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Effects of virtual conversations on international, students' intercultural communicative competence

Jingzhu Zhang

College of William & Mary - School of Education

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**EFFECTS OF VIRTUAL CONVERSATIONS ON INTERNATIONAL
STUDENTS' INTERCULTURAL COMMUNICATIVE COMPETENCE**

A Dissertation

Presented to

The Faculty of the School of Education

The College of William and Mary in Virginia

In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

By

Jingzhu Zhang

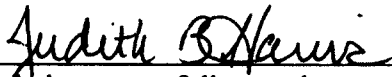
April 2015

**EFFECTS OF VIRTUAL CONVERSATIONS ON INTERNATIONAL
STUDENTS' INTERCULTURAL COMMUNICATIVE COMPETENCE**

By

Jingzhu Zhang

Approved April 8th, 2015 by



Co-chairperson of dissertation committee, Dr. Judith Harris, Ph. D



Co-chairperson of dissertation committee, Dr. Carol Tieso, Ph. D



Dr. Katherine Kulick, Ph. D

DEDICATION

To international students

who are brave enough to immerse themselves in a different country

who are fortunate enough to experience a different culture

and who contribute their intercultural experiences to building a better world

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EFFECTS OF VIRTUAL CONVERSATIONS ON INTERNATIONAL STUDENTS' INTERCULTURAL COMMUNICATIVE COMPETENCE

ABSTRACT

This study investigated the effects of virtual conversations with domestic American students on improving international students' intercultural communicative competence (ICC) at a public university in the United States. The study used a sequential mixed-method study design that utilized both quantitative and qualitative data. Based on Byram's (1997) model, the researcher self-developed an Intercultural Communicative Competence Inventory (ICCI) to collect pre- and post- data on participants' ICC in both comparison and treatment groups. The results indicate that international students who had virtual conversations lasting 5 hours and more scored significantly higher on the posttest than those who had 1 to 4 hours of virtual conversations ($p = .002$). Previous intercultural experiences predicted international students' perceived ICC pretest scores, ($p = .003$). ICC pretest scores and virtual conversation hours predicted international participants' ICC posttest scores ($p < .001$).

International participants reported four factors that contributed to meaningful virtual intercultural communication: motivation; previous intercultural experiences; equality: learning from each other; and affordances of videoconferencing. Virtual conversations between American and international students in this study facilitated intercultural communication and understanding. Intercultural programs such as the Virtual Conversation Partner Program have the potential to enhance higher education internationalization efforts in a cost-effective way.

**Keywords: virtual conversations, international students, intercultural
communicative competence (ICC), conversation partner program, English as a Second
Language**

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**EFFECTS OF VIRTUAL CONVERSATIONS ON INTERNATIONAL
STUDENTS' INTERCULTURAL COMMUNICATIVE COMPETENCE**

**Effects of Virtual Conversations on International Students' Intercultural
Communicative Competence**

Chapter 1 Introduction

According to the Institute of International Education's *Open Doors Report 2014*, the total number of international students enrolled in U.S. higher education institutions increased 8% in 2013-2014 and reached a record high of 886,052 students. New international student enrollment increased 7.5% to 270,128 students. Undergraduate international students outnumbered graduate international students for the third year in a row since 2000-2001. The five most frequent places of origin for international students in 2013-14 were China (274,439), India (102,673), South Korea (68,047), Saudi Arabia (53,919) and Canada (28,304). Students from these countries comprised 59.6% of all international students. Primary funding sources for them were reported to be from personal and family sources (64.7%), the U.S. college or university in which they were enrolled (19.3%), and their home country's government or university (7.5%). The top choices of fields of study were business and management (21.2%), engineering (19.2%), and math and computer science (10.3%). High enrollments of international students bring both possibilities and challenges to student services staff in American higher education institutions (Lin, 2006; Major, 2005).

Depending on their academic backgrounds (Beykont & Daiute, 2002), prior international experiences (Halic, Greenberg, & Paulus, 2009), and individual attitudes and personalities (Dee & Henkin, 1999), international students encounter various barriers

after their arrival. The most common difficulty is limited English language proficiency, which contributes to other challenges in students' academic and social lives in U.S. colleges and universities (Dillon & Swann, 1997; Lin, 2006; Ye, 2006). International students can also experience social awkwardness when interacting with American peers (Heggins & Jackson, 2003). Like language and social barriers, cultural barriers also contribute heavily to international students' struggles in communicating with their American peers and professors (Hinchcliff-Pelias & Greer, 2004). International students typically experience culture shock, especially during the first few months after their arrival (Lin, 2006; Selvadurai, 1998). Though most international students have some basic knowledge of American history and culture, the majority of them have limited contact with Americans prior to coming to America (Pelias & Greer, 2006; Sarkodie-Mensah, 1998). This frustrating feeling of incompetence with communication can lead gradually to depression, loneliness, and a sense of isolation (Poyrazli, Kavanaugh, Baker, & Al-Timimi, 2004).

On the other hand, international students add considerable revenue to the American higher education market (Kim, 1998), and they also bring ethnic, racial, and cultural diversity to U.S. campuses (Breuning, 2007; Jang, 2009; Lin, 2006). Their contribution to U.S. higher education is tremendous. Due to their presence on campus, domestic American students have more opportunities to interact with students with various linguistic, geographic, and cultural backgrounds than would typically be available to them. Interaction with international students can help build tolerance, understanding, collaboration and more expansive worldviews (Cudmore, 2005). However, the presence of international students on campus alone does not ensure meaningful intercultural

interaction (Campbell, 2012; Leask, 2009). Without intervention, intercultural interaction is unlikely to happen (Leask, 2009; Shigaki & Smith, 1997). Both international and domestic students need structures and opportunities to connect with each other (Campbell, 2012).

Study Rationale

There is an abundance of research regarding issues and challenges faced by international students after their arrival in U.S. colleges and universities. However, there has been little research that explores how to prepare international students academically, emotionally, and psychologically prior to their arrival. Studies have found that the amount of contact with native speakers correlates significantly with international students' adaptation to the host culture (Andre de Araujo, 2011; Ward & Searle, 1991). Increasing the level of contact between these two groups has received urgent attention (Campbell, 2012); however, there is little research on the effects of intercultural interaction between international students and domestic American students.

This study focused on incoming international students who have been accepted into a U.S. higher education institution, but have not yet arrived. The summer before arrival is the critical period that this project examines. Researchers have noted that international students tend to have false confidence towards their academic studies prior to their arrival (Gu, Schweisfurth, & Day, 2010). The most unexpected concern was "feeling embarrassed if unable to answer questions in class" (p. 14); only 7% of international students reported this concern before their arrival, compared with 44% after they spent 3 months in host universities. Only 18% of international students worried about "speaking up in class discussion" (p. 14) before arrival, but 36% were concerned

about this after 3 months. Other challenges include establishing relationships with lecturers (3% prior to arrival versus 23% after three months) and understanding lecturers' expectations (10% versus 27%). These numbers indicate that international students might not be well prepared for or aware of the pedagogical differences between home and host educational systems. If not supported in timely and effective ways, international students' over-confidence could lead to doubts about their capabilities, disappointment in themselves, and even depression. Pre-departure preparations and pre-arrival orientation are needed and are critical in assisting incoming international students' transitions into new academic environments (Gu et al., 2010). One purpose of this study will be to address this need by exploring the effects of virtual interaction on improving international students' intercultural communicative competence. Intercultural communicative competence (ICC) is "the ability to negotiate cultural meanings and to execute appropriately effective communication behaviors that recognize the interactants' multiple identities in a specific environment" (Chen & Starosta, 1996, p. 358-359).

Web-based social media have provided language learners and students who are interested in learning about different cultures with authentic environments in which to interact with native speakers from target cultures (Sykes, Oskoz, & Thorne, 2008). However, the use of videoconferencing is a relatively new area of study and limited research has examined the interaction between language learners and native speakers via videoconferencing (Dalton, 2011; Tian, 2011; Wang & Chen, 2009). Specifically, very few studies have explored virtual options for developing international students' ICC through conversation. Further study is necessary on how international students or

language learners improve their spoken language proficiency and understanding of target cultures through virtual interaction with native speakers (Blaurock, 2011).

The Virtual Conversation Partner Program (VCP) is a peer program that promotes intercultural communicative competence through virtual, video-based conversations using Skype. Skype™ is a web-based, downloadable software program that offers one-to-one or multiple-user phone calls, videoconferences, and instant messages (Tian, 2011). The VCP paired domestic students from the university one-to-one with incoming international students. Each pair scheduled conversations on Skype for one hour per week during three months in the summer, for a total of at least 10 hours of conversation by the end of the summer. Both domestic and international participation was voluntary and each pair had the freedom to choose conversation topics.

Statement of Purpose

The study built upon Krashen's (2003) examination of authentic language input and Swain's (1985) study of comprehensible output, as well as Ellis' (1999) analysis of interaction language acquisition theory. Comprehensible input one receives facilitates language learning, and the degree of input comprehension varies based on language learners' language levels and discourse strategies (Krashen, 2003). In order to communicate effectively, language learners must be able to produce comprehensive output (Swain, 1985, 2000), which propels language learners to use discourse strategies to interact and negotiate (Ellis, 1999). The study's conceptual framework is derived from the field of linguistics and intercultural communication—the work of Byram (1997), in particular—as a way to analyze the four subdomains of intercultural communicative competence: linguistic competence (such as pronunciation and grammar), sociolinguistic

competence (such as choice of words), discourse competence (such as questioning strategies and body language), and intercultural competence (such as awareness and openness).

Further, work from informal learning (Marsick & Watkins, 2001) and contextual learning (Hyland, 2004) studies helps to connect international students' interpretations and assessments of their communication effectiveness with their virtual experiences, social interaction and reflection. Both theories provide us tools to understand the meaning negotiation that takes place between international and American students. The purpose of the study was to demonstrate how to improve intercultural communicative competence through peer-to-peer conversations. By providing opportunities for interaction and sharing, virtual interactions can facilitate intercultural exchange, discussion, and reflection. Specifically, this study explored the effects of video-based, real-time, virtual interactions between international students and domestic American students in an effort to discover potential factors that contribute to the development of international students' intercultural communicative competence. Further, the study was designed to yield a richer understanding of international students' perceptions of their ICC development.

Research Questions

Four questions guide this study: (a) To what extent and in what ways, if at all, did video-based, real-time virtual interaction affect incoming international students' ICC development? (b) What factors predicted international students' perceived ICC, if any? (c) Which factors were perceived by participants to contribute to meaningful virtual intercultural communication between incoming international students and American domestic students? and (d) What perceptions or attitudes of international participants

have changed as a result of virtual conversations with American domestic students? What facilitated this change?

Significance of the Study

This study's results furthered our knowledge of international students' intercultural communicative competence development. Empirical research in intercultural communication is quite limited compared to conceptual and theoretical discussions of its nature (Bradford, Allen, & Beisser, 2000). There are many ICC models, but few of them have been empirically tested. In particular, the findings from this study informed our understanding of the impact of intercultural interaction in a virtual context since there is little empirical research on effectiveness of videoconferencing between language learners and native speakers (Dalton, 2011; Tian, 2011; Wang & Chen, 2009). This study also was timely as it focused on the pre-arrival period that is often neglected in research. For international educators, this study's results may provide insights into how virtual interactions with domestic peers prior to arrival may facilitate international students' ICC development.

Chapter 2 Literature Review

Culture and language are intertwined in a symbiotic balance of power. To remove the cultural component from a language study eliminates the very fiber, which creates the texture and depth of communication. Without cultural contexts, words become mere links in a chain, mechanical and impersonal. (Cahill, 1990, p. 21)

For international students, the U.S. has been the popular destination to attend colleges and universities since after World War II (Andrade, 2009). International students choose to come here for varying reasons: some perceive that American higher education provides dedicated professors and high quality instruction; some trust that the U.S. higher education institutions have advanced lab facilities and equipment; others simply believe that there are better opportunities in America to build good lives for their future (Andrade, 2009; Woolston, 1995). No matter what motivation or reasoning leads international students to the decision to further their education in the United States, they are determined to work hard to have successful academic experiences in order to fulfill their dreams. However, this naïve determination sometimes is replaced by confusion, struggles, and even depression once the reality hits (Leong & Chou, 1996). Prior to their arrival, many international students are aware of some of the challenges that they will likely encounter in the U.S. However, few are fully prepared for the extent of the differences in cultural and societal norms. This is especially true for international students from Asian countries. “Their uncertainty about university life is magnified because they have to understand university challenges often in a second language and

almost always in a culture that is both literally and figuratively thousands of miles from the familiar” (Evans, Carlin, & Potts, 2009, p. 26).

As a result, the first few years studying in a U.S. college or university often turn out to be more difficult and stressful than expected (Clark Oropeza, Fitzgibbon & Baron Jr., 1991; Dee & Henkin, 1999). Some international students reach a point when they begin to question the wisdom of their decision to study in the U.S. (Meyer, 2001; Olivas & Lee, 2006). Most international students will move beyond the stage of culture shock – progressing through the recognized stages of acculturation – eventually adjusting and adapting to the new culture and reaching a point of balance in their new lives in a foreign country (Sackers, Secomb, & Hulett, 2008; Tomich, McWhirter, & King, 2000; Ye, 2006).

Issues International Students Encounter

Depending on their academic backgrounds (Beykont & Daiute, 2002), prior international experiences (Halic et al., 2009), and individual attitudes and personalities (Dee & Henkin, 1999), international students encounter various barriers after their arrival in the United States. Among these, limited English language proficiency, a lack of social interaction, and difficulty with cultural adaptation are the three main barriers identified in the international education research (Fatima, 2001; Halic et al., 2009; Wan, 2001).

English language proficiency barriers. Limited English language proficiency is the most fundamental factor contributing to international students’ negative experiences (Dillon & Swann, 1997; Halic et al., 2009; Kwon, 2009), acculturative distress (Andrade & Evans, 2009; Olivas & Lee, 2006; Poyrazli et al., 2004; Swagler & Ellis, 2003; Yeh & Inose, 2003), and depression and anxiety (Dao, Lee, & Chang, 2007; Poyrazli &

Grahame, 2007; Sümer, Poyrazli, & Grahame, 2008). Living in a foreign country where English is the primary language of communication, international students, especially non-European students, face the challenge of communicating spontaneously and naturally in a foreign language which thus far, they have only practiced in an academic setting (Galloway & Jenkins, 2005; Pederson, 1991; Senyshyn, Warford, & Zhang, 2000). Prior to coming to the U.S. the majority of international students have limited experience using spoken English in a natural environment (Mori, 2000; Parker, 1999; Wan, Chapman, & Biggs, 1992). Though they may have good or even high scores on the TOEFL test (Test of English as a Foreign Language), they may struggle with basic communication skills, such as pronunciation, vocabulary, and listening comprehension (Jia & Bergerson, 2008; Swan, 1983). Research has pointed out that the TOEFL scores do not always correlate with international students' academic success (Pederson, 1991). One possible explanation is that standardized tests, such as TOEFL, only assess the international students' knowledge of the English language, instead of assessing their use of the language (Evans et al., 2009). As high achieving students in their home countries, the majority of international students have never experienced this type of communication difficulty in a classroom setting (Hsieh, 2007; Lin & Yi, 1997; Mallinckrodt & Leong, 1992) or in expressing their feelings with peers (Fatima, 2001; Halic et al., 2009; Kaczmarek, Matlock, Merta, & Ames, 1994).

Many professors and instructors have assumed that international students who were accepted into their institutions would possess adequate language skills prior to attending their classes (Halic et al., 2009). International students also assume that that their many years of English study have prepared them well to succeed in an English-speaking

academic environment (Dillon & Swann, 1997). For example, in China, students start learning English in the first grade and continue throughout the nine-year compulsory education. English is also one of the three required core courses (the other two are math and Chinese) for both science and art students in high school and in four-year colleges and universities in China (Hu, 2002a). However, educational systems often vary markedly from one country to another, and in China, for example, most foreign language instruction follows the classical approach to language study where the focus is primarily on the development of foreign language reading and writing skills and an in-depth understanding of the structure of the language (Cheng, 2008; Li & Wang, 2000).

English education in Shanghai is considered to be advanced and innovative in China. The English test developed in Shanghai is comprehensive, but only about 60% of the items on the test evaluate the students' competency in using the language (Hu, 2002b). For example, the English test in 2000 consisted of seven sections: listening comprehension, grammar, vocabulary, cloze, reading comprehension, Chinese-to-English translation, and guided writing. There was no section on spoken English and the listening comprehension section is rather small compared to other sections. According to Hu (2002b), "The proportion for listening comprehension will be further raised, its contents will be more closely tied to communicative functions, and an oral sub-test will be added that can more directly test communicative competence" (p. 42). These testing changes should guide classroom instruction towards more communicative skills.

By the time a Chinese student comes to the U.S. to pursue a college or university degree, he or she has had anywhere from 11 to 15 years of English instruction. Despite many years of required English study, most Chinese students have had few opportunities,

if any, to interact with native speakers of English. This is not uncommon for students in many countries who are learning English as a foreign language. As a result, many international students lack confidence in their oral skills in English, and speaking English with native speakers including students and professors is a common source of stress (Tomich et al., 2000; Tompson & Tompson, 1996).

Social interaction barriers. As research has shown, there is a correlation between the language proficiency and the adjustment issues (Wan et al., 1992). Specifically, the less proficient an international student is in English, the more difficult the adjustment will be (Senyshyn et al., 2000). Similarly, there is a direct correlation between international students' social interaction with American peers and their adjustment (Al-Sharideh & Goe, 1998; Andrade & Evans, 2009; Olivas & Lee, 2006). Evans et al. (2009) summarized the relationship among an international student's English language skills, academic achievement, and social life:

English language skills have a profound impact on students' academic achievement. Language skills also influence a student's ability to socialize in meaningful ways with other students and community members, which in turn affects a student's personal life. Furthermore, when a student's social life is upset, it stands to reason that academic performance will be affected. (p. 34)

As Evans et al. (2009) pointed out, English language skills, academic success, and personal lives are intertwined in international students' university experiences in the U.S. International students coming from Western Europe and fluent in English have higher amounts of social contact with American students (Trice, 2004). While many international students have high academic expectations for themselves, they sometimes

neglect the importance of immersing themselves in the American college culture (Pelias & Greer, 2004; Swan, 1983; Trice, 2004). When they find themselves struggling with course materials and assignments, many international students intensify their efforts to study, resulting in even less time to interact socially with their American peers (Klomegah, 2006; Lacina, 2002). How one makes friends varies from one culture to another and international students are often unsure how to initiate a friendship with American students (Abe, Talbot, & Geelhoed, 1998; Parr, Bradley, & Bingi, 1992). Many international students are confused by American social behavior and interpret that behavior as superficial (Beykont & Daiute, 2002). In many cases, international students tend to isolate themselves from American students (Poyrazli & Grahame, 2007; Swan, 1983; Ward & Searle, 1991). They feel more comfortable socializing with students from their own countries (Fernandez, 1988; Lin, 2006). This kind of isolation further impedes their opportunities to improve their spoken English and their understanding of American culture. Chen (1996) described this as the “lonely island” effect: by withdrawing and isolating themselves, international students create barriers to their understanding of American culture and to promoting cultural awareness of their own cultures among their American peers.

Culture adaptation barriers. The various emotional and psychological stressors international students experience can be classified into different stages. Major (2005) defined three stages most international students experience. They begin with an Entry Stage, “a short period of expectations and elation just prior to and immediately subsequent to arrival” (p. 87). For most international students, especially students from Asia, being accepted into an American university or college brings great pride to the

family. It is also seen to be a tremendous reward for years of studying. This period of joyfulness and excitement, however, will soon be replaced by the second stage: a Dissonance Stage, “a second period of variable length characterized by intense emotional and interpersonal turmoil” (p. 87). Soon after arriving in America and being on their own, perhaps for the first time, in a foreign country, international students realize quickly that it is not always easy to live within a foreign culture. Many logistical issues involving housing, food, transportation, and similar concerns that have not been challenging at home now become daily struggles. In addition, when international students have difficulties in meeting their own high expectations for performance in classes, they can become troubled by self-doubt about their abilities and competence with academic work. They may begin to wonder whether choosing to study abroad was a wise choice. The final stage of acculturation that some international students experience is an Adjustment Stage. The adjustment stage is “where comfortable adjustment and achievement of personal and academic goals are achieved” (p. 87). Though many international students gradually reach this stage after several years of living in another country, they may still not feel fully assimilated into the culture that surrounds them (Li & Stodolska, 2006). They can continue to feel like outsiders for the duration of their academic experiences (Howard & Keele, 1991).

One way to reduce this feeling of being an outsider is to engage students in online communities using a web 2.0 site. However, who they interact with online makes a difference. A web 2.0 site allows users to interact and collaborate with each other in a social media dialogue as a creators of user-generated content in a virtual community (e.g., social networking sites, blogs, wikis, and video sharing sites) (Wikipedia, 2013). As Web

2.0 offers more opportunities for social interaction through social media, developing online communities for international students to express their feelings and to exchange their ideas proves to be an effective strategy. Online communities provide international students a safe environment in which they can communicate in their native languages, reducing their feelings of loneliness and creating a sense of belonging (Ye, 2006).

