Observe and interact with people within the culture to you're your assumptions. CQ: Behavior SLT: Attention, Retention	**Day 10** (2/4) Receive feedback and create an action plan for a future interaction. CQ: Metacognitive SLT: Reproduction	**Day 11** (3/4) Observe and interact with people within the culture to you're your assumptions. CQ: Behavior SLT: Attention, Retention	**Day 12** (4/4) Receive feedback and create an action plan for a future interaction. CQ: Metacognitive SLT: Reproduction	**Day 13** (1/1) Mid-Self-evaluation CQ: Metacognitive SLT: Reproduction	**Day 14** (1/1) Now that you have been in the country for a few weeks, reflect on your initial reactions and expectations. How have these changed? CQ: Cognitive SLT: Reproduction
Day Prompt Topic Cultural Intelligence (CQ) Domain Social Learning Theory (SLT) Phase	**Day 15** (1/4) Observe and interact with the locals. CQ: Behavior SLT: Attention, Retention	**Day 16** (2/4) Receive feedback and create an action plan for a future interaction. CQ: Metacognitive SLT: Reproduction	**Day 17** (3/4) Observe and interact with people within the culture to you're your assumptions. CQ: Behavior SLT: Attention, Retention	**Day 18** (4/4) Receive feedback and create an action plan for a future interaction. CQ: Metacognitive SLT: Reproduction	**Day 19** (1/1) Imagining everyday life: How would your life be culturally different if you grew up here? CQ: Metacognitive , Action SLT: Reproduction	**Day 20** (1/2) Final Self-evaluation and advice for future students. CQ: Metacognitive SLT: Reproduction	**Day 21** (2/2) How will you use what you learned when you return to campus and/or working professionally? CQ: Cognitive , Metacognitive , Behavior SLT: Reproduction

One solution to this problem of trying to provide feedback is to use reciprocal peer learning. Reciprocal peer learning emphasizes students' simultaneously learning from and contributing to another students' learning. On a study abroad program, peer learning can be used to enhance student CQ development by allowing students to receive feedback from someone who was observing their interactions firsthand. While there is no previous

research on how reciprocal peer learning can help students develop CQ, there is research on how this technique has been used in other areas of skill development abroad. Sharing experiences with peers is an important strategy for students to increase their cultural perspective and boundaries, especially among less experienced students (McLeod et al., 2018). This study showed that reciprocal peer learning was found to help students realize that effective intercultural interactions require patience and the desire and ability to try to understand the other's background. Through peer learning abroad, students can co-construct intercultural learning opportunities that otherwise wouldn't exist if the student attempted to engage with locals on their own (Borghetti et al., 2015). These co-constructed experiences allow both parties to recognize features of the interaction that otherwise may not be noticed when interacting alone. Furthermore, reciprocal peer learning can reduce the feeling of being alone while abroad because students develop more self-awareness and share these experiences with their peers. Sharing this developing self-awareness may help students to recognize that other students feel and experience cultural interactions similarly.

Reciprocal peer learning could be integrated into the reflective journal (see Table 7 for an example of a potential 21-day plan using peer learning). During the interaction with locals and by strategizing components previously discussed as parts of a potential standardized journal plan, students can observe and provide feedback to one another. Thus, while one student is engaging in an intercultural experience with a local, the other student could observe and record the interaction. Afterward, the students can share their observations, provide feedback on improvement, and work together to create a strategy for future interactions. This system would provide students with an opportunity to both receive and provide peer cultural mentoring.

Limitations, Strengths and Future Research

This study has important limitations that may guide future research. First, this incorporated both a cultural development course and a study abroad experience as one program to examine CQ growth. It is unknown which part of the program improved which capabilities of CQ because our program was informed by Social Learning Theory that used the cultural development program for *attention* and *retention* while utilizing the study abroad experience for additional *retention* and *reproduction*, dismantling designs to examine the active ingredients in our intervention may be difficult because they were developed as a package.