However, research on the acculturation process for immigrants implies that immigrants who live close by the same ethnic group members, with limited exposure to the real target cultures, have more difficulties assimilating into the host cultures (Al-Sharideh & Goe, 1998; Schumann, 1997). As a result, they struggle more in learning the target languages (Fan, 2012). This can be applied to international students' acculturation as well. Unger (1997) describes this kind of grouping behavior and the resulting behavior of immigrants noting, "Such deficiencies in speaking and listening comprehension, especially considering the liberties American students take with the English language, caused international students to experience fear and intimidation. Naturally, they sought the solace of fellow countrymen and women with whom they could commiserate" (p. 19). Therefore, if they interact primarily with others from their home country outside of the classroom, it will be extremely difficult for them to form friendships with American students.

Since the higher education system in the U.S. is often different from the educational system in their home countries, international students may also go through a stage of trying to figure out how the American educational system works (Hsieh, 2007; Wan et al., 1992). For example, in many Asian countries, college students are not allowed to eat food in classrooms or leave without permission. In America, in contrast, it

is a common practice for students eat sandwiches or snacks during lectures or leave a classroom without asking for permission. In Asian cultures, teachers are considered absolute authority (Lin & Yi, 1997). College students show great respect to their professors. The interactions with professors or instructors on campus are formal and professional. When Asian students interact with American professors, they experience uncertainty and awkwardness while trying to imitate the casual relationship they observe between American students and their professors. International students also need time to adjust to other differences in academic expectations (Abe et al., 1998; Mallinckrodt & Leong, 1992). Many standard requirements and assignments American students are used to from middle school on are foreign to international students. For example, international students, especially students from Asia, are not used to frequent quizzes, collaborative projects, presentations, or even class participation (Mori, 2000; Senyshyn et al., 2000). When an international student struggles in one or more of these areas and the professor or instructor is unaware of the cultural differences in the two educational practices, miscommunication and misunderstandings may occur, which could be devastating to the student.

With the increase in enrollments of international students in U.S. colleges and universities, there is an urgent need for more intercultural awareness workshops and programs for staff and faculty members (Dee & Henkin, 1999; Heggins & Jackson, 2003). In the meantime, in the field of international education, there is a continuing debate about whether international students should assimilate fully into American university culture or whether institutions should do more to accommodate the needs of

international students in order to make their experiences more successful (Swan, 1983; Yang, Wong, Hwang, & Heppner, 2002).

Summary

Language barriers, social barriers, and cultural barriers are the three main identified factors contributing to international students' negative experiences in the U.S. (Fatima, 2001). For U.S. higher education institutions, the questions are raised: Whose responsibility is it to ensure that our international students have positive and successful experiences on our campuses? Is it possible to better prepare international students before they arrive? What can we do to provide better services and programs to make their transition and adaptation go more smoothly? What kind of roles should our staff (Dee & Henkin, 1999), faculty (Heggins & Jackson, 2003), counselors (Yang et al., 2002; Zhao, Kuh, & Carini, 2005), and American students (Klomegah, 2006; Mallinckrodt & Leong, 1992; Swan, 1983; Wan, 2001) play in international students' experiences here?

Many researchers and international education practitioners emphasize the important role of professors (Heggins & Jackson, 2003; Hinchcliff-Pelias & Greer, 2004; Mallinckrodt & Leong, 1992). Professors who go beyond the basic academic responsibilities to establish professional mentor relationships with international students are considered the most effective and valuable support (Rice et al., 2009). Though they have been negatively perceived and slowly accepted, counseling services have been utilized to meet international students' mental and psychological needs (Pederson, 1991; Yi, Lin, & Kishimoto, 2003). International student offices have been central for advising international students on policies and procedures concerning their immigration status (Andrade, 2009). Now, more international student offices are making efforts to provide

social and cultural activities for international students to interact with their American peers (Evans et al., 2009; Poyrazli et al., 2004). One such approach is to develop social programs such as web-based college orientation integrated with web 2.0 technologies to address the three barriers identified in the literature on international students' adjustment issues (Murphy, Hawkes, & Law, 2002).

The three factors of language, social, and cultural barriers are interrelated and influence one another. Simply addressing one factor and ignoring the others would not effectively reduce international students' frustration or stress levels. In order to help smooth international students' transition to a new culture and academic system, a collective effort from many involved parties is required.

Intercultural Communication Competence

As research has indicated, language, social, and cultural barriers are the three major challenges faced by international students in an American higher education institute. If international students are not familiar with American culture and are not aware of the differences between their home cultures and American culture, it is rather difficult for them to communicate effectively and appropriately with American native speakers of English (Mori, 2000). International students may feel awkward in their interactions with American students and find such encounters intimidating (Major, 2005). Research has found that intercultural interaction contributes to international students' successful adaptation and adjustment to their new cultural environment (Heikinheimo & Shute, 1986; Hinchcliff-Pelias & Greer, 2004; Rajapaksa & Dundes, 2002-2003; Zimmerman, 1995). For example, international students perceived that they have

improved their self-confidence (Scott, 1998) and self-efficacy (Hinchcliff-Pelias, 2003) as a result of their intercultural interactions with host nationals.

Intercultural communicative competence is a term that has been widely adopted by current researchers in various disciplines, such as international education (Breuning, 2007; Jurgens & Robbins-O'Connell, 2008), intercultural communication (Arasaratnam & Doerfel, 2005), and foreign language acquisition (Belz, 2005). Traditionally, research in the field of intercultural communication has focused on a practical understanding of cultural differences (Chen & Starosta, 2008; Kim, 1993; Cleveland, Mangone, & Adams, 1960; Martin, 1993). The research efforts were to gain practical knowledge in order to improve intercultural interactions between people from different cultural backgrounds (Becker, 1970; Samovar & Porter, 1970). The primary focus was to assist individuals who live, study, or work overseas (Ackermann, 1976; Gudykunst & Hammer, 1984; Hall, 1959; Hall & Whyte, 1960; Ruben, 1976; Van Zandt, 1970). Though there has been a debate on whether the ultimate objective of intercultural communication research should be conceptual or practical (Becker, 1970; Koester, Wiseman, & Sanders, 1993; Spitzberg, 1989), today's researchers attempt to treat both practical and theoretical emphases as equally important (Neuliep, 2000; Neuliep & Ryan, 1998; Samovar, Porter, & McDaniel, 2006).

What is intercultural communication competence? Why is it important? What predicts and determines competent intercultural communication? How do we define "intercultural communication competence" in the context of international students' adaptation in an American higher education institute? The following sections will address these questions sequentially.

What is intercultural communication competence? Intercultural

communication research originated from studies labeled as cross-cultural adaptation, cross-cultural adjustment, and cross-cultural communication in the 1940s and 1950s (Hammer, 1989; Kim, 2001; Chen & Starosta, 2008). The beginning of the field of intercultural communication in the United States was the establishment in 1947 of the Foreign Service Institute (FSI) where Foreign Service officers were trained prior to their foreign assignments (Moon, 2008; Sadri & Flammia, 2011). The two concrete goals of the pre-departure training included spoken language fluency in the language of the host nation and how to interact with native speakers (Sadri & Flammia, 2011). Edward Hall, one of the trainers at the FSI, reflected on the training process (Hall, 1959) and documented the early understanding of cultural differences and intercultural communication (Hall & Hall, 1990). Hall's work in orientation and training in government for work overseas set a pragmatic foundation for intercultural communication scholarship (Leeds-Hurwitz, 1990; Moon, 2008). During this time, non-verbal communication (eye contact, gestures, spatial orientation) was also incorporated as a critical element of intercultural communication (Birdwhistell, 2011; Hall, 1959). It was believed that non-verbal communication could be learned in the same way that language is learned (Sadri & Flammia, 2011).

Gradually, the term intercultural communication competence appeared and was accepted by academia (Koester et al., 1993). The term "competence" has sociolinguistic roots, which gained credibility over time (Koester, et al., 1993). On one hand, there is a clear distinction between cross-cultural and intercultural communication. Cross-cultural communication research involves people from the similar culture while intercultural

communication research studies communicative interaction between people from different or dissimilar cultures (Harms, 1973; McDaniel, Samovar, & Porter, 2006). On the other hand, intercultural communication competence and multicultural communication competence are sometimes used interchangeably. While some scholars defined multicultural competence from the perspective of domestic diversity and intercultural competence from perspectives of both domestic and international diversity, the distinction between multicultural competence and intercultural competence was not clear (Franklin-Craft, 2010). Two definitions of intercultural communication competence have been accepted across disciplines, such as, “minimizing misunderstanding” (Gudykunst & Kim, 1984, p. 191) and “the ability to negotiate cultural meanings and to execute appropriately effective communication behaviors that recognize the interactants’ multiple identities in a specific environment” (Chen & Starosta, 1996, pp. 358-359). This latter definition focused on the two essential objectives of intercultural communication: effectiveness and appropriateness.

What is effective and appropriate communication? Spitzberg (1991) explained, “Effectiveness is the successful accomplishment of valued goals, objectives, or rewards relative to costs. Appropriateness means that the valued rules, norms, and expectancies of the relationship are not violated significantly” (p. 354). In other words, effective communication suggests that interactants are able to obtain their objectives by choosing flexible communication strategies. As Spitzberg (2000) illustrated, intercultural communication can be categorized into four styles: (a) minimizing communication style which is inappropriate and ineffective; (b) sufficing communication style which is appropriate but ineffective; (c) maximizing communication style which is highly

inappropriate in a certain context but effective in terms of achieving personal objectives; and (d) optimizing communication which is the ideal intercultural communication style and is simultaneously effective and appropriate. Samovar and Porter (1970) suggested two strategies to lower the barriers to intercultural communication: gain knowledge and understanding of cultural factors and have an honest and sincere desire to communicate. Appropriate communication depends on an understanding of the expectations of the context (Wiseman, 2003). In order to strategically assess and respond to a given context both effectively and appropriately, interactants need to be equipped with certain knowledge and skills. The interactants need to be aware of and understand both home culture (Byram, 1997) and other cultures (Wiseman, Hammer, & Nishida, 1989). Research also identified several skills that positively contribute to intercultural communication, such as uncertainty reduction strategies (Sanders & Wiseman, 1993), self-disclosure (Li, 1999), and capabilities to recognize nonverbal cues (Anderson, 1994). Most importantly, the fluency in host languages (Giles, 1977) has been found to be positively associated to intercultural communication competence.

The definition of intercultural communication competence by Chen and Starosta (2008) not only recognizes effectiveness and appropriateness (Spitzberg & Cupach, 1984), the two concepts of communication competence, it also places emphasis on the contextual factor of culture (Hammer, 1989). What is culture? In the 1970s, in the discipline of intercultural communication, culture was conceptualized in terms of race (Johnson, 1976), social class (Daniel, 1970; Philipsen, 1975), and gender identity (Best & Williams, 2001). In the 1980s, culture was mostly defined in terms of nation-state (Moon, 2008). The change in emphasis on cultures different from the United States is attributed

to the growing interest in international affairs. Positivist views dominated the scholarly publications (Gudykunst, 1985; Gudykunst & Hammer, 1984) and most research concentrated on interactions between people from dissimilar cultures and comparisons of communication strategies from various countries. During this time, intercultural communication scholars placed a priority on methodological rigor (Casmir & Asuncion-Lande, 1990) and theory development (Gudykunst, 1983; Gudykunst & Nishida, 1989).

In today's definition, culture is learned through interactions, observations, and imitation. Culture is never static, but dynamic, creating changes by exposure to other cultures (McDaniel, Samovar, & Porter, 2012). Culture and communication have been the two emphases in the research of intercultural communicative competence. Though culture and communication are two well-defined entities, each of which is composed of different constructs, they are inseparable. As Hall (1959) indicated, culture governs communication and communication shapes and creates culture.

What are some intercultural communicative competence theories? Theories in intercultural communicative competence have been derived mainly from interpersonal communicative competence (Spitzberg, 1989). Communication is like a kaleidoscope (Novinger, 2001). The whole picture is made up of pieces of different objects, shapes, textures, and lights. Any movement and change will cause variations in the outcome. This metaphor vividly illustrates what communication looks like and how communication works. Researchers have attempted to categorize these many pieces into constructs, such as uncertainty (Gudykunst, 1993; Novinger, 2001), affect (Randolph, Landis, & Tzeng, 1977), sensitivity (Chen & Starosta, 2000), and adaptability (Novinger, 2001). Some researchers have identified linguistic competence as one separate factor of intercultural

communicative competence (Giles, 1977; Martin, 1993; Matveev & Nelson, 2004; Mol, Born, & Molen, 2005; Thomas & Hagemann, 1996).

Though the theoretical frameworks of intercultural communicative competence are still in the development stage (Chen & Starosta, 2008), anxiety/uncertainty reduction theory (Gudykunst, 1993), identity negotiation theory (Cupach & Imahori, 1993; Ting-Toomey, 1993) and strategic competence theory (Kim, 1993) have gained recognition and influence over the years. The researchers in the field of intercultural communication have generated consistent or similar variables that predict successful intercultural interaction. For example, Ruben (1976) listed seven dimensions of competence: display of respect, interaction posture, orientation to knowledge, empathy, self-oriented role behavior, interaction management and tolerance for ambiguity. Several of these dimensions can be categorized in the three factors suggested by Hammer, Gudykunst and Wiseman (1978) that include the ability to deal with psychological stress, ability to communicate effectively, and ability to establish interpersonal relationships. Spitzberg and Cupach (1984) identified cognitive, affective, and behavioral factors as contributing to the success of intercultural interaction. Though termed differently in various studies, the cognitive category has often been referred to as knowledge; the affective category is sometimes described as motivation; and the behavioral category is frequently labeled skills (Bradford et al., 2000, p. 35).

Why is intercultural communicative competence important? The teaching of culture has been an important part of foreign language learning. According to Liaw (2006), the development of the teaching of culture in a foreign language classroom has gone through several stages. The traditional approach was to teach culture through rote

learning of factual knowledge (e. g. literature, arts, customs). This transmission perspective downplayed the meaning of culture because it ignored language learners' own cultural identity and individuality in the target culture (Huebener, 1959). The second stage of teaching culture was the cross-cultural contrastive approach, which encouraged language learners to compare and contrast the similarities and differences between their own and the target culture (Liaw, 2006). The contrastive approach, however, oversimplified the complexity and variety of a culture and risked creating stereotypes of both home and target cultures (Ortuño, 1991). The third stage of teaching culture was communicative competence-based teaching. Language learners were encouraged to study the values and beliefs of a target culture through the roles of the native speakers. However, this approach was criticized for the danger of cultural imperialism (Tsuda, 2008). An enculturation approach that was solely modeled after the native speakers' perspective is not considered the best practice any more (Liaw, 2006; Nakano, Fukui, Nuspliger, & Gilbert, 2011; Savignon, 2007). Developing intercultural communicative competence has been accepted as the current stage of teaching culture in foreign language learning. The objective of this approach is to prepare language learners as competent communicators across different cultures who are able to interpret the target culture through the lens of their own cultural background and knowledge. The essence of this approach is not to purely acquire knowledge of the target culture, but to understand how the target culture interacts with one's own cultural experiences (Liaw, 2006).

As described above, the emphasis of culture learning in foreign language teaching has shifted from intracultural (among foreign language learners) to intercultural (between foreign language learners and native speakers) (Belz, 2005). A so-called "third place" by

Kramsch (1993) reflects this intercultural learning movement. The “third place” is the intersection where learners’ home culture and target culture meet and they are able to form a sophisticated understanding of their new cultural identities (Kramsch, 1993).

How to measure intercultural communicative competence? In terms of how to measure intercultural communicative competence, Lustig and Koester (1993) summarized four different approaches from various studies: the trait approach explores the personality and individual characteristics that contribute to successful intercultural communication (Milhouse, 1993); the perceptual approach emphasizes groups of attitudes or perceptions related to intercultural interaction (Lustig & Koester, 1993); the behavioral approach collects data on observable behavior and self-report behavior that result in effective communication in an intercultural context (Koester & Olebe, 1988; Martin & Hammer, 1989; Ruben, 1976); and the culture-specific approach focuses on culture-specific awareness and behaviors (Carbaugh, 1993; Jia, Tian, & Jia, 2012; Kumar & Sethi, 2012; Nakanishi & Johnson, 1993).

Basic assumptions. In the field of intercultural communication research, there has been a debate on whether the emphases should be culture-general or culture-specific (Gudykunst & Hammer, 1984). In the culture-general approach, the interactants make generalized adaptations in the context of intercultural interactions. The culture-specific approach, on the other hand, requires culture-specific awareness and behaviors (Bradford et al., 2000) and knowledge and adoption of the communication patterns and practices of the host country national (Gudykunst & Hammer, 1984). For the purpose of this review, intercultural communication competence is defined as a competence that international students develop in order to communicate effectively with native speakers of English,

especially with their American counterparts in a social and conversational context. Therefore, this study reflects the culture-specific approach. Two components are emphasized here: first, the linguistic competence – the ability to communicate effectively in a foreign language (English)—and, second, the sociolinguistic competence – the ability to interact appropriately in a social and conversational setting. The theoretical framework that is chosen for this specific context has to incorporate at least these two critical elements.

Byram's model. As mentioned above in the basic assumptions, two critical components—linguistic competence and sociolinguistic competence—have to be included in the theoretical framework that is chosen to measure intercultural communication competence in this study. Further, in an intercultural context, both international students and their American peers bring their own cultural identities and interpretations. The ultimate goal for international students is to become an intercultural mediator instead of a cultural imitator. The conventional emphasis on native-like communicative competence—aiming to talk and behave like a native speaker—is now considered inappropriate and unrealistic (Byram, 1997; Savignon, 2007). This objective does not lead to effective interactions either. International students need to embrace and understand their own culture and be aware of its influence on their interpretations of other cultures. In this study, the researcher chose Byram's model of Intercultural Communicative Competence (1997) to examine international students' intercultural communicative competence development.

In his definition, Byram (1997) refined van Ek's (1986) language-based model. According to Matsuo (2012), van Ek's model and other frameworks in modern second

and foreign language education during that period (late 80s and early 90s) were heavily influenced by Hymes' communicative competence model (1972). Even though Hymes' model was originally intended for first language education, it was adapted for the second language education by other scholars, such as Canale and Swain (1980) and Bachman (1990). Byram (1997) borrowed but revised the three elements from van Ek's language based model—linguistic competence, sociolinguistic competence, discourse competence—and proposed a fourth element: intercultural competence.

- *Linguistic competence*: the ability to apply knowledge of the rules of a standard version of the language to produce and interpret spoken and written language;
- *Sociolinguistic competence*: the ability to give to the language produced by an interlocutor – whether native speaker or not – meanings which are taken for granted by the interlocutor or which are negotiated and made explicit with the interlocutor;
- *Discourse competence*: the ability to use, discover and negotiate strategies for the production and interpretation of monologue or dialogue texts which follow the conventions of the culture of an interlocutor or are negotiated as intercultural texts for particular purposes.
- *Intercultural competence*: the ability to develop open attitudes to, knowledge of both home and target cultures, skills of interpreting and relating, and critical cultural awareness. (p. 48)

In the 1990s, Byram worked as a member of the team to produce the *Common European Framework of Languages (CEFR)* of the Council of Europe (Matsuo, 2012).

Byram (1997) listed four key savors: skills (acquiring new knowledge of the target culture and applying it through communication and interaction), attitudes (reforming values and belief), knowledge (understanding group and individual social actions), and critical cultural awareness (the ability to evaluate).

Summary

Many researchers in the field of second language acquisition have used Byram's ICC model as their theoretical framework (Al-Jarf, 2007; Belz, 2002; Helm, 2009; Nakano et al., 2011; O'Dowd, 2003; Schuetze, 2008; Zha, Kelly, Park, & Fitzgerald, 2006). These studies found that the interaction between language learners and native speakers over a semester facilitated language learners' ICC development, especially their skills, attitudes, and knowledge. The critical awareness component was found to be challenging to develop, perhaps requiring intercultural interactions longer than a semester (Nakano et al., 2011). These studies will be discussed further in a later section of computer-mediated communication (CMC). Most of the research, however, evaluated only one of the four competences in Byram's model: intercultural competence. Though intercultural competence is the crucial piece in his ICC model and has been widely referenced in foreign language teaching and learning literature, the other three competences (linguistic, sociolinguistic, and discourse competence) are equally important and should not be disregarded. Some researchers used the terms intercultural communicative competence and intercultural competence interchangeably (Eloola & Oskoz, 2008; Schuetze, 2008). Byram (1997) clearly stated his position on the differences between these two competencies: a person with intercultural competence is able to understand and interpret another culture in his/her native language while a person

with intercultural *communicative* competence is able to interact with people from another culture in a *foreign* language. In other words, linguistic competence is the key component that sets apart intercultural competence and intercultural communicative competence.

This study focuses on the four competences (linguistic, sociolinguistic, discourse, and intercultural) included in Byram's ICC model. The following figure illustrates the relationship between ICC and IC.

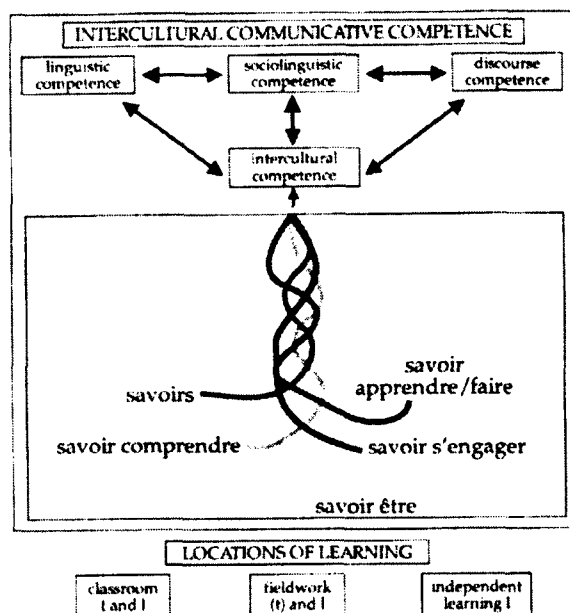


Figure 1. Intercultural Communicative Competence Model (Byram, 1997, p. 73)

Researchers who adopted Byram's model have found that second language learners' lack of intercultural communicative competence could lead to negative attitudes towards the target culture, especially the stereotypes about the people from the target culture (Belz, 2002; O'Dowd, 2003). On the other hand, successful personal relationships among students from different cultures are the key component to facilitate their development of intercultural communicative competence (Lu & Hsu, 2008; Swan, 1983).

Further research is needed in exploring possible variables and factors that contribute to international students' ICC development in an institution of higher education in the U.S.

In his critique of Byram's (1997) ICC model, Matsuo (2012) pointed out two weaknesses in the model. First, the model is an individual-oriented list-type model, which identifies the components that are hypothesized as comprising a competence, but does not conceptualize relations and interdependences among the components. This concern has been addressed in the pilot studies by statistically analyzing the interrelationships among the four subdomains. Second, Matsuo (2012) claimed that Byram (1997) equated culture with the national culture of nation-states. As reviewed earlier, culture is more complicated than simply national culture. Without intercultural interaction, students may risk stereotyping both home and target cultures. To address this weakness, this study paired one international student with one domestic American student. The students had the freedom to choose topics that were relevant to their personal and social lives in an effort to connect the participants on a more individualized level.

Intercultural Language Learning

Language learning is not just about mastering the forms and rules of a language, but also understanding the culture where a language is spoken (Hall, 1989). English as a global language has become the focus of internationalization efforts in many countries. The following section will review the current practices in international English education, language acquisition theories, and research findings on using computer-mediated communication to facilitate intercultural language learning.

International English education. International students are English language learners in their home countries prior to arriving at American institutions. Generally,

there are three types of English language learners: (a) English as a second language (ESL) learners are those who are learning English and whose own native language (first language) is not English; (b) English as a foreign language (EFL) learners are those who are learning English in countries where students' own native language (first language) is the main and/or official language; (c) English for speakers of other languages (ESOL) learners are those who are learning English and whose own native language(s) (first and second language) are not English.

How they learned English and the target culture affects how they apply their intercultural communication skills with native speakers. As empirical research has shown, international ESL/ESOL learners believe in self-efficacy and formal structured studies (Wu, 2008, 2012); meanwhile, they agree that the lack of authentic interaction with native speakers is the major contextual barrier to their spoken English proficiency and understanding of the target culture (Pill, 2001; Richards, 1998; Wu, 2012). Native speakers refer to people of a particular language who have spoken that language since earliest childhood. Indeed, several studies on "English Corner," an informal gathering place for practicing spoken English that is popular on university campuses in Hong Kong, Taiwan, and mainland China, have shown that ESL/ESOL learners value the opportunities to interact with native speakers outside the classroom in an unstructured and informal setting (Gao, 2009; Kellaway, 2013). Socio-cultural theories argue, "Language learning is a situated social practice that occurs through social interactions at a specific time and place" (Shin, 2006, p. 67). Without understanding specific cultures of English speakers, international students could face ungraspable challenges when interacting with English native speakers. Their social interaction might be hindered by

their lack of sufficient knowledge of native speakers' cultural background (Belz, 2002; O'Dowd, 2003; Shin, 2006). While more English curricula in many countries now emphasize culture learning and language application, most traditional instruction methods only focus on grammar, spelling, reading, and writing. Therefore the international students who receive their English education through the traditional methods tend to struggle more after they arrive on American campuses (Swan, 1983).

Since language barriers and cultural awareness are the two fundamental factors that affect international students' academic performance and their social interaction with American students, one area that needs urgent attention and reform is the English education in international students' home countries. Before international students take on their study-abroad journeys, they have been EFL learners in their home countries. The EFL education they have received is critical to their success in an English-speaking country. Fortunately, as the global economy requires more intercultural interactions with English native speakers (Sadri & Flammia, 2011), English language instruction has become a strategic focus in Asia (Hino, 2009; Musa, Lie, & Azman, 2012), Africa (Kajee, 2011), Europe (Ibarz & Webb, 2007), and North America (Cudmre, 2005).

For example, in order to address the growing criticism about the lack of English communicative skills among Japanese students, the Japanese government developed a five-year action plan to "cultivate Japanese with English abilities" in 2003 (Butler & Lino, 2005, p. 25). In 2008, the School Education Act and the Basic Plan for the Promotion of Education published in 2008 stipulated, "Foreign language education, including foreign language activities at the primary school level, should be enhanced and fostered for the next five years" (Hosoki, 2011). Similarly, the Turkish Higher Education

System necessitated a shift in English language teaching curriculum “from linguistic perspective to interculturality” (Hismanoglu, 2011, p. 806). The objective is not only for these learners of English to be equipped with both linguistic and intercultural competences so that they can communicate effectively with others, but to develop their intercultural awareness and discourse strategies to face challenges brought by cultural differences (Hismanoglu, 2011). The same shift occurred in Chinese foreign language curriculum, which now emphasizes cultivating intercultural competence as well as developing language proficiency (Hu, 2002b; Wang & Coleman, 2009). In China’s new five-year plan (2011-2015), the central government has adopted a policy to attract international talents to China and encourages Chinese students to study abroad. This new policy has had a huge impact on the increased number of undergraduate Chinese students in the U.S. in year 2011-2013. From a local government perspective, Shanghai is the pioneer in reforming English education:

That English carries so much weight follows from the municipal government’s ambition to develop Shanghai into a first-class international metropolis. There has been a clear recognition of English as an important resource that the municipality can harness in promoting international exchange, fostering economic progress, acquiring scientific knowledge and technological expertise, and facilitating educational development. (Hu, 2002a, p. 33)

The Shanghai Education Commission developed a ten-year program to create 34 language, culture and curriculum programs by 2003 (Hu, 2002a, 2002b, 2005; Li, 2010). One of the two innovative objectives was to send 1500 to 1800 core English teachers to overseas institutions to receive English language teaching training. The second objective

was to recruit about 400 native speakers as English teachers at primary and secondary schools in Shanghai. These two objectives reflected the local government's understanding of the importance of authentic language learning opportunities to both their students and teachers. All of these efforts are evidence that the English education in China is gradually moving away from the traditional emphasis on reading and writing towards promoting communicative language skills of teachers and students. This is a giant step in English education reform, which hopefully will lead to future Chinese students' success in a U.S. college or university if they choose to study abroad there.

The program developed in Shanghai requires tremendous support from the local government, especially financial support. Not many countries or local governments can afford to send their teachers overseas for language training or to import a large number of native speakers to be English teachers. Many ESL/ESOL educators and researchers around the world have been experimenting with cost-effective ways to create more opportunities for their students to interact with native speakers of English. One major theme is how to use educational and instructional technology, especially how to take advantage of the interactive and communicative features offered by web-based technologies to improve ESL/ESOL students' English language skills as well as their intercultural communicative competence.

Language acquisition theories. In the field of second language acquisition, there has been an increase in awareness of the importance of social and contextual perspectives (Kurata, 2011). Contemporary researchers believe that language acquisition should not be an isolated endeavor solely focused on cognitive operation; rather, it should be a natural and authentic development in a social context (Firth & Wagner, 2007; Lantolf & Thorne,

2006). Sociocultural theory, developed by Vygotsky (1978) originally in the context of the development of children, has been widely adopted by second language researchers (Blaurock, 2011; Kurata, 2011; Warschauer, 1997). Vygotsky (1978) defined two ways of learning: interpsychological and intrapsychological. The former refers to how language is learned on the social level between people and through imitation. Social interaction provides the learner with opportunities to engage in the language, to learn new vocabularies, and to practice meaning negotiation strategies (Blaurock, 2011). The latter, intrapsychological learning, describes how language learners internalize what they have experienced and reflect on what they have learned on the individual level and inside him or her self (Kurata, 2011). In sum, social interaction creates an environment to “learn language, learn about language, and learn through language” (Warschauer, 1997, p. 471). Internalization further enhances language learners’ cognitive development in mastering a new language (Warschauer, 1997).

Language learning is a complex process. The social cultural concepts of how language learners develop language skills in social interactions are also the foundation of several specific language acquisition frameworks. For example, Interactionist theory emphasizes that an important factor in the language acquisition process is the interaction and negotiation of meaning (Ellis, 1999).

Krashen’s Input Hypothesis (2003) is the first part of this theory. Comprehensible input one receives facilitates the development of a second language (Long, 1983). The degree of input comprehension varies based on language learners’ language levels and discourse strategies (Krashen, 2003). Swain (1985) further completed the concept by proposing a second component: comprehensible output. In order to communicate

effectively, language learners must be able to produce comprehensible output, which propels language learners to use discourse strategies to convey meaning and achieve their objectives. Negotiation of meaning occurs during this process. From situated learning (Collins, Brown, & Newman, 1989) and contextual learning perspectives (Hyland, 2004), the interaction provides language learners an authentic communication environment where they express their own personal interests and solve meaningful communication tasks. The interactive feature facilitates language learners' interpretation of their linguistic and sociolinguistic competence (such as pronunciation, grammar, and choice of words) and assessment of their communication effectiveness (Lantolf & Thorne, 2006). More importantly, they start to develop meaning negotiation strategies, such as clarification requests, confirmation checks, comprehension checks, and/or repetitions (Pica & Doughty, 1985).

From a social constructivism perspective, language learners can construct their knowledge through social interaction with native speakers and self-reflection (Boulter, 2007; Du & Wagner, 2007). Social constructivism focuses on learning as a dynamic process of constructing knowledge by an active learner. Rather than being transmitted through instruction, knowledge is constructed or created by learners as they build their own cognitive structures or mental models from the input. Individuals learn better when they are forced to discover concepts themselves rather than when they are told (Biggs, 1996). ESL/ESOL teachers should encourage students to construct knowledge through the process of acquiring, generating, analyzing, manipulating, and structuring information. The constructivist model shifts teaching from instruction-focused to a

learner-centered practice where the instructor's role is to support rather than to direct (Du & Wagner, 2005) in a more facilitative and less authoritative way (Sengupta, 2001).

Computer-mediated Communication (CMC). For students in non-English speaking countries who are taking English, it can seem almost impossible to use English in an authentic environment (Armstrong & Retterer, 2008; Belz, 2005). How can EFL students who are not able to physically immerse themselves in an authentic English language environment gain some real-time English linguistic and cultural experience? From a technological perspective, teaching a second or a foreign language has evolved from being restrained in traditional classrooms to facing unlimited opportunities and challenges in cyberspace (Al-Jarf, 2007; Cook, 2004). Cook (2004) suggested:

Scholars of language use, language change, and ideologies of language must surely explore and interrogate the effects of these technologies on traditional modes of communication, the impact of our new capacity to communicate instantly anywhere in the world, and the meaning of language contact as it is taking place in cyberspace. (p. 103)

Computer-mediated communication (CMC) research emerged in the early 1990s when various forms of Internet-based communication tools became available (Wang & Chen, 2009). Computer-mediated communication is defined as communication that occurs via computer-mediated formats (e.g., instant messaging, email, chat rooms, and videoconferencing) (Wikipedia, 2013). In the context of this literature review, CMC refers to computer-based discussion involving negotiation of meanings with native speakers of the target language or with non-native speakers who are proficient in the language (Beatty, 2010). Research literature of CMC in second language acquisition has

addressed both linguistic and social dimensions in terms of how it affects ESL/ESOL students' learning (Cook, 2004; Shin, 2006). When used consciously and creatively, CMC between language learners and native speakers can be authentic, collaborative, and meaningful (Meskill & Anthony, 2007). CMC can be categorized into two types: asynchronous and synchronous.

Asynchronous CMC. Asynchronous CMC refers to online communication that allows time delay in response (e. g., email, discussion forum, blogs). Asynchronous communication allows language learners to compose their responses with less time strain and to consult various resources as needed (Savignon & Roithmeier, 2004). Participants in Savignon and Roithmeier's research felt less anxiety when using asynchronous tools. Research has found that asynchronous CMC enhances the reflective learning style of quiet students (Weasenforth, Biesenbach-Lucas, & Meloni, 2002). In asynchronous communication, everyone has equal opportunity to participate (Beauvois, 1998); however, dominant individual students could still take control of the communicative situation in written CMC (Warschauer & Lepeintre, 1997). There are various types of asynchronous CMC tools.

Email. Email exchange projects are one type of asynchronous CMC that has been examined in many studies (Cifuentes & Shih, 2001; Greenfield, 2003; Kasapoğlu-Akyol, 2010; O'Dowd, 2003; Zhu, Gareis, O'Keefe, Bazzoni, & Rolland, 2005). For example, research has found that English language learners [who participated in email exchange projects] from Taiwan (Cifuentes & Shih, 2001), Hong Kong (Greenfield, 2003), Japan (Gray & Stockwell, 1998), Spain (O'Dowd, 2003), Bulgaria (Meskill & Rangelova, 1995), and France (Kern, 1996) not only improved their English composition proficiency

(e.g., vocabulary, grammar, sentence structures), but they also increased their intercultural awareness. The majority of these research studies have focused on telecollaborative projects or activities by using e-mail (Belz, 2002; Liaw, 2006; O'Dowd, 2003; Shin, 2006; Tudini, 2007). Apart from their positive effects on students' cognitive development and social interaction, their findings confirmed that the format of emails had limitations and caused some negative results, including the lack of deeper reflection on home and target cultures (Shin, 2006; Tudini, 2007) and the failure to differentiate stereotypes and individuality (O'Dowd, 2003). How do ESL/ESOL students prepare themselves with true knowledge about the target culture, society, as well as the people, to avoid misunderstanding and social awkwardness in a real interaction situation?

Blogs. The emergence of a new online media weblogs, often called "blogs," has offered a cost-effective and accessible alternative solution to some aspects of this problem. English teachers have long been using journals as assignments to help students develop a personal voice or style (Armstrong & Retterer, 2008). Blogs are one type of electronic journal that uses computers as writing tools and the Internet as a communication platform. From a constructivist perspective, the best way for ESL/ESOL students to practice authentic English is to learn in an interactive, reflective, and communicative environment with native speakers (Schuetze, 2008; Zhu et al., 2005). Blogs can provide one such environment (Xing, Wang & Spencer, 2008). Researchers have identified that writing in blogs can help EFL students practice reading and writing (spelling, vocabulary, fluency, composition), (Armstrong & Retterer, 2008; Pinkman, 2005). More importantly, blogs promote virtual social interaction and intercultural communication (Elola & Oskoz, 2008). The rationale of emphasizing intercultural as well

as the linguistic learning is that language expresses an individual's beliefs and values (Liaw, 2006). Using blogs, language students do not merely share information with native speakers, but reflect and analyze their cultural differences, therefore identifying their individual values and forming new knowledge, understanding, and worldviews (Liaw, 2006). For example, Elola and Oskoz (2008) found that blog interactions had a positive effect on the development of college students' intercultural communicative competence; however, the participants were American college students who were taking Spanish classes and who were studying abroad in Spain, not ESL/ESOL college students. Sufficient research has not been conducted to examine the effect of blogging on ESL/ESOL college students' ICC development. Though blogs have proved to have potential in improving language students' written language as well as their intercultural competence, there are some major areas where blogs have limitations including in improving language students' spoken language fluency and conversational skills, which are key elements to communicative competence, especially in international students' successful interactions with native speakers.

Other asynchronous tools such as discussion boards have been found to have positive effects on ICC development. Cross-national collaboration projects provided a sociocultural context for language students to interact with native speakers and to learn about real people of various social backgrounds, traditions (Kern, 1996) and cultural issues (Kasami, 2009; Meskill & Rangelova, 1995; O'Dowd, 2003). For ESL/ESOL learners, learning the target culture is as important as mastering the linguistic part of the language (Boulter, 2007; Liaw, 2006; Tan, Nabb, Aagard, & Kim, 2010). Researchers have adopted Byram's (1997) ICC model in their studies (Elola & Oskoz, 2008; Elorza,

2008; Sercu, 2004) and have found that the lack of ICC could lead to ESL/ESOL students' negative attitudes towards the target culture, especially the stereotypes about its people (Belz, 2002; O'Dowd, 2003). Some researchers found positive results of college ESL/ESOL students' ICC development in online projects using asynchronous CMC, such as discussion boards (Al-Jarf, 2007; Schuetze, 2008; Zha et al., 2006) and diaries (Helm, 2009).

Synchronous CMC. Synchronous communication refers to online communication that occurs in real time where participants exchange information and respond to messages immediately (e. g., text chat, voice chat, audio and videoconferencing) (Schuetze, 2008; Zhu, Gareis, Bazzoni, & Rolland, 2005). Synchronous SMC provides a truly authentic context for conversations, which encourage fluency, expression, and multiple perspectives on issues (Kern, 1998). Researchers have found that college students in the U.S. and France preferred using instant messaging instead of e-mails for peer interaction outside class (Thorne, 2003). One potential reason might be that synchronous CMC mirrors face-to-face communication more closely than asynchronous CMC does. Cognitively, synchronous communication stimulates language learners' brains more naturally and generates more spontaneous responses, which are the means for language development (Powell & Kalina, 2009). Further, synchronous CMC provides an optimal environment for language learners to process comprehensible input and improve the comprehensibility of their own output through negotiation of meaning (Tudini, 2003; Iwasaki & Oliver, 2003; Toyoda & Harrison, 2002). The audio- and video-based synchronous CMC will be discussed later when compared to text-based CMC.

Table 1:
Studies of CMC-based Language Learning

CMC format	Tools	Study
Asynchronous	email	Belz, 2005; O'Dowd, 2007
	blogs	Hauck & Youngs, 2008
	audioblogs	Hsu, Wang, & Comac, 2008
	Discussion forums	Al-Jarf, 2007; Hewett, 2000; Montero, Watts, & Garcia-Carbonell, 2007; Savignon & Roithmeier, 2004; Schuetze, 2008; Weasenforth et al., 2002; Zha eta al., 2006
	Bulletin boards	Abrams, 2003; Hirotani, 2009; Kasami, 2009; O'Dowd, 2007
Synchronous	Voice chat	Jepson, 2005
	Text chat	Abrams, 2003; Blake, 2008; Hauck & Youngs, 2008; Hirotani, 2009; Iwasaki & Oliver, 2003; Jepson, 2005; Payne & Ross, 2005; Payne & Whitney, 2002; Toyoda & Harrison, 2002; Tudini, 2007
		Audio conferencing
	Video conferencing	O'Dowd, 2007; Ryobe, 2008; Wang, 2004

In many cases, researchers and educators combined asynchronous and synchronous communication tools to create multimodal environments for students to interact across nations (Chun & Plass, 2000; Furstenberg, Levet, English, & Maillet, 2001; Hampel & Hauck, 2004; Hauck & Youngs, 2008; Hirotani, 2009; Zhu et al., 2005). This type of intercultural collaboration has been called telecollaboration (Blake, 2008; Warschauer, 1997). Research found that intercultural communication was the natural

component of the language learning process. For example, collaborative projects between New Zealand and New York (Zhu et al., 2005), France and the United States (Furstenberg, et al., 2001; Thorne, 2003), and Germany and the United States (Belz, 2002) incorporated various CMC tools including e-mails, electronic discussion boards and/or online chat. These projects allowed students from two different cultures to facilitate and mediate a global and intercultural exchange of ideas through online collaboration and to improve their intercultural communicative competence, including linguistic competence. The students had positive experiences and perceived that the intercultural engagement between their foreign counterparts and them influenced both their linguistic development and intercultural relationship building (Belz, 2001; Furstenberg, et al., 2001; Zhu et al., 2005). Specifically, the Cultura Project developed by the Massachusetts Institute of Technology in Cambridge in the late 1990s focused more on helping second language students find an intercultural third place (Kramsch, 1993), a place between the native culture and the target culture by analyzing, discussing, and reflecting on cultural assumptions (Blake, 2008). The students from MIT collaborated with students at the Institut National des Telecommunications in Evry, France, to observe, compare, and analyze materials from their respective cultures. The Cultura project demonstrated how intercultural communication can facilitate foreign language students' understanding of target culture, including attitudes, beliefs, perspectives, and worldviews (Furstenberg, et al., 2001; Liaw, 2006). The communicative features of CMC offer an opportunity for second language learners to develop their language competence and their understanding of the target culture by conversing with native speakers (Belz, 2003; Blake, 2008; Furstenberg, et al., 2001; O'Dowd, 2003; Thorne, 2003; Zhu et al.,

2005). At a macro level, second language students are able to interact with native speakers in a social context. At a micro level, second language students are able to experience authentic and meaningful linguistic interactions and improve their linguistic competence.