Previous research supports the theoretical decision to not separate the two parts of the program because international experience alone does not automatically enhance students' overall CQ (Li et al., 2013; Varela & Gatlin-Watts, 2014). Future studies could help illuminate the importance of each component by incorporating a third data collection point between the cultural development program and the study abroad experience, or by developing a more complex study design with participants divided into three groups: one that receives only the intercultural training, one that receives only the international experience and another that receives both. Such a study could elucidate mechanisms that could increase the efficacy of the intervention.

Second, the CQS was only administered in English. A small number in the sample were international students from non-English speaking countries. While international students studying in the United States are required to hold an adequate English proficiency level, the validity of the CQS assessment in a foreign language is unknown. Several studies have investigated the usefulness of the CQS assessment in multiple languages (AL-Dossary,

2016; Moyano et al., 2015); however, it is unknown if the CQS scores would differ in international students at US universities based on the language of the questionnaire.

In addition to the limitations, there are some strengths as well. First, a comparison group to examine these changes in CQ scores was used. Furthermore, this study was a quasi-experimental design that compared a nonrandomized comparison group comprised of students who were learning on campus during the summer. Students in the comparison group had demographics similar to those in the intercultural development program. Additionally, the comparison group received scholarships to engage in faculty-led research activities for at least 140 hours during the 12 weeks. By comparing this *intercultural development program* with the university's on-campus research program, we can examine if the students' CQ growth is associated with the *intercultural development program* or if it is the result of interacting with people from different cultures. The results of this study are promising, but the quasi-experimental design precludes making causal statements.

Second, this analysis used multi-level modeling because time is nested within students. Therefore, using regression analysis on this data would lead to an underestimate of standard errors of coefficients and an overstatement of statistical significance. Next, a multi-level model controlled for within-cluster variance and testing the fixed-effect estimate against the remaining between-cluster variance. This resolved the issue of multiple responses per student. Finally, because the *intercultural development group* experienced a longer period between pre-post data collection (2 semesters) than the *comparison group* (1 semester) – multi-level modeling does not require the same measurement schedule for all groups in the analysis. Thus, this comparison is appropriate regardless of the time difference.

Conclusion

This study suggests that an intentionally designed, individualized intercultural development program grounded in Social Learning Theory and Constructivist Learning Theory may increase undergraduate students' CQ scores compared to students who stayed on a college campus in a research-focused program for summer. The Social Learning Theory provided the theoretical foundation to explain how a cultural development course coupled with a study abroad experience can help undergraduate students increase their CQ. In this paper, we argue programs that focus on a combined effort to help students' *attention*, *retention*, and *reproduction* through individualized learning plans can maximize students' cultural intelligence. Our program combines a cultural development course (9-weeks) with a 3-week, faculty-led study abroad experience. The combined intercultural development program focused on assisting students with *attention* and *retention.* At the same time, the study abroad experience focused on *retention and reproduction,* the use of cultural mentors helped students with intercultural and personal goals achievement. Previous research on college students supports our findings that indicate both program components appear necessary for cultural growth (MacNab et al., 2012). Further studies that focus on important student characteristics may help further determine *which* students do better in a combined program and *in what ways*.

University programs that focus on helping students increase their CQ could play an important role in helping students prepare for successful intercultural interactions in their professional and personal lives (Fang et al., 2018). Programs that focus not only on learning about cultural differences but also focused on teaching students how to think about and

anticipate ways to interact with other cultures as well as allow students to practice can provide maximum benefit to students looking to grow their CQ.

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Stewart Chang Alexander is an Associate Professor (Public Health) and is a Faculty Scholar at Purdue University. In 2020, he was the inaugural recipient of Purdue University's Vision Award for his work on cultural development. In 2018, he received the College of Health and Human Sciences' Study Abroad Leadership Award. In 2017, he received Purdue's Trailblazer Award for mid-career faculty whose research, scholarship or creative work has made a significant impact in their discipline.