In some cases, CMC research is not categorized as synchronous or asynchronous, but analyzed as text-based CMC and audio/video-based CMC.

Text-based CMC. Among the diverse formats of CMC technology, text-based CMC is most widely studied (Tian, 2011). Text-based CMC includes emails, blogs, text chat, discussion forums, and bulletin boards. Research has found that text-based CMC improves language learners' intercultural competence (Thorne, 2003; Savignon & Roithmeier, 2004). Brander (2007) debated how CMC created a "certain paradox in terms of cultural and social interaction" (p. 145). In a text-based virtual communication environment, students' physical social identities are hidden, so it seems like the cultural and social dimensions are reduced. However, other cultural issues still influence how they negotiate meanings online, how they decode and encode words, and how they interact with each other. Therefore, just like face-to-face communication with native speakers, cultural competence is still an important component in text-based CMC (Brander, 2007).

Text-based CMC also improves written language competence, such as linguistic accuracy (Kasami, 2009; Kelm, 1992), complexity (Beauvois, 1998; Hirotsu, 2009; Kasami, 2009), argumentation (Kern, 1995), and cohesiveness (Chun, 1994; Savignon & Roithmeier, 2004). For example, a class of German students of English at a German secondary school collaborated with a class of U.S. students of German at a high school.

They discussed various societal topics over a three-week period through a bulletin board. The researchers found the bulletin board postings produced by the students were cohesive and coherent and the language learning was meaningful and productive (Savignon & Roithmeier, 2004). Since English is considered as an international language (Savignon, 2007), the text-based CMC among ESL/ESOL students from various non-English speaking countries was also found to improve participating students' written language skills and cultural attitudes (Kasami, 2009). For example, 386 students from 14 universities in 9 countries (Japan, Korea, Taiwan, Brazil, Indonesia, UAE, Burkina Faso, Mexico, and Namibia) participated in Project Ibunka¹ in 2005. All students were required to write and post three essays on the shared bulletin board and were encouraged to respond to other students' postings (Kasami, 2009). Similar to Savignon and Roithmeier's (2004) collaboration project, Project Ibunka also suggested discussion topics such as school life, cultures and world peace. The researcher examined the effectiveness of collaborative learning and intercultural CMC-based exchange on 19 Japanese students' motivation and satisfaction in learning English and culture. The findings indicated that the experience of collaborative learning with foreign students by using text-based CMC significantly improved Japanese students' English writing competence measured by T-units (Hirano, 1989; Hunt, 1965), including length, complexity, and accuracy. The project also sustained Japanese students' motivation for learning English and enhanced their intercultural communicative competence (Kasami, 2008).

¹ Ibunka means "different cultures" in Japanese (Kasami, 2009, p. 128).

Several studies also indicated that CMC has the potential to improve oral fluency as well (Blake, 2008; Hirotsani, 2009; Payne & Whitney, 2002). The assumption was that since both writing and oral speech involve the same cognitive mechanisms (Payne & Ross, 2005; Starfire, 2006), the conversational elements learned in written communication may be gradually transferred to spoken language competence (Chun, 1994; Hampel & Hauck, 2004; Sotillo, 2000). When compared to face-to-face interaction, researchers have not reached consensus as to whether text-based CMC will improve language students' oral proficiency more effectively. For example, some researchers compared the language learning in CMC to face-to-face interaction and found no significant difference in gains on oral proficiency measured by the lexical and syntactic quality of their speech (Abrams, 2003). Some researchers found that the students produced much shorter and less complex sentences in the text-based CMC settings than face-to-face environments (Cameron, 1999) while others found a positive correlation between text-based CMC use and linguistic complexity and accuracy (Beauvois, 1998; Hirotsani, 2009). Additionally, some researchers pointed out that the conversational written language does not completely reflect the characteristics of oral language output (Blake, Wilson, Cetto, & Pardo-Ballester, 2008; Montero, Watts, & Garcia-Carbonell, 2007). Further, there is no solid evidence to support that text-based CMC can improve oral language competence (Liu, Moore, Graham, & Lee, 2002; Tian, 2011). These research findings indicate the need to further explore the potential effects of text-based CMC on oral language fluency. Additionally, more research attention should be given to studying audio/video-based CMC and oral language learning.

Audio/video-based CMC. Compared to text-based CMC, audio/video CMC has not been widely studied in the second or foreign language field. One major reason was that web-based conferencing is vulnerable to technical difficulties (Hara & King, 1999), such as distorted audio or frozen video frames due to problems with network capacity or connectivity (Bateson & Daniels, 2012). With the advancement of bandwidth and Internet speed, the potential of audio/video-based CMC are emerging. For example, voice-based CMC has been found to improve language learners' pronunciation (Jepson, 2005). The use of video enhances immediacy and interactivity (Coverdale-Jones, 2000) and as a result, improves language learners' confidence and participation (Hampel & Hauck, 2004). The visual images allow language learners to observe native speakers' body language, such as head nods and facial expressions, which helps language learners assess their communication effectiveness (Tian, 2011). Among various online platforms, videoconferencing is gaining momentum. However, there has been limited empirical research on using videoconferencing in ESL/ESOL learning.

Skype. With the growing popularity of web 2.0, social media has provided language learners and students who are interested in learning about different cultures an almost authentic environment to interact with native speakers from other cultures (Sykes, Oskoz, & Thorne, 2008). One study compared structured Skype discussion with unstructured Skype discussion among ESL students and found no significant difference on students' oral proficiency, measured by pronunciation, fluency, comprehension, vocabulary, and accuracy (Yang & Chang, 2008). However, the Skype interaction that occurred in this study was only among ESL students. Studies using Skype or other audio/video conferencing tools connecting ESL/ESOL learners with English native

speakers are hard to find (Tian, 2011). The prior studies on interactions between language learners and native speakers have been limited to text-based CMC (Graham, & Lee, 2002; Hampel & Baber, 2003; Liu, Moore, Tudini, 2003; Savignon & Roithmeier, 2004), and even fewer of them are synchronous CMC studies (Iwasaki & Oliver, 2003; Negretti, 1999; Toyoda & Harrison, 2002). In three empirical studies, however, second language learners conversed with native speakers using Skype (Dalton, 2011; Ryobe, 2008; Tian, 2011).

For example, Tian (2011) conducted a between-group experimental study to compare the effects of audio conferencing and videoconferencing on learners' development of oral proficiency in Chinese. The 36 non-native speakers were undergraduates in the Chinese language programs at two accredited universities in the United States. The 36 native Chinese speakers were enrolled in a master's degree in Teaching Chinese to Speakers of Other Languages (TCSOL) at a top-five teacher education university in eastern China. The participants were randomly assigned to audio and video treatment groups, and they had conversations using Skype that lasted 30 minutes each session, three sessions a week for four weeks. It was found that the students in the videoconferencing group improved their oral language proficiency significantly more than the students in the audio conferencing group (Tian, 2011).

Similar to Tian's (2011) study, Ryobe (2008) also found that the effect of video chat is more significant than voice chat in improving language learners' oral communication skills. Ryobe's (2008) two-year study examined how audio and video chat activity between Japanese college students and Filipino English teachers using Skype improved students' oral communication skills and motivation toward autonomous

learning. The results from the pre- and post- tests and the interviews revealed that the Japanese students were highly engaged in the Skype conversations and their motivation towards learning English greatly improved. The 55 Japanese students who participated in the video chat in the second year performed better than the 40 Japanese students who had audio chat in the first year. Though the differences could be attributed to the video format of Skype conferencing versus the audio format of the first year, there is a possibility that the researcher taught and organized the second year class better than the pilot year. Nonetheless, the effects of audio and video conferencing on language learners' oral communication skills require further exploration and study.

Among the three empirical studies examining the effects of Skype-based videoconferencing, Ryobe's (2008) study resembles most of the logistic designs of this study. However, there were a few distinct differences between Ryobe's (2008) study and the VCPP study. For example, in Ryobe's (2008) study, the conversation partners were not English native speakers, but Filipino English teachers who spoke English as a first language in Philippines. Secondly, the Skype conversations were scheduled during class time. Therefore, Ryobe (2008) noticed several drawbacks, such as high background noise level, low video qualities, frequent disconnections and lack of privacy (Ryobe, 2008). Third, the Japanese students and the Filipino teachers conversed 25 minutes per session for 8 times per semester. That is only a total of 4 hours of conversations on Skype between the pre- and the post- tests in Ryobe's study compared to an average of 7 hours of virtual conversations on Skype in the VCPP study.

The above two studies both used a native-speaker (NS) to non-native-speaker (NNS) configuration. In the field of CMC-based language learning, there has been a

debate whether NS-NNS or NNS-NNS is more effective in developing language learners' oral communicative competence (Blake, 2000). Only one study used a direct, controlled comparison between communication within NS-NNS and communication within NNS-NNS (Dalton, 2011). Dalton (2011) found that the NNS-NNS configuration is more effective than the NS-NNS measured by frequency of conversational turns and negotiation of meaning. However, the interaction between four NNS-NNS pairs and five NS-NNS pairs in this study only took place in three Skype sessions. Therefore, the limited number of Skype Chat sessions is a central limitation of this study. The data set was too small to generate applicable results. Despite this limitation, this study paved some foundational work on using synchronous videoconferencing, specifically Skype, to develop language learners' oral communication competence. Future research will be necessary to incorporate a greater volume of videoconferencing sessions to allow the possibility of finding statistically significant results.

Additionally, researchers have found that videoconferencing provides paralinguistic cues, such as body language and facial expressions, which facilitate meaning comprehension and reduce occurrences of interruptions (Ryobe, 2008; Tian, 2011; Yamada, 2009). Further, the images improve social presence and create a natural interaction environment, which is the key to intercultural communication (Yamada, 2009). The common challenges identified in videoconferencing projects include both scheduling difficulties due to time differences (Levy & Stockwell, 2006; Tian, 2011) and technical issues, such as network connections, sound and image transmission (Ryobe, 2008; Tian, 2011).

Some researchers explored the effects of using Skype as a communication tool to facilitate intercultural classroom-to-classroom collaboration across nations (Dooly & Ellermann, 2008; O'Brien, 2011). Though their focus was not on second language learning, both projects demonstrated that young people around the world have a strong desire to talk with people of similar ages from different cultures. For example, the Cross-Cultural Rhetoric (CCR) Project is a program at Stanford University that used Skype for intercultural interaction and integrated three modes of videoconferencing: class-to-class, group-to-group, and student-to-student (O'Brien, 2011). Each quarter, more than 500 Stanford students participate in CCR activities. During the past five years, Stanford students from various disciplines have made nearly 120 connections with students from Australia, Egypt, Russia, Singapore, and Sweden using Skype. They participated in both one-to-one and small group discussions and peer-review activities. Blogs and collaboratively written, cloud-based documents were used as well for reflective journals and peer-reviewed writings. CCR was found to have facilitated "increased sensitivity, expanded worldviews, empathy, and communication abilities for connecting and negotiating across cultural differences and across global subject positions" (O'Brien, 2011, p. 41). Another project that used Skype for audio chatting is the MICaLL Project. The two schools involved in this European Union funded project connected their students so that they could participate in online activities collaboratively. In the feedback from the partner teachers, Dooly & Ellerman (2008) found that they agreed: "There was a need to move away from more static interaction with computers to a dynamic interaction wherein the students see a real reason for using the language—because there is someone 'on the other side' interested in knowing about them and what they are doing" (p. 184).

Summary

Researchers have investigated the use of various types of synchronous and asynchronous tools for ESL/ESOL learning and intercultural communication. Some studies have found positive effects of using computer-mediated communication to interact with English native speakers, such as facilitating students' interactions (Belz, 2002), collaboration (Hsieh, 2007), and meaning negotiation (Blake, 2000), and promoting students' awareness of their linguistic competence (Blake 2000). Further, CMC offers opportunities for language students to experience authentic and meaningful intercultural communication across nations (Belz, 2005; Liu, Moore, Graham, & Lee, 2002; Thorne, 2003; Zhu et al., 2005). In addition, Byram's (1997) ICC model has been widely accepted in the intercultural CMC-based second language research. Based on all the above findings, a synchronous videoconferencing tool, such as Skype, has great potential in facilitating intercultural communication between ESL/ESOL students and English native speakers in cross-national projects. Therefore, in this study, the researcher chose Skype as the platform for the Virtual Conversation Partner Program and Byram's (1997) ICC model as the framework to assess incoming international students' intercultural communicative competence development.

Chapter 3 Methods

The following sections describe the methods for this study, including a description of the research design of the study, followed by a description of the school, the program, and the sample. This will be followed by a description of the two phases of the data collection and the procedures used for each phase. This chapter concludes with limitations and delimitations of the study, assumptions, ethical considerations, and the role of the researcher.

Research Design

This study used a mixed-method study design (Creswell, 2011) that utilizes both quantitative and qualitative data to address the study's focus upon international students' developing intercultural communicative competence (ICC). Three questions guided this study: (a) To what extent and in what ways, if at all, did video-based, real-time virtual interaction affect incoming international students' ICC development? (b) What factors predicted international students' perceived ICC, if any? (c) Which factors were perceived by participants to contribute to meaningful virtual intercultural communication between incoming international students and American domestic students? and (d) What perceptions or attitudes of international participants have changed as a result of virtual conversations with American domestic students? What facilitated this change?

The researcher used a postpositivistic worldview to answer the research questions. Postpositivism is "an epistemology that assumes an objective reality, but that this objective reality can only be known imperfectly" (Gall, Gall, & Borg, 2007, p. 16). Post-

positivism asserts that we construct our worldview and make claims for knowledge based on “(a) determinism or cause-and-effect thinking; (b) reductionism, by narrowing and focusing on select variables to interrelate; (c) detailed observations and measures of variables; and (d) the testing of theories that are continually refined” (Creswell, 2011, p. 40). In this study, the researcher examined selected variables (for example, videoconferencing hours, previous intercultural experiences, and measured ICC) to determine possible factors contributing to international students’ potential ICC changes. The researcher acknowledged the tendency for error and bias in data collection. Therefore, this study emphasized the importance of multiple measures, different types of data, including both quantitative and qualitative, and using triangulation to discern as objective a description of the study’s focus as possible. Additionally, the researcher followed appropriate procedures to ensure that she did not generalize the claims beyond what could be supported by the empirical findings (Gall et al., 2007).

This study used a sequential explanatory mixed-methods design, consisting of a quantitative phase and a qualitative phase (Creswell, 2011). In this design, the quantitative data were collected through electronic surveys. Qualitative data were generated to help explain or build upon initial quantitative results (Ivankova, Creswell, & Stick, 2006). The results from the quantitative phase led to the selection of interview participants during the second phase of data generation. The themes from the qualitative phase helped explain the main effects discovered from analysis of the quantitative data, and also provided a different form of support for the quantitative findings. The qualitative data painted a more personal picture of the international participants’ experiences. As a result, the researcher’s understanding of the research problem was enriched (Glesne,

2011; Meloy, 2002). The researcher will address the specific connections between the quantitative and qualitative findings in chapter 4 and 5.

The following sections provide information on methods of sample selection, data collection and data analysis. Results and procedures from two pilot studies are detailed as well, including how the researcher developed the Intercultural Communicative Competence Inventory (ICCI) and how this instrument's reliability and validity were tested. Ethical considerations and role of the researcher are also explained.

The School

The campus on which data were collected and generated is located in a small southern city with fewer than 20,000 residents. The university is considered to have strong undergraduate programs and top graduate programs in education, law, and business. It is ranked as one of the best public colleges in the U.S. It has students from over 40 states and the District of Columbia and over 50 foreign countries. In 2014, it had about 6,000 undergraduates and 2,000 graduate students with 31 percent being students of color. 81 percent of freshmen graduated in the top ten percent of their high school classes. 75 percent of the undergraduate students participate in community service projects and more than 45 percent of the students study abroad in more than 45 countries at some point in their undergraduate career. The student-faculty ratio is 12:1. More than 80 percent of undergraduate courses have fewer than 40 students registered. The college has 5 undergraduate and graduate schools, over 30 undergraduate programs, and more than 20 graduate and professional degree programs.

Summary of the Program

The Virtual Conversation Partner Program (VCP) is a peer-based program that

promoted intercultural communicative competence through virtual conversations on Skype. The VCPP paired American domestic students from the university with incoming international students. Each pair scheduled conversations on Skype, one hour per week, for three months in the summer, for a total of at least 10 hours of conversation by the end of the summer. The hours varied, based on students' availabilities and schedules. The participants had freedom to choose their own topics of conversation. However, during the orientation for the American domestic students, the director of the VCPP offered tips and recommendations in terms of how to be good conversation partners. The university's international student advisor also provided suggestions on how to interact with international students. Based on responses in the applications from both American students and international students in the 2012, 2013, and 2014 programs, making friends and learning a new culture were the strong attractions of this program. For international students, being able to practice their spoken English and ask questions about the university were especially important. Seventy-four international students and 63 domestic American students participated in the pilot program in summer 2012. Forty-three international students and 40 domestic American students participated in the VCPP 2013 program. Sixty-two international students and 60 domestic American students participated in the VCPP 2014 program, which served as the participants' pool for this study.

Participants

A population of all of the incoming international students admitted in fall 2014 at this public university in the U.S. was utilized in the study. The sample of the treatment group ($n = 43$) was drawn from the incoming international students who completed the

VCPP in summer 2014. The sample of the comparison group ($n = 12$) was drawn from the international students who did not participate in the VCPP in summer 2014. The sample of the domestic students ($n = 44$) was drawn from the domestic students who completed the VCPP in summer 2014. Participation was voluntary.

Phase I: Quantitative Data Collection

During the quantitative data collection phase, the research design was quasi-experimental, in which participants were not randomly assigned to conditions (Gall et al., 2007). The sample in this quasi-experimental study was the incoming international students who either participated in the VCPP or who did not. In this study, the comparison group was composed of international students who did not participate in the VCPP. The treatment group included the international participants of the VCPP. During this first phase, the researcher used the Intercultural Communicative Competence Inventory (ICCI), a self-developed instrument, to collect pre-, semi- and post-intervention data on participants' intercultural communicative competence (ICC). The international participants completed the pre-test (see Appendix A) before they were assigned to virtual conversation partners, then the semi-test (see Appendix A) immediately following their first videoconferencing sessions, then lastly, the post-test (see Appendix B) after their arrival on campus. The reason for collecting the semi pre-ICC scores was to exclude the possibility that the pretest scores were inflated due to the overconfidence of international students prior to their arrival (Gu et al., 2010). After one session of videoconferencing with an American student, the international participants were expected to have a more realistic assessment of their ICC, especially their spoken language. The domestic participants were asked to evaluate their conversation partners'

ICC at the beginning (after one videoconferencing session) and the end of the program using the ICCI. The items were the same, except the subjects were changed (see Appendix C). For example, the item “My spoken English in general is” was changed to “My conversation partner’s spoken English is.” These data generated by the American domestic students provided a more objective evaluation on the effects of the virtual interaction on international students’ ICC. Apart from the pre-, semi pre-, and post- ICC scores, the researcher also collected data on number of videoconferencing hours as well as demographic information such as gender, program type (undergraduate or graduate), native languages, schools (Arts and Sciences, Law, Business, Marine Science, and Education); and previous intercultural experiences. The international students from the comparison group completed the pretest in May and June and the posttest in late August and early September.

Instrumentation. One objective of the pilot studies was to test an instrument that was developed during the pilot studies. If its inferences are valid and reliable, then it can be used in the future to assess international students’ intercultural communicative competence. A Likert-type scale was selected as the measurement design for the survey. The scale ranged between 1 (*totally disagree*) and 5 (*totally agree*). The choices for responding to each original statement included totally disagree, disagree, not sure, agree, and totally agree. The scores of the responses for each item were summed to yield the individual’s perception score. Thus, the total scale was a summated rating scale.

Based on Byram’s ICC model (1997), four latent constructs were identified in the survey: linguistic competence, sociolinguistic competence, discourse competence, and intercultural competence. For each category, five preliminary statements were created to

reflect international students' perceptions of their ICC development after participating in the conversation partner program. Twenty statements were included in the original version of the survey: 16 were worded positively while 4 were worded negatively. The final version of the survey included 14 statements with the scale ranges between 1 (*poor/disagree*) and 5 (*excellent/totally agree*). The order of the statements was based on the four categories while the categories were not labeled on the survey.

The pre-participation survey also included additional demographic questions, such as native/first language, prior international experience in other countries, gender, year in college and total hours of videoconferencing. At the end of the post-participation survey, two open-ended questions asked international students' perceptions of their ICC development: (1) Do you think your understanding of American culture has changed? If so, what facilitated this change? (2) Do you think you are better at explaining your home culture to American students? If so, what facilitated this change?

Pilot Studies. Piloting is an effective strategy to test the clarity and reliability of an instrument (Teijlingen, Rennie, Hundley, & Graham, 2001) and the merit of a new procedure (Gall et al., 2007). The pilot study should include a sample of individuals from the target population and the instrument developed should be revised and retested based on the sample members' feedback (Gall et al., 2007). "Well-designed and well-conducted pilot studies can inform us about the best research process and occasionally about likely outcomes," according to Teijlingen et al. (2001, p. 4). The researcher conducted two pilot studies to test the psychometric properties of the instrument and to correct the flaws of the procedure in 2012 and 2013 respectively. One flaw in the first year pilot was that the items on the online survey did not require validation, such as forced answer. As a result,

missing data occurred in several responses. To prevent this from happening again, validation (forced answer) was added to most of the questions in the second year.

Practical lessons were learned through the pilot studies. For example, one lesson learned from the first pilot was that the survey response rate was lower than expected (the response rate was 32%). The second pilot demonstrated the necessity of changing some of the procedures. One of them was to change the timing of recruitment. The researcher needed to reduce the gap between the domestic and international recruitment schedules in order to maintain American domestic students' interest levels. Most of the American domestic students were eager to get paired up right after the orientation in April while the majority of applications from the international students weren't submitted until early May. Second, the domestic orientation content needed to be enriched. Based on participants' feedback, a list of possible conversation topics would be helpful to include.

Phase 1. The sample for the first pilot study was drawn from the face-to-face conversation partner program on campus. There were 80 international students who participated in this face-to-face program from 2009 to 2011. Prior to sending out the research invitation email and the survey link, the director of the face-to-face conversation partner program at the college sent out an email briefly describing the project and the opt-out option. Out of the 80 email addresses, 6 were invalid with undeliverable messages received. One week after this email, the survey was launched on line via Survey Monkey and the link to the survey was emailed to the 74 potential participants. The survey was open for a month, during which time three reminder emails were sent out to the potential participants. Three \$15 gift cards for Target were offered as incentives for participation. The names of participants were randomly drawn to win the gift cards. Of the 74

individuals selected to participate in the pilot study, 24, or 32%, completed and returned the survey as requested. One possible explanation of this low response rate was that the majority of participants had graduated from the university, thus they were not checking their previous school emails.

The 24 participants in the first pilot study roughly represented the diversity of the target population except that graduate students were over represented in the sample. 80% of the participants were graduate students. (See Table 2)

Table 2

Demographic Characteristics of Participants in Pilot Study 2011 (N = 24)

	n	%
Gender		
Male	11	49
Female	13	51
Years		
Undergraduate	2	8
Graduate	19	80
Post-doc	1	4
Scholar	1	4
Language House Tutor	1	4
Native languages		
Chinese	14	59
Japanese	5	21
Korean	1	4
Ukrainian	1	4
Bahasa Indonesia	1	4
Sinhalese	1	4
Spanish	1	4

Phase 2. The second phase studies were conducted in summer 2012 and 2013. The sample of individuals was drawn from the international participants in the VCPP 2012 and 2013 (see Table 3). The survey was launched online through Qualtrics and remained open for more than one month. Three reminder emails were sent to all participants during the months and six Target gift cards were provided each year as incentives. The names of participants were randomly drawn to win the gift cards.

Table 3

Demographic Characteristics of Sample 2012 and 2013

	2012 (N = 33)		2013 (N = 23)	
	n	%	n	%
Gender				
Male	11	33	7	30
Female	22	67	16	70
Years				
Undergraduate	15	45	12	52
Graduate	18	55	11	48
Home countries				
China	30	91	19	83
India	2	6	1	4
Austria	1	3	0	0
Japan	0	0	3	13

In the 2012 pilot study, 45% (33 out of 74) of international participants completed the survey. The average videoconferencing hours were 10 hours and ranged between 3 and 50 hours. The findings from the 2012 pilot study showed that (a) the VCPP international participants have higher, non-significant gains in linguistic, discourse, and intercultural competences than the CPP international participants; and (b) international participants have more significant gains in sociolinguistic competence in the face-to-face

context than the virtual ($p = .000$); and (3) the videoconferencing hours and satisfaction scores are positively correlated at significance level ($p < .05$).

In the 2013 pilot study, 54% (23 out of 43) of international participants completed both the pre- and post- ICC tests. The average videoconferencing hours were 7.8 hours and ranged between 2 and 20 hours. Similar to one of the three findings from 2012 study, the 2013 study also demonstrated that the videoconferencing hours and international participants' satisfaction scores are positively correlated ($r = .477, p < .05$). While the post-test ICC scores of international participants were higher than the pre-test scores, they were not significant.

Gender was found to be significantly correlated with international students' ICC gain ($r = .427, p < .05$). Since the ratio of female ($n = 16$) over male ($n = 7$) is 2.6, there was a high possibility that the unequal variance existed between female and male participants. To test this hypothesis, the researcher ran an independent-sample T-test. Levene's test for equality of variances ($F = 8.583, p < .01$) found that equal variances can not be assumed between male and female participants. As a result, no significant ICC gain difference was found between female and male participants.

Validity. There are various validities associated with a self-developed instrument. Among them, content-related validity and construct validity can be determined through expert review, pilot studies, and data analysis (Cohen & Swerdlik, 2010; Gall et al., 2007).

Content-related validity. Content experts typically assess the content-related validity by determining how well the test items represent the intended domain of the content (Gall et al., 2007). The Intercultural Communicative Competence Inventory

(ICCI) was constructed to measure intercultural communicative competence. The theoretical framework for this instrument was Byram's Intercultural Communicative Competence model (ICC, 1997). Byram's ICC model integrates four competences: linguistic, social linguistic, discourse, and intercultural. Therefore, the items on the survey address each of the four categories. For example, the items under the linguistic competence category include English pronunciation, vocabulary, grammar, fluency, and spoken English in general. The items about sociolinguistic competence address English conversational skills, confidence, self-consciousness, and social awkwardness. Discourse competence was interpreted as sensitivity to corrections, topic initiation, body language, and questioning styles. Lastly, the intercultural competence addressed cultural awareness, openness, reflection on home culture, and understanding of American culture. After the survey was drafted in spring 2011, three content experts, including an English as a Second Language (ESL) instructor from the ESOL office, an international student and scholar advisor, and an ESL professor from the Modern Language Department, reviewed the survey and offered suggestions on the content. Specifically, the reviewers suggested that the item of "I always questioned my conversation partner when I disagreed with his/her opinions" and the item of "I am sensitive to corrections and it makes me uncomfortable to be corrected" were too difficult to interpret. The researcher removed these items after the analysis of reliability coefficient confirmed this observation.

Reliability. The reliability of the survey was tested in the pilot studies. In the first pilot study conducted in November 2011, the Cronbach's alpha reliability coefficient was calculated for the 20 selected items in an effort to determine the degree of internal consistency of this questionnaire. The resulting Cronbach's Alpha was $\alpha = .892$. This was

considered to be adequate for internal reliability (Cohen & Swerdlik, 2010). If any of the four items were removed from this questionnaire, the Cronbach's Alpha would increase slightly: "I am self-conscious about my accent" (if item deleted, $\alpha = .907$); "It is always my conversation partner who initiates new conversation topics" (if item deleted, $\alpha = .921$); "I always questioned my conversation partner when I disagreed with his/her opinions" (if item deleted, $\alpha = .930$), and "I am sensitive to corrections and it makes me uncomfortable to be corrected" (if item deleted, $\alpha = .935$). This result correlated with the suggestions from the expert review. When the original questionnaire was submitted for content expert review, the item of "disagreement" and the item of "sensitivity" were suggested to be too difficult to interpret. Therefore, the four items were removed from the original questionnaire for the phase 2 pilot. Though the Cronbach's Alpha would improve to .949 if six additional items were removed, the researcher considered them to be important components of the content. Therefore, the six items of "clarification, awkwardness, openness, awareness, explanation, and respect" were kept on the questionnaire. The researcher would decide whether to keep them after the data from the second pilot study in September 2012 was analyzed.

With further analysis on the correlations among items in each subcategory, the researcher found: (a) There are strong correlations among all five items under linguistic competence; (b) In the subcategory of sociolinguistic competence, the item "My conversation partner and I have/had awkward moments or silence during our meetings" had weak correlations with other items ($p < .05$). The item "I am self-conscious about my accent" had no correlation with other items; (c) The five items in the subcategory of

discourse competence were not consistently correlated; and (d) The five items in the subcategory of intercultural competence are not consistently correlated.

Analysis on the correlations among all four competences identified a significant correlation among linguistic competence, sociolinguistic competence, and intercultural competence (see Table 4). Discourse competence correlated with both linguistic competence and sociolinguistic competence ($p < .05$), but had no correlation with intercultural competence. These important findings led to a re-examination of the original survey structure. Combined with the calculation of Cronbach's Alpha explained in the next section on reliability, several items were removed from the survey used in the second pilot study.

Table 4

Intercorrelations for Subscales of ICCI in Pilot Study 2012

	1	2	3	4
1. Linguistic competence				
2. Sociolinguistic competence	.75**			
3. Discourse competence	.48*	.42*		
4. Intercultural competence	.73**	.62**	.32	

* $P < 0.05$ (2-tailed); ** $P < 0.01$ (2-tailed).

In the second pilot study conducted in summer 2012, the Cronbach's Alpha was calculated for the 16 items after removing the 4 items from the original survey used in the first pilot study. The resulting Cronbach's Alpha was .903, which was higher than the original .892 with 20 items. When Listwise deletion was administered, the Cronbach's Alpha went up to .925 if the item of "awkwardness" was removed. Then after the item of "clarification" was removed, the Cronbach's Alpha changed to .940. Since these two items had weak correlations with other items in the subcategories of sociolinguistic

competence and discourse competence respectively, it was reasonable to remove them to achieve a better internal consistency.

The finalized survey now has 14 items with four latent constructs: Linguistic Competence (5 items), Sociolinguistic (3 items), Discourse (1 item), Intercultural Competence (5 items). As shown by Table 5, all four competences inter-correlated with each other at .05 level. The data from the second pilot study supported the researcher's previous decision to keep the six items since it turned out only two out of the six items needed to be removed. Some of the statements are reworded into a self-assessment structure that can be used for both pre- and post- tests. For example, the original item, "my conversation partner helped me with my English pronunciation" is rewritten as "my English pronunciation is: 1 = *poor*; 2 = *below average*; 3 = *average*; 4 = *above average*; 5 = *excellent*. The final ICCI instrument is in Appendix A.

Table 5

Intercorrelations for Subscales of ICCI in Pilot Study 2013

	1	2	3	4
1. Linguistic competence				
2. Sociolinguistic competence	.74**			
3. Discourse competence	.47*	.39*		
4. Intercultural competence	.81**	.74**	.63**	

Note: $P < 0.05$ (2-tailed); ** $P < 0.01$ (2-tailed).

Data analysis. The researcher used Statistical Package for Social Sciences Software (SPSS) version 22 to conduct all statistical analysis of the quantitative data. The researcher considered inferences from the final version of the ICCI reliable and valid after detailed analysis of pilot study data and careful corresponding changes. The

responses to the 14 statements included in the questionnaire were assigned a value of 1 through 5. Both the comparison group and treatment group participants generated pre- and post- test scores. Additionally, the treatment group generated semi pretest scores after one videoconferencing session. The American participants also evaluated their conversation partners' ICC at the beginning and the end of the program. The test scores were analyzed by using raw scores. The raw score on the ICCI test ranged from 14 to 60. A score of 42 represented an average ICC.

Exploratory data analysis. The researcher computed descriptive statistics for each group in the study, including demographic information such as gender, class rank, and native languages (Gall et al., 2007). The researcher computed the group mean as an ICCI total score. Each standard deviation was also calculated.

First, there was a possibility that the pretest scores were inflated or deflated due to the participant's overconfidence or under-confidence prior to their interactions with native speakers. There were 28 participants in the treatment group who took both the pretest prior to their first videoconference session and the semi-test right after their first videoconference with their virtual conversation partners. The researcher used a paired-samples *t* test to compare international students' pre- and semi-test scores to determine whether there was any significant difference. The semi-test ICC scores ($M = 55.14$, $SD = 7.53$) were higher than the pretest ICC scores ($M = 53$, $SD = 8.27$), but not statistically significant, $p = .061$. As a result, the researcher considered the pretest ICC scores as objective without suspected inflation. The researcher chose to use the pretest ICC scores in the following data analysis.

In this study, the researcher tried to avoid using gain scores to determine the effect of the treatment. A gain score is the posttest score minus the pretest score (Gall et al., 2007). Gain scores are problematic and can cause serious difficulties to measure the amount of change that has occurred in individuals as the result of an intervention. The ceiling effect and regression toward the mean are two problems of interpretation if raw gain scores are used in this study to measure the amount of ICC change. A ceiling effect occurs when the range of difficulty of the test items is limited, placing a restriction on the distribution of gain scores across levels of initial ability. Regression toward the mean is the tendency for research participants who score either very high or very low on a measure to score nearer the mean when the measure is re-administered. The researcher has chosen adequate statistical procedures to overcome some limitations of gain scores. The process will be described in detail below.

Data screening. The second step of data analysis is data screening. To ensure the statistical technique used in the study was an appropriate test for the data collected, the researcher screened the data on normality, linearity, and homogeneity of variance using standard procedures (Giles, 2002). Chapter 4 lists the results for testing various assumptions.

In order to decide whether to use an ANOVA or ANCOVA to test the group differences, the researcher ran an independent-samples *t* test to see whether the pretest ICC scores were significantly different between the treatment and comparison groups. There were 53 participants in the treatment group and 20 participants in the comparison group. There were no outliers in the data, as assessed by inspection of a boxplot. Pre-ICC scores for each group were normally distributed, as assessed by Shapiro-Wilk's test ($p >$

.05), and there was homogeneity of variances, as assessed by Levene's test for equality of variances ($p = .879$). The comparison group participants' pre-ICC was higher (60.70 ± 8.12) than treatment group participants (54.64 ± 8.05), a statistically significant difference of 6.06 (95% CI, 10.28 to 1.84), $t(71) = 2.862$, $p = .006$. Since the independent-sample t test showed a significant difference between the pretest scores of the comparison and the treatment groups, it indicated a possibility that the pretest difference might contribute to the posttest scores. In this case, the researcher decided to use analysis of covariance (ANCOVA) to compare the group mean differences on the ICC scores in the quantitative data analysis.

Phase II: Qualitative Data Generation

The qualitative data were generated in three different stages and types. First, applications completed by the international participants provided brief information about their expectations of and motivations for joining this program. Second, two open-ended questions that appeared at the end of the ICCI survey prompted the international participants to describe their individual experiences of conversing with their virtual conversation partners. Third, semi-structured interviews conducted with selected participants (as described below) further explored factors that participants perceived to be contributing to any changes noted in their intercultural communicative competence as a result of participating in the VCPP.

After the ICCI survey post-participation data were collected in September 2014, the treatment group was divided into three subgroups based on their ICC gains: negative gain (NG), zero gain (ZG) and positive gain (PG). Then the researcher randomly selected two participants from each of the three subgroups with whom to conduct semi-structured

interviews. Additionally, the researcher interviewed one more Chinese student who had positive ICC gain. As a result, seven international students completed interviews.

Interviewing is an effective method for prompting participants to articulate their understandings. Interviewing offers an opportunity to learn about what the researcher cannot see and to explore alternative explanations of what the researcher does see (Glesne, 2011). The Interview Protocol (Appendix H) included open-ended questions that were designed to elicit participants' reflections upon their experiences of the virtual interactions with their American partners.

The interview protocol was pilot-tested with two international participants from the VCPP 2013. The pilot interviews alerted the researcher to any communication problems, evidence of inadequate motivation, and questions requesting sensitive information. Additionally, different respondents interpreted the same question differently. Based on the pilot interviews, the researcher rephrased questions that were ambiguous and revised the procedure to establish the best rapport and cooperation between participants and researcher (Gall et al., 2007).

Each interview lasted between 44 and 72 minutes, depending on the length of participants' responses. The average length of all seven interviews was 56 minutes. In addition to asking the questions listed in the Interview Protocol, the researcher asked follow-up questions based upon participants' responses to explore the aspects international students perceive as critical in contributing to meaningful conversations, deeper reflections, and potential long-term friendships with their VCPP partners. This information enriched the researcher's understanding of international participants' ICC development in this unique virtual environment. The interviews specifically shed light on

how, if at all, the virtual interactions with their American conversation partners affected the international students' ICC development. The interviews focused on what the international participants learned from the virtual conversation experience and why they perceived this experience to be beneficial or not. Additionally, the interviews provided insights on what individually perceived factors (for example, motivations to participate; perceived virtual conversation partners' friendliness; common interests) contribute to meaningful interactions through videoconferences.

The participants received the interview questions by email prior to the scheduled interviews and were informed that the interview would be audiorecorded and transcribed verbatim. The participants received written summaries of the interview transcripts. They then had an opportunity to review and correct their interview's summary as needed. The summary was written in first person (as if it was the participant speaking) to ensure correct understanding. The researcher utilized various communication options (such as emails, telephone, and Skype) to gather corrections from interview participants.

Data analysis. Guided by a grounded theory data analysis strategy (Corbin & Strauss, 2008), the researcher first transcribed the interviews and preliminarily explored the data by reading through the transcripts and writing memos about recurring expressions, topics and rationales. This step originated some open codes. Second, the researcher segmented the text according to different topics. The researcher assigned open codes to units of data. The size of the unit was sentence. Third, the researcher used the open codes to develop themes by aggregating similar codes together. Fourth, based upon common themes and interrelationships, the aggregated data were categorized and labeled with axial codes. Lastly, preliminary results in the form of higher-level themes (selective

codes) were derived. This inductive approach to data analysis helped the researcher to ensure that the study's results emerged from data and therefore, were evidence-based (Corbin & Strauss, 2008; Glesne, 2011; Ivankova et al., 2006). The researcher constructed a narrative to answer the third and fourth research questions, which addressed the factors perceived to contribute to meaningful virtual intercultural interaction between international students and American domestic students and the changes as a result of virtual conversations with American students.

Limitations and Delimitations of the Study

This study focused on incoming international students accepted for admission to a mid-size higher education institution located in the southeastern United States. The sample size was relatively small ($N = 53$). The origins of the international participants' home countries were rather limited. Two limitations of the study should be recognized, as described below: the threads to internal validity and external validity.

Internal validity. The following section will address potential issues involving internal validity, including characteristics, history, and attrition.

Characteristics. All international participants were incoming international students in the fall 2014, but they had varied socioeconomic status, ethnicity, gender, culture, and religions. Their different backgrounds might have influenced their answers of certain questions on the ICCI tests. Since participation was voluntary, the researcher was not able to randomly assign students into two equitable groups. There was an initial difference between the two groups. In order to reduce the possibility that the initial difference was the main cause of the group difference, the researcher used analysis of

covariance (ANCOVA) to control for initial differences between the two groups (Gall et al., 2007).

History. During the study period, the participants' various levels of personal interactions with the target culture might have contributed to their posttest achievements. In order to minimize the unbalanced effect, the participants were asked to provide information on their exploration of American culture during the summer. The extreme cases were eliminated from both groups. For example, one participant arrived in the U.S. in early July and spent two months exploring the local community and campus. Another Chinese participant studied in the UK for her freshman year. These two participants were considered as extreme cases because they had higher level of interactions with the target culture or language. Therefore, these two participants' ICCI scores were skewed compared to other participants. Their data were deleted from the final analysis.

Attrition. Some participants might have dropped out of the study if they experienced isolation, embarrassment, or rudeness during videoconferencing. The researcher monitored the conversation partners' Skype logs on Google Docs to ensure appropriate interaction and discussion to minimize the mortality threat. The researchers also communicated with participants through emails if they were not meeting the minimum requirements of Skype hours.

External validity. First, both international and American domestic participants in this study were volunteers. These students were motivated to have a virtual intercultural interaction experience. The use of volunteer participants in the study limited the external validity of the study, since the sample might not be representative of the population of incoming international students or of American domestic students who interact with

them. Specifically, international students who applied to participate in the VCPP could be highly motivated to interact with American domestic students or highly confident in their spoken English or both, compared to other incoming international students. Therefore, the findings of the study may not be generalizable to international students with lower interest or less motivation to improve their spoken English.

Second, although the findings from this study could be replicated in other studies examining international students' intercultural communicative competence, it is possible that the relatively small sample size threatens the power and limit the generalizability of the results. A minimum of 15-30 participants per group will be required to justify the statistical findings (Mackey & Gass, 2005). In addition, the participants in this study came from only one higher education institution in the U.S. Therefore, the findings may not be applicable to other institutional types or institutions located in other geographic regions.

Assumptions

The researcher assumed that the perception scores on the pre- and post- tests were the true reflections of the international participants' intercultural communicative competence. Though the instrument has been validated through two pilot studies and its reliability is .940, the items on the ICCI are self-perception statements. Therefore, there was a possibility that the scores might not accurately reflect international participants' actual intercultural communicative competence. The researcher was aware of this possible flaw and used various quantitative and qualitative evaluation data to confirm the assumed effects. For example, American domestic students also completed surveys to evaluate their virtual conversation partners' ICC both at the beginning and the end of the

program. However, as researchers in the field of second language acquisition point out, perceived social and psychological distance may affect language acquisition (Polat & Schallert, 2013; Schumann, 1976). For example, if an individual language learner believes there to be a great social or psychological distance between his or her home culture and the target culture, then this will negatively impact language acquisition – whether or not such a distance actually exists. Perception becomes reality for the individual. Therefore, self-reporting of perceived cultural differences may, in fact, be more meaningful than objective measures.

Ethical Considerations

The following section presents steps the researcher has taken in the study to ensure ethical considerations, including obtaining human subjects approval, informed consent and maintaining privacy and confidentiality.

Human subjects approval. The researcher submitted the application to Education Internal Review Committee (EDIRC) in April after passing the proposal defense. The EDIRC determined that the study complied with institutional regulations and the human-subject provisions of the Code of Federal Regulations for the Protection of Human Subjects (Gall et al., 2007).

Informed consent. The researcher informed each participant about “what will occur during the research study, the information to be disclosed to the researchers, and the intended use of the research data that are to be collected” (Gall et al., 2007, p. 82). Participants had the freedom to withdraw from the study at any time. A letter describing the research and the conditions was sent to each participant electronically. The participants electronically signed and returned the letter to the researcher prior to their

participation in the study. Appendix D, E, F, and G contain four informed consent forms that were sent specifically to the following: comparison group, treatment group, interview group, and domestic participants.

Maintenance of privacy and confidentiality. To protect the confidentiality of participants' identities, each returned questionnaire was numerically coded and kept confidential. The individual interviewees were assigned fictitious names in the transcripts and the final report. The researcher collected, analyzed and reported all data and kept them on a safe computer with password protection. The data were destroyed after the study was complete. No one except the researcher had access to the identities of the participants and their responses on the survey and during the interviews.

The Role of the Researcher

The researcher's involvement with data collection and generation was different in the two phases of the study. In the quantitative phase, the researcher administered the survey, collected the data, and analyzed the data using standardized procedures and robust statistical analysis techniques. In the qualitative phase, the role of the researcher was participatory, due to the fact that the researcher is also the director of the VCPP, and the interviewer during the interviews.

The responsibilities of the program director included screening applications, conducting orientation sessions, pairing up conversation partners, responding to participants' emails and Skype messages, and organizing gatherings for participants. Therefore, the researcher might develop supportive or even personal relations with some participants during the process. Further, the researcher herself came to the same institution as an international student in 2003, graduated with a Master's degree, and was

in a doctoral program. The researcher experienced similar challenges and growth to the study's participants, brought by intercultural interactions with American students. Given these similarities, there was a possibility that the researcher might form bias and subjective interpretations of the phenomenon being studied (Creswell, 2010).

At the same time, the researcher's intercultural experiences were different from the participants in the VCPP. The researcher has been living in the U.S. for the past 12 years and has taught in an American middle school for four years and in an American high school for two years. These experiences might lessen or increase the potential for bias. Therefore, the researcher used extensive verification procedures to establish the accuracy of the findings including triangulation of data and member checking. In addition, the researcher's dissertation committee was supervising data collection, generation, and analysis.

Summary

This study design was sequential mixed-methods. The researcher collected quantitative data during the first stage of the study, the quasi-experimental phase. After entering pre- and post-tests data from both treatment groups and comparison groups into SPSS, the researcher conducted descriptive data screening to generate three simple groups based on their ICC gains: negative gain, zero gain and positive gain. Then, the researcher recruited interviewees from each of these three groups. In the next chapter, the researcher will present the research results sequentially, first from the quantitative data analyses, then from the qualitative data analyses.

Chapter 4 Results

The purpose of this mixed methods study was to determine the effects of virtual conversations with American students through videoconferencing on international students' intercultural communicative competence (ICC) development. Four research questions guided this study: (a) To what extent and in what ways, if at all, did video-based, real-time virtual interaction affect incoming international students' ICC development? (b) What factors predicted international students' perceived ICC, if any? (c) Which factors were perceived by participants to contribute to meaningful virtual intercultural communication between incoming international students and American domestic students? and (d) What perceptions or attitudes of international participants have changed as a result of virtual conversations with American domestic students? What facilitated this change?

This study design was sequential mixed-methods. In this chapter, the researcher will present the research results sequentially, first from the quantitative data analyses, then from the qualitative data analyses. In the latter section, the researcher will link the specific findings that emerged from the qualitative data analyses to the relevant findings from the quantitative data analyses.

Quantitative Data Analyses

Intercultural communicative competence was measured using the self-developed Intercultural Communicative Competence Instrument (ICCI) before and after treatment. The study was limited to the international and American students who volunteered to

participate in the study. The researcher used Statistical Package for Social Sciences Software (SPSS) version 22.0 to conduct all statistical analysis of the quantitative data. Principal factor analysis, analysis of variance (ANOVA), analysis of covariance (ANCOVA), multivariate analysis of covariance (MANCOVA), and simple linear regression were the methods chosen.

Descriptive statistics. In the summer of 2014, 62 incoming international students² and 60 domestic students (57 American students and three international students³) applied for the Virtual Conversation Partner Program (VCP). Fifty-eight international students completed the ICC pretest, 26 of them completed the semi-test right after their first Skype session with their American virtual conversation partners, and 43 completed the posttest in late August and early September. Forty-three American students completed the pre-evaluation and the post-evaluation. Twenty-five international students who didn't apply for the VCP agreed to be part of the comparison group and completed the pretest, but only 12 of them completed the posttest (see Table 6).

Table 6

Numbers of students who applied for the VCP and those who took the ICCI tests

	Applications	Pretest	Semi-test	Posttest
American participants	57	44	n/a	43
International participants				
Treatment group	62	56	26	43
Comparison group	0	25	n/a	12

² One incoming international student was only 17 years old. Therefore, she was excluded from the study.

³ Each of the three international students who had been studying in the U.S. for at least one year was paired up with an incoming international student to have virtual conversations on Skype. Since they were not native speakers, they and their conversation partners were excluded from the study.

Principal factor analyses in this study utilized all the pretest responses ($N = 81$) completed by international students regardless of their participation of the program. The rest of the analyses used data generated by the international students who completed both the pre- and the posttest to form the treatment group ($n = 43$) and the comparison group ($n = 12$). The treatment group participants were divided into two categories based on their virtual conversation hours on Skype or using other videoconferencing tools, such as Facetime: Treatment group 1 included international participants who had 1 to 4 hours of virtual conversations⁴ and treatment group 2 included international participants who had 5 hours or more of virtual conversations. Table 7 shows the demographic characteristics of the international participants in both the treatment and comparison groups.

⁴ Throughout this chapter, virtual conversations are defined as conversations between international and American students, conducted through videoconferencing tools, such as Skype, Facetime, etc.

Table 7
Demographic Characteristics of Participants (N = 55)

Characteristic	<i>n</i>	%
Gender		
M	20	36.4
F	35	63.6
Class Rank		
Undergraduate	28	50.9
Graduate	27	49.1
First Language		
Arabic	1	1.8
Burmese	1	1.8
Cantonese	1	1.8
Chinese	40	72.7
Indonesian	1	1.8
Japanese	1	1.8
Spanish	2	3.6
Taiwanese	2	3.6
Thai	1	1.8
Dutch	2	3.6
British	1	1.8
Vietnamese	1	1.8

Data screening. To ensure ANCOVA, MANOVA, and MANCOVA used in the study were appropriate tests for the data collected, the researcher screened the data on normality, outliers, homogeneity of variance, homogeneity of regression slopes, linearity, and homoscedasticity. Further, the researcher tested additional assumptions underlying the simple linear regression analysis, including multicollinearity, and independence of errors, heteroscedasticity, normality of residuals using standard procedures (Giles, 2002). There was a linear relationship between pre- and post- ICC scores for each condition group. There was homogeneity of regression slopes as the interaction term was not statistically significant, $F(2,49) = .77, p = .47$. Standardized residuals for the interventions and for the overall model were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$). There was homoscedasticity and homogeneity of variances, as assessed by visual inspection of a scatterplot and Levene's test of homogeneity of variance ($p = .54$), respectively. There were no outliers in the data, as assessed by no cases with standardized residuals greater than ± 3 standard deviations. No correlations between the predictor variables surpassed .90, as the highest correlation was -.23. Therefore there was no multicollinearity issue. The Durbin-Watson statistic is 1.904, which indicates that there is no correlation between residuals. Therefore, it can be accepted that there is independence of errors. Homoscedasticity and normality of residuals are also met. Appendix I documents all the above assumption analyses under each statistical method chosen with detailed figures and tables.

Once all the assumptions underlying each potential analysis were confirmed not violated, a principal factor analysis was performed to test Byram's (1997) four-factor ICC model.

Principal Factor Analysis. The ICC model proposed by Byram (1997) includes four constructs: linguistic competence, sociolinguistic competence, discourse competence and intercultural competence. During the pilot studies, exploratory or confirmatory factor analysis was not performed due to small sample sizes. In this study, a principal factor analysis was conducted using the sample of the 81 VCPP applicants who took the ICCI pretest. The sample size is still small, however, the exploratory nature is helpful in guiding the researcher's attention to the potential underlying factors of international students' ICC.

As table 8 demonstrates, two factors were identified based on their eigenvalues. According to Kaiser's (1960) stopping rule, an eigenvector is extracted if its eigenvalue is at least greater than 1.

Table 8

Eigenvalues, Percentages of Variance, and Cumulative Percentages for Factors of the 14-Item Intercultural Communicative Competence Inventory

Factor	Eigenvalue	% of variance	Cumulative %
1	6.93	49.5	49.5
2	2.05	14.6	64.1

Some researchers prefer using a graphical procedure, such as a scree test, to determine the number of eigenvectors to extract (Cattell, 1966). Usually, the scree plot shows a steep visual descent for the first few eigenvectors, and then a slow and steady descent for the rest of the eigenvectors. "The eigenvalues (and corresponding eigenvectors) in the steep descent are retained, and the eigenvalues in the gradual descent (including the eigenvalue occurring in the transition from steep to gradual descent) are dropped" (Byrant & Yarnold, 2009, p.100). In this case, two eigenvalues were in the

steep descent. Therefore, two eigenvectors were extracted, which is consistent with the result using Kaiser's (1960) stopping rule.

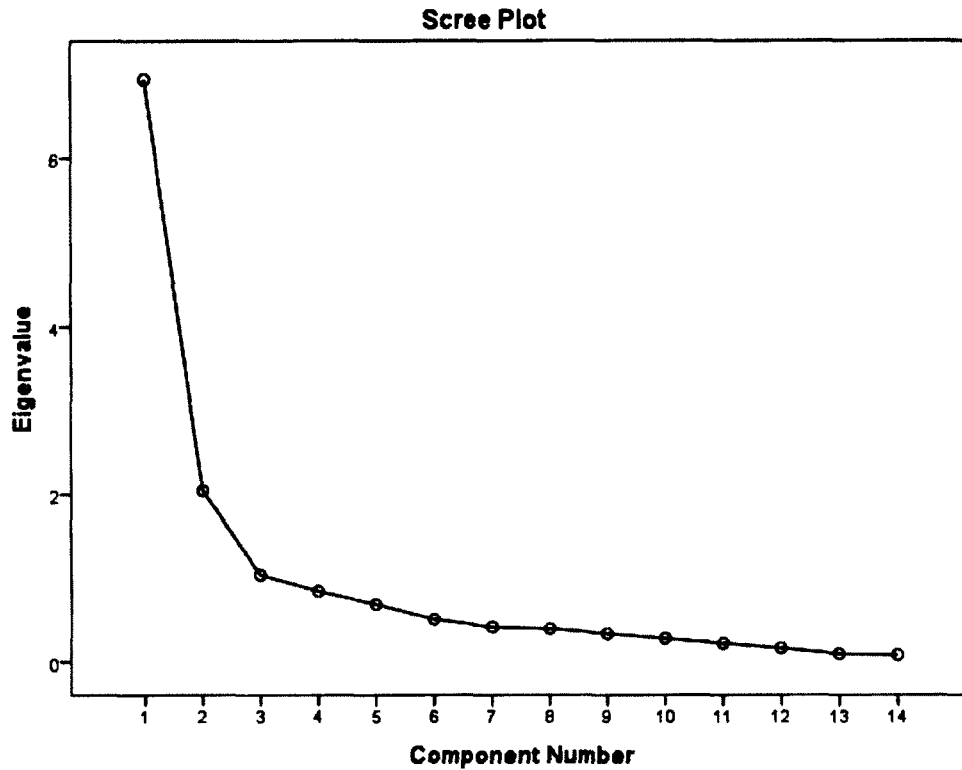


Figure 2. Scree plot

The result indicates that there are two latent factors: the first factor includes items 1-9 (items under linguistic competence, sociolinguistic competence, and discourse competence,) and items 12 and 13 (under intercultural competence). Item 12 ("I am good at explaining culture from my home country") asks about communication skills. Therefore, it makes sense for it to be loaded upon factor 1. The second factor includes three items under intercultural competence (see table 9).

Table 9

Summary of Items and Factor Loadings for Varimax Orthogonal Two-Factor Solution for the Intercultural Communicative Competence Instrument (N = 57)

Item	Factor loading		Communalities
	1	2	
1. My spoken English	.763	.066	.702
2. My English pronunciation	.803	.098	.745
3. My English vocabulary	.722	.226	.686
4. My English grammar	.653	.033	.591
5. My spoken English fluency	.932	.036	.873
6. My English conversational skills	.861	.112	.786
7. I am comfortable speaking English with native speakers.	.808	.218	.847
8. I am comfortable interacting with English native speakers.	.798	.199	.830
9. I am good at reading English native speakers' non-verbal cues, such as body language.	.523	.320	.505
12. I am good at explaining culture from my home country.	.583	.300	.568
10. I am aware of cultural differences between the U. S. and my home country.	.037	.615	.440
11. I am open to beliefs and values different from mine.	.105	.746	.591
13. I understand American culture.	.494	.478	.675
14. I try to make other people from a different culture feel respected, valued, and equal.	.141	.814	.640

This finding doesn't support Byram's four-factor ICC model (1997), but it concurs with Byram's theory that intercultural communicative competence has two underlying components: language and culture. Researchers in the field of intercultural

communication have reached similar understandings (Kim, 1992). Due to the small sample size ($N = 81$), further investigation using a large sample is warranted. However, combining the theoretical findings from previous research and the results of the principal factor analysis in this study, the researcher collapsed the three constructs (Linguistic, sociolinguistic, and discourse competence) into one factor, namely language competence, while keeping intercultural competence as the second factor in this study. In the subsequent analyses and discussion, intercultural communicative competence will be represented by two factors (language competence and intercultural competence).

The following sections will present relevant data to answer each research question. Data were compared among three groups: two treatment groups and one comparison group. Each research question is divided into several sub-questions.

Research Question #1. To what extent and in what ways, if at all, did video-based, real-time virtual interaction affect incoming international students' ICC development? The researcher answered this research question by dividing it into three subcategory questions: (a) Do the groups differ on the mean pretest score? (b) Do the groups differ on the mean posttest scores while controlling for pretest scores? If so, do the groups differ on language competence, intercultural competence or both? (c) Was there significant change on ICC scores over time within and among groups?

Research question 1.1. Do the groups differ on the mean ICC pretest score?

One-way ANOVA demonstrated a significant difference between the pretest scores of the comparison and both treatment groups ($p < .05$). International students who applied for and participated in the virtual conversation partner program scored significantly lower on the ICC pretest than the international students who did not apply for or participate in the program (see Table 10).

Table 10

ICC Pretest Scores and Predicted Posttest Scores

	ICC pretest scores		Predicted value for posttest ICC	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SE</i>
1-4 hours (1)	52.6	6.73	51.8	.69
5 hours and more (2)	54.2	8.48	58.3	.58
Comparison (3)	60.3	8.36	59.7	.84
Post hoc	1, 2 < 3		1 < 2	

Research question 1.2. Do the groups differ on posttest scores while controlling for pretest scores? Since the mean ICC pretest scores were significantly different between the treatment groups and comparison group, it indicates a possibility that pretest differences might contribute to the differences in posttest scores. Analysis of covariance (ANCOVA) was conducted to compare the group mean differences on the ICC posttest scores while controlling for ICC pretest scores. The independent variable was the levels of the virtual conversation hours. The independent variable had three levels: zero hours (comparison group), one to four hours (treatment group 1), and five hours or more (treatment group 2). The ICC pretest scores served as the covariate and the ICC posttest scores served as the dependent variable.

After adjustment for pretest ICC scores, there was a statistically significant difference in posttest ICC scores among the interventions as shown in Table 11, $F(2,51) = 6.83, p = .002, \text{partial } \eta^2 = .21$.

Table 11

Analysis of Covariance of Posttest ICC Scores as a Function of Virtual Conversation Hours Condition, With Pretest ICC Scores as Covariate

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	η^2
ICC pretest scores (covariate)	1	443	443	15.67	.000	.24
Groups	2	193	193	6.83	.002	.21
Error	51	28.3	28.3			
Total	55					

Post hoc analysis was performed with a Bonferroni adjustment. The 1 to 4 hours group had the lowest posttest ICC scores, which were significantly lower than the 5 hours and more group ($p = .002, \text{Cohen's } d = 10.19, \text{ES} = .98$). As shown by Table 10, the comparison group (zero hours) had the highest posttest ICC scores, but was not significantly higher than the treatment groups.

American students who participated in the VCPP evaluated their conversation partners' ICC right after their first videoconferencing session and at the end of the program. Appendix C contains the evaluation survey that was completed by American participants. An ANCOVA confirmed the findings described above that, after adjustment for ICC pre-evaluation scores, the international students who had 5 hours and more virtual conversations received significantly higher scores on the post-evaluation from their American conversation partners than the international students who had less than 5 hours of virtual conversations, $F(1,26) = 8.65, p = .007, \text{partial } \eta^2 = .25, \text{Cohen's } d =$

4.16, and $ES = .90$ (see table 12). It enhanced the credibility of the results and ruled out the possibility that the international students' self-evaluation scores were biased.

Table 12

Predicted Value for ICC Posttest Scores

	Peer evaluation		Self-evaluation	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
1 to 4 hours	58.8	1.38	51.8	.69
5 hours and more	63.7	.93	58.3	.58

International students who had 5 hours and more virtual conversations scored significantly higher on the posttest than those who had fewer than 5 hours of virtual conversations. Where were the differences? Did they score higher in language competence or intercultural competence, for instance? In others words, were virtual conversations more effective in improving spoken English or understanding of cultural differences or both? To answer these questions, a MANCOVA was conducted on two treatment groups with two dependent variables: posttest scores of language competence and intercultural competence. The correlation between the two dependent variables ($r = .55$) was not high enough to cause any statistical problems. The covariates were the pretest scores of language competence and intercultural competence.

As table 13 shows, international students who had 5 hours and more virtual conversations had significantly higher mean language competence (LC) and intercultural competence (IC) scores than those who had 1 to 4 hours of virtual conversations after the treatment. In other words, international students who had 5 hours and more virtual conversations with American students demonstrated significantly higher growth in language competence ($p = .014$, Cohen's $d = 3.72$, $ES = .88$) and significantly higher

growth in intercultural competence ($p < .001$, Cohen's $d = 5.48$, $ES = .94$) than those students who had fewer than 5 hours of virtual conversations.

Table 13

Pretest Means, Adjusted Posttest Means, Standard Deviations, and Multivariate Analysis of Covariance Results for Language Competence and Intercultural Competence

	1 to 4 hours				5 hours and more				$F(1, 39)$	p	η^2
	Pretest		Posttest		Pretest		Posttest				
	M	SD	M	SD	M	SD	M	SD			
LC	32.1	4.98	32.4	.96	32.8	6.55	35.7	.81	6.55	.014	.14
IC	20.6	2.66	19.8	.49	21.4	2.63	22.3	.42	14.7	.000	.27

Research question 1.3. Was there significant change in ICC scores over time within and among groups? The above results show that international students who had 5 hours and more virtual conversations scored significantly higher on the posttest than those who had less than 5 hours of virtual conversations, but whether either group's intercultural communicative competence was significantly changed from pretest to posttest is unknown. In other words, was one summer's virtual interaction sufficient enough to make a difference in improving international students' intercultural communicative competence?

A mixed ANOVA was performed to determine whether international students' ICC scores changed significantly over time within and among the three groups. The between-subjects factor is group based on hours of virtual conversations (Comparison group, 1 to 4 hours, and 5 hours and more). The within-subjects factor is time (pre- and post-). The dependent variable is the ICC scores. As shown by Table 14, there is no significant interaction between groups and time on ICC scores, $F(2,52) = 3.10$, $p = .054$,

partial $\eta^2 = .10$. The main effect of time showed that there was no significant difference in ICC scores at the different time points, $F(1,52) = .80, p = .376$, partial $\eta^2 = .01$. In other words, ICC scores of the international students didn't change significantly during the summer, regardless of whether they had virtual conversations with American students or not.

Table 14

Analysis of Variance Results for Group and Time Variables

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	η^2
Between subjects						
Group	2	892	446	6.14	.004	.19
Error 1	52	3779	72.7			
Within subjects						
Time	1	21.0	21.0	.80	.376	.01
Group \times Time	2	163	81.7	3.10	.054	.10
Error 2	52	1372	26.4			

However, the main effect of group showed that there was a significant difference in ICC scores between groups regardless of the time point, $F(2,52) = 6.14, p < .005$, partial $\eta^2 = .19$. Figure 3 shows the mean ICC scores of each group at different time point.

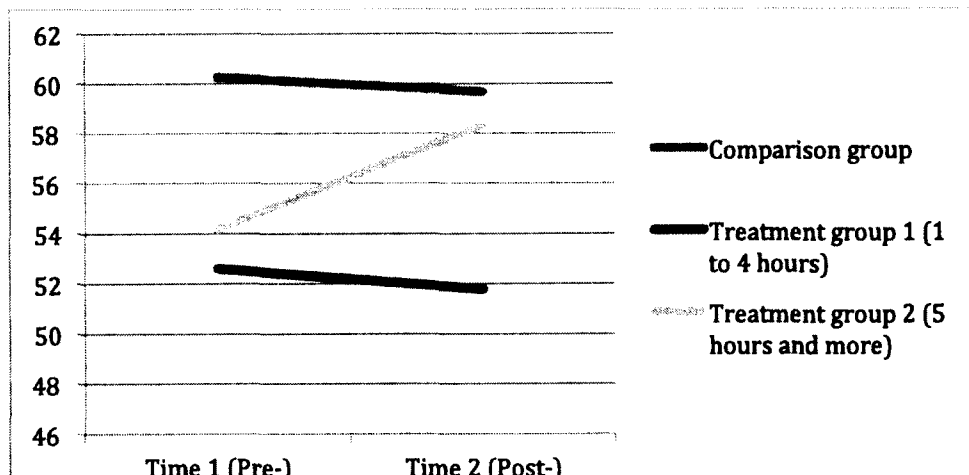


Figure 3. Mean ICC scores as a function of hours of virtual conversations and time.

Though the differences between group ICC means collapsed across time did not have any meaningful indication, the results nonetheless showed some interesting implications for future research. Post hoc analysis with a Bonferroni adjustment indicates that the mean ICC score of the international students who didn't participate in the VCPP, the comparison group ($M = 60.0$, $SE = 1.74$), was significantly higher than that of those who had 1 to 4 hours of virtual conversations with American students ($M = 52.2$, $SE = 1.42$), $p = .003$. There was no significant difference between the mean ICC scores achieved by comparison group ($M = 60.0$, $SE = 1.74$) and the 5 hours and more group ($M = 56.2$, $SE = 1.21$), $p = .074$.

Research question #2. What factors predicted international students' perceived ICC, if any? Two sub-questions were derived from this research question: a) What factors predicted international students' perceived ICC pretest scores? b) What factors predicted international students' perceived ICC posttest scores? Table 15 shows the correlations among variables. Satisfaction scores ranged between 1 (very unsatisfied)

and 5 (very satisfied). The levels (0-2) of previous intercultural experiences were based on international students' responses on two questions: Have you had any experience interacting with Americans? Have you had any experience traveling to or living in a foreign country? If the answers to both questions were no, then the level was zero. If one answer was yes, then the level was 1. If both answers were yes, then the level was 2.

Table 15
Intercorrelations for Five Variables

Variable	1	2	3	4	5
1 Post-ICC	—				
2 Satisfaction	.513**	—			
3 Hours	.133	.475**	—		
4 Pre-ICC	.515**	.219	-.213	—	
5 Previous intercultural experience	.319*	.194	.038	.398**	—

Notes: * $p < .05$; ** $p < .01$

Research question 2.1. What factors predicted international students' perceived ICC pretest scores? Using univariate regression analysis with stepwise method, the researcher entered three potential predictors: previous intercultural experiences (0, 1, 2), gender (male or female), and class rank (undergraduate or graduate).

As shown by Table 16, the previous intercultural experiences significantly predicted international students' perceived ICC pretest scores, $F(1,53) = 9.95$, $p = .003$ and they accounted for 16% of the explained variability in ICC pretest scores. The regression equation was: Predicted ICC pretest scores = $45.9 + 5.4 \times$ Intercultural Experiences. The more intercultural experiences an international student had, the higher his or her intercultural communicative competence was. In other words, international students who had traveled abroad or had interacted with Americans scored significantly

higher on the ICC pretest than the international students who had less intercultural experiences.

Table 16

Univariate Regression Analysis Summary for Variables Predicting International Students' ICC Pretest Scores

Model		<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
1	(Constant)	45.9	3.05		15.1	.000
	Intercultural experience	5.40	1.71	.40	3.16	.003

Research question 2.2. What factors predicted international students' perceived ICC posttest scores? The quantitative data so far indicate international students' previous intercultural experiences predicted their intercultural communicative competence. The more intercultural experiences they have, the higher their intercultural communicative competence. However, one summer's weekly virtual conversations with American students via videoconferencing tools were not sufficient enough to significantly improve international students' intercultural communicative competence, but in the meantime, 5 hours and more of virtual conversations with American students made a significant difference in international students' ICC compared to 1 to 4 hours of virtual interactions. Can international students' posttest scores be predicted by known variables that can be controlled on some level, such as hours of virtual conversations? A simple linear regression was calculated. First, additional assumptions underlying the simple linear regression analysis were tested, such as multicollinearity, independence of errors, heteroscedasticity, and normality of residuals. There was no violation of any of these assumptions (see Appendix I).

As shown by Table 17, the ICC pretest scores and virtual conversation hours significantly predicted international participants' ICC posttest scores, $F(2,52) = 12.6, p < .001$ and they accounted for 33% of the explained variability in ICC posttest scores. The regression equation was: Predicted ICC posttest scores = $29.0 + .47 \times \text{ICC pretest scores} + .35 \times \text{virtual conversation hours}$.

Table 17

Univariate Regression Analysis Summary for Variables Predicting International Students' ICC Posttest Scores

Model		<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
1	(Constant)	33.3	5.36		6.21	.000
	PreICC	.42	.10	.52	4.38	.000
2	(Constant)	29.0	5.54		5.24	.000
	PreICC	.47	.10	.57	4.89	.000
	Hours	.35	.16	.25	2.18	.034

Qualitative Data Analysis

This section describes the themes that emerged from the face-to-face interviews after international students' arrival and answer to the open-ended questions on the participation survey. Between April and October 2014, the researcher generated many forms of qualitative data, such as open-ended question responses on the applications and surveys, Skype logs, and semi-structured interviews. For the purpose of this study, the researcher only analyzed the qualitative data from surveys (see Appendix G) and interviews (see Appendix J) since those were most relevant to the third and fourth research questions: Which factors were perceived by international participants to contribute to meaningful virtual intercultural communication with American domestic

students? What perceptions from international participants changed as a result of virtual conversations with American domestic students and what facilitated this change?

Interviewee profiles. After the ICCI survey post-participation data were collected in September 2014, the treatment group was divided into three subgroups based on their ICC gains: negative gain (NG), zero gain (ZG) and positive gain (PG). Then the researcher randomly selected two participants from each of the three subgroups with whom to conduct semi-structured interviews. All selected participants gave consent. Additionally, since the percentage of Chinese participants in this study was 72.7%, the researcher interviewed one more Chinese student who had positive ICC gain. As a result, seven international students completed interviews as shown by table 18. The researcher used pseudonyms to represent the seven interviewees. The researcher did not use any specific names while quoting other international participants' survey responses.

Table 18

Demographic Characteristics of Interview Participants (N = 7)

Name	ICC gain	Home Country	Gender	Program ¹	Skype (Hours)	Interview (minutes)
1 Kasih	Negative	Indonesia	M	G	4	62
2 Adriaan	Negative	The Netherlands	F	U	10	61
3 Jonathan	Zero	Costa Rica	M	G	8	47
4 Weiwei	Zero	China	F	U	10	46
5 Zhiguo	Positive	China	M	U	15	59
6 Yan	Positive	China	F	G	18	72
7 Asuka	Positive	Japan	F	U	6	44

Notes: G: graduate program; U: undergraduate program.

Research Question #3. Which factors were perceived by international participants to contribute to meaningful virtual intercultural communication with

American domestic students? Four themes emerged from the interviews and survey responses that generated data to help answer this research question: a) motivation; b) previous intercultural experiences; c) equality: learning from each other; and d) affordances of videoconferencing.

Motivation. The advertisement of the VCPP listed two features of the program to attract international participants: practicing spoken English with an American student and learning about American culture before arrival. When asked, “Why did you join the VCPP?” participants’ responses reflected their motivations in learning either the language or the culture or both. Students from Asia were more concerned about their spoken language proficiency which was weaker compared to their reading and writing abilities in English. Kasih, for example, was quite critical of his spoken English and was very motivated to improve it, saying:

I have to learn how to speak English well. MBA is all about networking, presentation, communication skills, how you engage with others. We learn English in 4th grade in elementary school. In college, we had three credits for English, but all the courses were delivered in Indonesia language. We didn’t have any professor who was a native English speaker. I didn’t actively speak English until I worked for my company. I only spoke English when I met vendors from foreign countries... We didn’t speak very well. My English was awful.

Similarly, students from China and Japan also mentioned that their spoken English was weak compared to their reading and writing skills due to the fact that there were limited opportunities to interact with native speakers, especially students of their

own age in their home countries. Asuka is an exchange student from Japan, who started learning English in junior high school. She stated:

In Japan in general, it focused more on reading and writing. I almost had no opportunity to speak English on daily basis. Conversations are more difficult for me compared to reading and writing.

The process of preparing and applying for admission to American schools also made international students more aware of their struggles with spoken English. Yan, a Chinese student, took the TOFEL examination and scored well in reading, writing, and listening comprehension, but received a lower score on the speaking segment. She felt deficient in her spoken English at that time and winced when remembering being interviewed by people from American universities on Skype. She recounted, "I had six interviews through Skype with other universities. In the two of these interviews, the first two, I performed really badly. I think it was quite hard for the interviewers to understand me."

In contrast, students from Europe had more exposure to American or British English at a young age. Therefore, they had a much better command of the language, especially spoken English. For example, Adriaan described how English was spoken in many parts of her country, the Netherlands. She heard English often in movies and in popular music. She spoke English half the time in middle school and high school. She still remembered her first English teacher, saying:

During our first week, our English teacher from Canada said, 'by Christmas, I don't want to hear a word of Dutch any more in my class.' So from that moment on, we started speaking English. We had special drama and conversation classes

in English, and art, biology, math, history, geography were in English, except other language classes, physics, and chemistry.

When deciding on which school to choose, international student participants were also conscious about their objectives in having an authentic experience interacting with American students. Asuka explained, “I really want to improve my English skills. I don’t want to go to west coast because there are a lot Asian students there.” Similarly, when asked about their social lives on campus, international students were aware that spending most of their time with their fellow citizens would limit their intercultural experiences. As Kasih argued, “When I hang out with people from Vietnam or China, I don’t really learn about American culture, because we have similar cultures”. Adriaan also discussed similar self-awareness, saying:

There are other Dutch students here as well, but I don’t know any of them, and I am not very interested in knowing any of the Dutch students. It sounds bad... it is like I don’t like people from my own country, but that is just not the idea behind the exchange to meet people who live in the same city like you.

As the above experiences discussed by international participants suggest, lack of practice of spoken English and lack of intercultural interaction with native speakers, especially peers, led to their strong desire to have more contact with American students. Though students from Asia and Europe had different levels of exposure to spoken English, both groups of students were aware the importance of interaction with American students.

Previous intercultural experiences. There was a quite distinct contrast apparent between students who had previous intercultural experiences and those who had not.

Students who didn't have much interaction with native speakers or American culture responded to survey questions saying that although they had been nervous and unsure about themselves at the beginning of the virtual sessions, gradually, they began to develop strategies in intercultural communication as the conversations continued. In contrast, those students who had completed study abroad experiences seemed to understand the nuances in talking with someone from a different culture. For example, Weiwei, a Chinese freshman, had native speakers as English teachers while she was in primary school. She studied in the United Kingdom for one month after graduating from junior high and went on a performance trip to Europe while she was in high school. She was quite confident and comfortable interacting with her American conversation partner, who was learning Chinese and curious about Chinese culture. During the first session, they discussed what method to use for their virtual conversations: casual talk or prepared discussion. They decided to choose a topic, prepare for it and then exchange ideas during Skype sessions. In one session, they decided on two topics for the following session: Chinese and American clothes and music. Weiwei described how they structured their virtual conversations to learn about each other's cultures:

We both actually prepared PowerPoints. For example, for music, we prepared the music, such as a website, and we sent it to each other because you can send messages on Skype. Then we clicked on it and listened to it at the same time during the Skype. PowerPoint is a wonderful option because you could see the clothes clearly at the same time while we talked about the different dynasty clothes.

Even though Weiwei didn't directly articulate that her previous intercultural experiences prepared her for the virtual interactions, clearly, she demonstrated several strategies in facilitating their intercultural learning prior to, during, and after their virtual conversations. Compared with two other Chinese students in the interview participant sample who did not have similar experiences, her virtual conversations with her American partner stood out as highly structured and effective. As a result, she and her conversation partner became close friends, and Weiwei was very involved in campus activities after arriving on campus. They became Chinese language partners, meeting once each week on Sunday afternoons.

While previous intercultural experiences were a factor that boosted international students' confidence and facilitated their virtual conversations with American students, the fact that their American conversation partners were genuinely interested in learning about their home cultures was a pleasant surprise to the international participants.

Equality: Learning from each other. After the initial virtual conversations, international participants realized that they had much to offer, because their American virtual conversation partners were genuinely interested in learning about their home cultures. This kind of balance in the form of learning from each other gave international participants a sense of equality. For example, Asuka was surprised by how much her conversation partner knew about Japanese news and Japanese girl idols and how much he valued her opinions. It was fascinating to both American and international participants when engaging in discussions on topics that are relatable to both. For example, Zhiguo, a freshman from China, and his conversation partner, an American senior, discussed the differences between watching movies on Netflix with a small monthly subscription fee in

the United States versus downloading movies illegally in China. Zhiguo recounted their discussion on the issues of copyrights of movies, saying, “When I told her that we could download movies for free in China, she was curious about why the officials were not doing anything. I told her that the copyrights were not very strict in China.” He paused a little bit then concluded by saying, “I think the American way is better.”

These kinds of topics appealed to both international and domestic American students. Their discussions ignited deeper reflections on and comparisons of very different practices in two societies. Adriaan, for example, was very proud of the recent achievements of her home country, The Netherlands. When she tried to understand the social security and health insurance systems in the U.S., she discussed the benefits of having a small government with her conversation partner. Many international participants shared a similar recognition that these kinds of dialogue and conversation were needed, valuable and inspiring. Adriaan explained how much she valued this kind of exchange and discussion, and the opportunity to feel the connection and to see the similarities, “When we spoke, I could see, there was a young person, who could relate to me, who could understand me. There was very little difference between us...every time when it happened, it was kind of magical...” International participants felt that these kinds of equal opportunities to exchange their beliefs and views made their virtual conversations meaningful.

Since the VCPP interaction was virtual, another factor was critical in achieving a smooth and interactive conversation: navigating the features of videoconferencing successfully.

Affordances of videoconferencing. As the literature review in Chapter 3 indicates, studies in using videoconferencing for language acquisition and intercultural learning are limited in both size and scale. In the past, low bandwidth speed has caused many technical problems, such as frozen images, lost connections, unreliable audio (Bateson & Daniels, 2012; Hara & King, 1999). In this study, Skype has proven to be relatively reliable and accessible in the various countries from which the international participants came. Participants have not reported any major technical issues that significantly affected their conversations. Instead, international participants mentioned several affordances of videoconferencing that facilitated their conversations.

Being able to see each other made the contact more natural. Body language helped them evaluate whether they were understood. As Kasih explained:

Without Skype, you don't really know the person you talk to. You don't know the moods. Body languages speak more than the actual conversations, right? On Skype, you really have a real-life conversation, so it helps. You know from their reactions, right, that whether you are understood or not. It is true reflection. Now it is much easier for me to read American people's body language.

Additionally, cameras helped participants to see each other's families, homes, campuses and local environments, which enriched their mutual understanding and strengthened their relationships. Some participants even introduced their virtual conversation partners to their parents and pets via cameras. Asuka summarized:

I think Skype is better than writing in emails because I can see his face and sometimes gestures. Sometimes I used gestures and sometimes I used dictionary. We used our laptop cameras to show the inside of our houses. Through Skype, I

was getting more used to talking to native speakers. I was more confident and more comfortable.

The qualitative findings that have been presented to this point have addressed international students' personal reflections on their experiences conversing with American students virtually. The reasons they applied for the program was that they were aware of their weaknesses in spoken English, had limited interaction with native speakers in their home countries, or felt the need of learning more about American culture. They were motivated to get to know more about the school, the students, and the community. During the virtual conversations, they not only were learning from their conversation partners; they also realized how much they could contribute to the conversations and how much the American students valued their knowledge and opinions. Motivation, previous intercultural experiences or lack of them, and a sense of equality, combined with affordances of videoconferencing, making their virtual conversations intriguing, meaningful, balanced and reliable. The researcher wanted to see if meaningful conversations led to language improvement and intercultural understanding. Did international participants improve their spoken English and understanding of American culture as a result of virtual conversations with American domestic students? The researcher asked this question both on the survey and during the interviews. The following section will address this specific question.

Research Question #4. Which perceptions or attitudes of international participants have changed as a result of virtual conversations with American domestic students, if any? International participants from Asian countries perceived that

their linguistic competence, especially spoken English, had improved greatly as a result of participating in the VCPP. For example, Zhiguo reflected:

I think the Skype sessions have improved my spoken English dramatically because before I didn't dare to speak in English with other people. She showed me how to describe objects using different elements, such as shapes, colors, etc. After the summer, I became confident to express myself in English.

Yan also commented that talking with her conversation partner helped her practice organizing her words when speaking in English.

Participants from both Asian countries and non-Asian countries agreed that their intercultural competence improved, though in different ways. Some of the international participants' perceptions of American culture changed, especially those of students from Asia. On the other hand, some participants—specifically students from non-Asian countries, such as countries in Europe and South America—reported that their understanding of American culture did not change drastically but had become more nuanced and personalized. The following section will examine international participants' growth in intercultural competence using Byram's (1997) definition, "the ability to develop open attitudes to, knowledge of both home and target cultures, skills of interpreting and relating, and critical cultural awareness" (p. 48).

Attitudes. Byram (1997) defined attitudes as "curiosity and openness, readiness to suspend disbelief about other cultures and belief about one's own" (p. 91). For example, some Asian students realized that some of their assumptions of American life, especially students' lives were inaccurate. Yan explored this topic extensively with her American virtual conversation partner, who was a graduate student in school psychology. Yan was

surprised to learn that her conversation partner was socially isolated in middle school. She said, “Most Chinese people think children in America have a very happy life before they enter college. They have social activities every day, a lot of friends and a very colorful life.”

International students from non-Asian countries stated that their understanding of American culture had not really changed as a result of VCPP participation. Instead, they reported gaining a deeper understanding or more insight into what they already knew. As Adriaan explained, “I think that my conversation partner personalized what I knew or expected. She embodied my conceptions, which gave me a deeper, more human understanding of things.” Similarly, another participant from the Netherlands expressed a similar recognition, saying, “It became more nuanced, because you can talk about the stereotype American you have in mind, and you find out that there is no ‘American,’ and that every state and every town or village has its own culture.”

Knowledge. Byram (1997) believed that two areas of intercultural knowledge were the processes and institutions of socialization in both home and target countries and the types of cause and process of misunderstanding between different cultures. The international students’ virtual conversations with their American counterparts brought to light more similarities between the two cultures than they had realized previously. As one participant put it, “It seems that there is a smaller difference between Chinese culture and American culture than I have ever thought. I can find a lot of ideas in common with my partner.” Another participant shared an example of this discovery, also, saying, “Melissa told me their gift culture and I realized they do have many subtle thoughts. Not like they

are really direct as I thought before.” The following quote captures the process of this participant’s changing understanding of American culture:

Before, my understanding of American culture came from watching the TV series or being told by others. Some of the American culture from those resources makes the American culture far more mysterious and different from Chinese culture.

However, after this program, I found that the basic things in these two cultures are the same, such as what is good, and what is bad. The difference is only the way we express it.

Skills. Byram (1997) identified intercultural skills as the ability to interpret different cultural concepts, documents, or events and to operate under the constraints of real-time communication and interaction. In this study, the very experience of describing and explaining their home culture to their conversation partners provided international participants with valuable practice leading to an improvement in their ability to perform the task. As Jonathan explained, “Sometimes you don’t think about your culture until someone asks you.” Similarly, one participant from China reflected, “Because my partner and I discussed the culture of each other’s country, I got many chances to explain my home culture. Maybe I am better at doing that since now I can find more flexible ways to explain.” One participant also pointed out, “Actually, by preparing talks to explain our home culture, I knew many new and detailed things about my own culture.” Asuka expressed similar appreciation, saying, “My conversation partner was really interested in my country and had a lot of questions, which made me think of my own country and culture deeply.”

Awareness. Byram (1997) defined critical cultural awareness as “an ability to evaluate, critically and on the basis of explicit criteria, perspectives, practices and products in one’s own and other cultures and countries” (p. 101). In this study, international participants reported that, having learned more about American culture, they felt better able to describe and explain their home cultures, and were thus in a better position to draw meaningful comparisons. As one participant explained:

At the beginning of this program, I tried to explain my home culture, and I found it was hard to explain without knowing the American culture. Only when I understood the American culture, and all the assumptions in American culture, then I could find the differences of these cultures completely and explain my home culture better.

Another participant echoed such growth, saying, “I’m better at explaining my home culture to American students now because when I got to know more about America through the communications with her, I could compare American culture with Chinese culture.” Interestingly, a participant from Austria also wrote similar comments, saying, “Discussing the differences between the U.S. and Austria really helped me to become better in explaining my home culture.”

What facilitated this change? A majority of international participants indicated that the experience of having an American virtual conversation partner gave them greater confidence in their ability to interact and speak with native speakers of English. As one participant wrote, “I think the most important thing is that I feel much more comfortable talking with native speakers now. I didn’t know anyone from the college before talking with her. She gave me confidence.” Many other participants described such feelings, with

one saying, for example, “I feel much better and less nervous about the upcoming campus life.”

Additional findings: Did this change affect international students’ campus life after arrival? If so, how? On the post-participation survey, many international participants mentioned the friendships they had developed during virtual conversations with American students. Since the interactions during the summer were one-on-one, it was quite natural for international and American participants to become friends. Once the international students arrived on campus, were they going to continue these friendships built in the summer? Were they able to immerse themselves quickly in campus life? These questions were on the mind of the researcher during the interviews. The researcher conducted the interviews after the fall semester had started. International participants had experienced more than a month of living and studying in the United States at the time of the interviews.

Becoming friends. As a result of the program, some international participants became friends with their American virtual conversation partners. One participant who Skyped for more than 18 hours with her virtual conversation partner during the summer wrote on the survey, “I cannot be very sure if she regards me as her friend, but I have regarded her as my friend.” Another participant echoed such sentiment, saying:

She’s more than a virtual conversation partner. I really appreciate all of her time and effort. I mean, she’s so always patient to listen to me telling my stories in such flawed English. We decided to continue to hang out with each other this semester. I’m really glad and felt really lucky to have her as my first American friend.

Involvement in campus life. During the interview, Asuka talked about her campus activities, saying, “I am taking [a] public speaking class...I’ve been to the tennis club. I was in the swing dance [club].” Similarly, Weiwei became very active in various community service projects offered by the college. She participated in a project at the orientation where international students from different countries displayed things from their home countries and explained their cultural meanings. Invited by her conversation partner, she attended an information session of a community services abroad program. She also applied for the International Ambassador Program to introduce her home culture to the students at a local school. Weiwei attributed her active involvement in campus activities to the virtual discussions about the school during the summer, saying, “I knew more about the school, and it is not so strange for me anymore. I think it better prepared me.” Other international participants also commented on how they became more familiar with campus life through virtual conversations; therefore, they were more comfortable taking initiative to participate in activities once they were on campus.

Though international participants discussed their involvements in campus activities positively, three out of seven interviewees also critically expressed their frustration with the difficulties in socializing with American students after class.

Difficulties in on-campus interaction with American students. Asuka, who was active in the tennis and swing dance clubs, mentioned the difficulties in becoming close friends with her American roommate. Asuka could not go to the dining hall with her because her roommate was a senior and did not have a meal plan. Asuka wanted to do as many activities as possible so she could experience more but her roommate did not want to do these activities because she had experienced most of them before her senior year.

Asuka also reported that she was not able to initiate any interactions with her classmates outside class, because, she said, “As soon as the classes are over, everyone is gone.” Similarly, Yan was only able to befriend one of her American classmates, saying, “She is quite like my virtual conversation partner. She is the only one who interacted with me and another Chinese student. I baked an apple pie and sent it to her.” Kasih tried to get his class project team to get together for social activities, but so far, he commented, “We have not done anything yet because of our different schedules.”

Though international students’ friendships with their conversation partners, involvement in campus life, and social interactions with American classmates after arrival are not part of the original research questions, the three themes that emerged in the interviews shed some light on the potential effects of this virtual conversation experience on international students’ adjustment after arrival. The implications of these additional findings will be discussed further in Chapter 5.

Conclusion

This study’s interviews revealed students’ perceptions and experiences that would not have been known if only quantitative data had been generated. What international students perceived as critical factors that contributed to their intercultural communicative competence development deepened the researcher’s understandings of the quantitative findings. Participants’ individual reflections on their intercultural interactions and personal experiences explained why certain independent variables were identified as predictors to ICC scores. The next chapter will present discussions of the findings, limitations, and implications for practice and research.

Chapter 5 Discussion, Limitations, and Implications

One of the many paths to enlightenment is the discovery of ourselves, and this can be achieved whenever one truly knows others who are different. (Hall, 1989, p.8)

Studies have found that the amount of contact with native speakers correlates significantly with international students' adaptation to the host culture (Ward & Searle, 1991). However, the level of contact (for example, class interaction, collaborative campus projects or community service, and friendship) between the two groups has been reported as low (Arkoudis et al., 2013; Marginson, 2007; Poyrazli & Grahame, 2007; Zhang & Brunton, 2007). Increasing the level of contact between these two groups has received urgent attention (Campbell, 2012); however, there is little research on the effects of intercultural interaction between international and domestic American students.

This sequential mixed-methods study investigated the effects of virtual conversations with American students on improving international students' intercultural communicative competence (ICC) at a public university in the United States. Based on Byram's (1997) model, the researcher self-developed the Intercultural Communicative Competence Inventory (ICCI), an instrument to collect pre- and post- data on international participants' intercultural communicative competence in both the comparison and treatment groups (N = 55). One month after their arrival, the researcher interviewed seven international participants from five countries. In this chapter, the researcher will integrate the findings from both quantitative and qualitative data analyses and discuss the connections and importance to previous research related to international

students. The researcher will also address limitations of this study and present implications for practice and future research.

Discussion

A first important finding is that international students who applied for and participated in the virtual conversation partner program scored significantly lower on the ICC pretest than the international students who did not apply for or participate in the program. This finding implies that the VCPP was more attractive to international students who had lower self-perceived intercultural communicative competence. On the other hand, the international students who perceived their ICC to be adequate or superior either did not see the need to improve their intercultural communicative competence or were not interested in having virtual conversations with American students during the summer prior to their arrival in the United States. Since the advertisement of the program emphasized the benefits of practicing spoken English and learning American culture, the researcher assumed the first reason was more plausible.

A second important finding of the present study is that international students who had 5 hours and more virtual conversations scored significantly higher on the posttest than those who had 1 to 4 hours' virtual conversations. Since the international participants evaluated themselves based on their own perceptions, there was a possibility that the scores were biased. To enhance the credibility of the results, the researcher also asked the American students who participated in the VCPP to evaluate their conversation partners' ICC right after their first videoconferencing session and at the end of the program. An ANCOVA confirmed the findings described above that, after adjustment for ICC pre-evaluation scores, the international students who had 5 hours and more virtual

conversations received significantly higher scores on the post-evaluation from their American conversation partners than the international students who had less than 5 hours' virtual conversations. In other words, international students who had 5 hours and more virtual conversations had significantly higher growth in language competence and intercultural competence than those who had 1 to 4 hours' virtual conversations. This indicates that 5 hours and more virtual conversations were effective in improving international students' language competence as well as intercultural competence compared to 1 to 4 hours' virtual conversations.

However, there was no significant difference in ICC scores at the different time points. In other words, ICC scores of the international students did not change significantly in the summer, regardless of whether they had virtual conversations with American students or not. On the surface, this finding is disappointing, but actually it is rather expected since increasing a multi-faceted competence, such as intercultural communicative competence, requires persistent effort, interaction, and reflection (Kim, 1992). One summer's intervention is simply not enough time to significantly impact the competence. On the other hand, the main effect of group showed that there was a significant difference in ICC scores between groups regardless of the time point. Though the researcher did not seek to know the differences between group ICC means collapsed across time, the results nonetheless showed some interesting implications for future research. Post hoc analysis with a Bonferroni adjustment indicates that the mean ICC score of the international students who did not participate in the VCPP (comparison group) was significantly higher than that of those who had 1 to 4 hours' virtual conversations with American students (treatment group 1). There was no significant

difference between the mean ICC scores achieved by comparison group and the treatment group 2 (5 hours and more). This particular result seems to be irrelevant to the research questions. However, if you remember that both treatment group 1 and 2 had significantly lower ICC pretest scores than the comparison group, now there was no significant difference in mean scores between treatment group 2 and the comparison group. This result indicates that 5 hours and more virtual conversations with American students were effective enough to close the gap between these two groups. This finding is mostly encouraging for practitioners who are looking for cost-effective and efficient solutions to improve international students' intercultural communicative competence. Persistent virtual conversations (e.g. more than 5 hours) with American students might have the potential for improving international students' ICC significantly over time. Of course, this prediction needs to be tested by future research.

A third—and in the researcher's opinion—most important finding is that previous intercultural experiences predicted international students' perceived ICC pretest scores, and ICC pretest scores and virtual conversation hours predicted international participants' ICC posttest scores. The more intercultural experiences an international student had, the higher his or her intercultural communicative competence. In other words, international students who had traveled abroad or had interacted with Americans scored significantly higher on the ICC pretest than the international students who had less intercultural experiences. This is not surprising in light of previous findings that contact with target culture plays a significant role in developing intercultural communicative competence as emphasized by many researchers in the field of international education (Andre de Araujo, 2011; Campbell, 2012), ESL education (Long, 1983; Tarone, 2007) and intercultural

communication (Al-Jarf, 2007; Kim, 2001). This is also consistent with Zimmermann's 1995 finding: "The frequency with which subjects interacted with American students and their oral English skills accounted for 27% of the variance in satisfaction with communication" (p. 328). Whatever the mechanism, an important message for those involved in international education and ESL teaching is that peers, particularly those with whom an international student has direct interaction, play a substantial role in the perceived level of ICC. This point is particularly salient as the social life of international students moves from climates of isolation to intercultural interaction. International students are social actors, with proactive, positive attitudes towards the host culture (Gu et al., 2010). This study continues that tradition, finding that social interaction is indeed an important factor in understanding an international student's perception of ICC. This (the correlation between satisfaction scores and ICC posttest scores, $r = .513, p < .001$) suggests that perceptions of ICC are socially influenced and that the more satisfying the experience was, the higher the post-ICC scores were. This finding is promising in that if we would like to see international students' ICC improve, we could put more effort and attention in providing opportunities for them to have conversations with American students, virtual or face-to-face.

A fourth finding indicates that motivation, previous intercultural experiences, equality, and affordances of videoconferencing were the four factors perceived by the international participants to contribute to meaningful intercultural discussions with American students. International students were self-aware of their language skills and were motivated to learn more about either the language or culture or both. Students from Asia reflected more on their spoken English proficiency that was poor compared to their

reading and writing abilities in English. International students were also conscious about their objectives in having an authentic experience interacting with American students. Those students who did not have much interaction with native speakers or American culture reported being nervous and unsure about themselves at the beginning of the virtual sessions. Gradually, they felt better able to describe and explain their home culture, and, having learned more about American culture, were in a better position to draw meaningful comparisons. The very experience of describing and explaining their home culture to their conversation partner had provided international participants with valuable practice leading to an improvement in their ability to perform the task. This is not surprising in light of Gudykunst and Kim's (1984) findings that the more international students interact with American students, the more opportunities students have to employ interactive uncertainty reduction strategies. This is also consistent with Campbell's (2012) finding that international students' self-confidence in speaking English increased after participating in peer programs. As reviewed in Chapter 2, social interaction creates a natural environment for language learners to interpret their linguistic and sociolinguistic competence (Firth & Wagner, 2007). In this study, international participants were actively processing the linguistic input (Krashen, 2003) and body language (Byram, 1997) produced by American participants, while also utilizing meaning negotiation strategies (Pica & Doughty, 1985) to produce comprehensible output (Swain, 1985, 2000). Intercultural interaction between international and domestic American participants offered an authentic setting for participants to develop intercultural competence in addition to language competence.

The results suggest that the participants from Asia focused more on their realization of the similarities that existed between their home cultures and American culture. Therefore they considered their understanding of American culture had changed after their virtual conversations with their American partners. On the other hand, the non-Asian participants focused more on discovering new ideas of American culture. They regarded themselves as having had an accurate and basic understanding of American culture. The virtual conversations only enhanced and deepened their understanding.

It is claimed that greater language proficiency results in an asymmetrical power relationship, in which native speakers can impose their views and values, while non-native speakers can be intimidated, and their intelligence negatively evaluated (Tsuda, 1986). Other researchers describe the fine line between native speakers who modify aspects of their language in intercultural encounters being seen as patronizing and rude rather than helpful (Kasper, 1997; Trifonovitch, 1981). Through the virtual conversations, international participants realized that they had so much to offer because their American virtual conversation partners were genuinely interested in learning about their home cultures. This kind of balance in the form of learning from each other gave international participants a sense of equality. Though linguistic competence is one key component of the ICC model used in this study, the objective is not to impose native speakers' communication competence or style upon international students. The virtual conversations provide authentic opportunities for international students to interact with American students who are native speakers, making them aware of intercultural differences and improving their spoken English to be able to communicate more effectively with native speakers. Elements like accents, home cultures, and individual

differences are celebrated in this interaction. The interactions involving native speakers made it possible to examine some of the claims made about the disadvantages of non-native speakers in such situations. In this study, international students perceived that their American conversation partners were polite, patient, helpful and respectful of their values and views. Specifically, international students felt a sense of equality when American students showed genuine interest in their home cultures. American students also benefited from this intercultural interaction.

Furthermore, consistent with previous findings from Ryobe (2008), Tian (2011) and Yamada (2009), videoconferencing provided paralinguistic cues, such as body language and facial expressions, which facilitated meaning comprehension and reduced occurrences of interruptions. The images improved social presence and created a natural interaction environment, which is the key to intercultural communication. Additionally, cameras helped participants see each other's family surroundings, campus and local environments, which enriched their mutual understanding and strengthened their relationship.

The last important finding of this study is that international participants expressed that they became more involved in campus life after arrival than they imagined they would have been had they not participated in the program. Familiarity with campus life made them more comfortable in taking initiative. This is consistent with Zimmermann's (1995) finding that frequency of interaction with American students was strongly related to students' adjustment to American life. Additionally, it supports Abe et al. (1998) who reported that international students who participated in peer programs showed significantly higher social adjustment scores than those who did not. Meantime, three out

of seven international interviewees also mentioned the difficulties they experienced in socializing with American classmates after arrival. The difficulties described are consistent with previous research findings on international students' adaptation issues in the United States (Beykont & Daiute, 2002; Lin, 2006; Poyrazli & Grahame, 2007). This can be explained by two possibilities. One is that after the virtual interactions in the summer, some of the international students still did not have adequate intercultural communicative competence to effectively initiate interaction with American students. This supports one of the quantitative findings presented earlier that one summer's virtual conversations with American students were not sufficient to significantly improve international students' ICC. However, a more plausible explanation is what previous research clearly indicated: there is very little interaction occurring between domestic and international students (Guo & Chase, 2011; Turner, 2009; Volet & Ang, 2006). Recent researchers tried to find solutions to enhance interaction between domestic and international students in higher education (Arkoudis et al., 2013). One of the approaches was to structure culturally mixed groups to facilitate intercultural learning (Volet & Ang, 2006). In this study, these international participants have had the experience talking to American students virtually prior to their arrival; they might be more aware of and vocal about the gap between their social needs and the difficult reality. It further underscores the importance of meaningful interaction opportunities on campus.

Limitations

While the researcher made every effort to reduce limitations within the study, some limitations do exist. First, the self-developed Intercultural Communicative Competence Instrument (ICCI) warrants further investigation. The ICCI is a self-report

instrument, thus students' desirable social behavior could have influenced the results to some degree. Despite this, the results from American students' evaluations were consistent with those from the international participants' self-evaluations on their ICC. It also has been pilot tested twice and had a satisfactory reliability (Cronbach's Alpha = .94). These results indicate that the instrument is a valid and robust measurement of international students' intercultural communicative competence. Originally, based on Byram's (1997) ICC model, the researcher structured the ICCI as a four-factor scale composed of linguistic competence, sociolinguistic competence, discourse competence, and intercultural competence. However, the exploratory principal factor analysis in this study indicates that the instrument is a two-factor scale, including language competence and intercultural competence. Since the sample size is rather small ($N = 81$), a replication study using a large and diverse sample is needed to confirm the numbers of constructs of this instrument.

Additionally, only 43 out of 62 international students (68%) completed both pre- and post- surveys in the treatment group. It is possible that some of the 19 international students (32%) who did not take post- surveys were the ones who had an unsuccessful experience on Skype. Some of them might have terminated their contact after one or two sessions. If this is the case, a very significant aspect was not recorded in the existing data and, therefore, was not examined in the study. Specifically, what were the factors that led to their discontinued or unsuccessful interactions on Skype?

Furthermore, this is a fairly modest piece of research situated specifically among the incoming international students at a public university in the United States. Its insights need to be explored further in different sorts of institutions and with a larger sample size.

Because participants in this study were not randomly selected, but instead part of a group of volunteers, the generalizability of the results to international student populations is considered lower than if the sampling process had been random. The lack of random assignment can also lead to the internal validity threat of selection bias, but having pretest measures increased the power of this study by improving statistical conclusion validity and aided in controlling for internal validity threats related to regression and maturation (Shadish et al., 2002). For future research, if a large and diverse sample can be randomly selected from one large school or various schools that offer similar virtual conversation partner programs, the generalizability of the study's results could be significantly increased.

Implications for Practice

The researcher would like to emphasize two connections between the findings from quantitative and qualitative data. First, previous intercultural experiences emerged as both a predictor for international participants' ICC pretest scores and were perceived by international participants as one of the factors that contributed to meaningful virtual conversations. Second, international participants' ICC didn't change significantly during the summer, with or without treatment. Even though the ICC of international participants who did not participate in the VCPP and those who had 1 to 4 hours' virtual conversations decreased after the summer while the ICC of those who had 5 hours and more virtual conversations increased, neither of the changes was significant. This implies that one summer's intervention was not sufficient to improve international students' ICC.

These two connections underscore the central question raised consistently by previous research (Arkoudis et al., 2013; Guo & Chase, 2011; Volet & Ang, 2006): how

do we find common ground and structure intercultural learning opportunities to bring international and domestic students together? Additionally, if intercultural experience is the key predictor to international students' ICC, then the English education they receive in their home countries could play an important role. Many countries have realized this connection and proposed conceptual changes to their English education strategic plans (Butler & Lino, 2005; Hismanoglu, 2011; Hosoki, 2011; Wang & Coleman, 2009). In the following section, the researcher will present implications for both practice and research in English-as-a-second-language and international education.

English-as-a-second-language education. Before international students leave on their study-abroad journeys, they have been ESL learners in their home countries. The ESL education they have received is critical to their success in an English speaking country. Since the world has evolved into a global society connected by the Internet, social media, and affordable and instantaneous communication, the classical method of foreign language instruction focusing only on reading and writing does not meet ESL students' needs any more. The classical method for teaching foreign languages has a long-established tradition (centuries) and has historically resulted in strong reading and writing skills, advanced vocabulary development and strength in grammatical accuracy. As the world changes, however, other skills such as speaking skills and intercultural competence are now becoming more valuable and sought after. Governments and educational systems, however, are often slow to change (Cook, 2013). ESL educators, the ultimate change agents, need to be competent themselves in intercultural communication. This is not an easy task, especially in most Asian countries where contact with English native speakers is limited. There are strong reasons why many countries have chosen the

classical method for foreign language instruction. Important assessments and examinations are routinely administered in written format. Government funding in public schools to provide the professional development, international experience and technology necessary to create a cadre of ESL teachers competent in intercultural communication is lacking.

Most importantly, ESL teachers may lack awareness that authentic intercultural interaction is critical in their and their students' ICC development. Research-based evidence, such as the findings presented in this study, will draw attention to the importance of authentic language and culture learning and the possibilities brought by educational technologies, such as virtual tools. Professional development for ESL teachers should focus on how to integrate culture learning into language learning with existing resources. School leaders should also promote intercultural interaction by creating authentic opportunities for teachers and students to interact with people from other cultures. This can be achieved by inviting people from various cultural backgrounds from local communities into classrooms. By partnering with schools from other countries, school leaders can also create virtual opportunities for teachers and students from different cultures to interact with each other. This approach is cost-effective, but it is not easy to implement. It requires leadership, vision, and collaborative effort.

Ultimately, it is hoped the research efforts like this will facilitate instructional changes in ESL classrooms. Though language acquisition is not a primary focus of this study, the findings nonetheless support the interactionist theory (Long, 1983; Gass, Mackey, & Pica, 1998) that a second language is best learned through social interaction. Peer interaction facilitates language learners' assessment of their communication

effectiveness (Lantolf & Thorne, 2006) and their practice in meaning negotiation strategies (Pica & Doughty, 1985). Miscommunications and instances of negative evidence generated during this process led language learners to their awareness of the need for improvement in specific areas. For example, an international student may notice that he or she does not know “how to express precisely the meaning they wish to convey at the very moment of attempting to produce it—they notice, so to speak, a ‘hole’ in their interlanguage” (Swain, 2000, p. 100). If ESL classroom teachers plan to integrate computer-based intercultural activities into their language instruction, they could focus on specific strategies and language modifications students employ during synchronous and asynchronous conversations, such as how to confirm they are understood, how to ask for elaboration, how to simplify their explanations, and how to clarify misunderstanding (Blake, 2008; Long, 1983). School leaders play key roles in both inspiring and empowering classroom teachers to transform instructional practice by providing information on research-based best practices (Shatz & Wilkinson, 2010). Doughty and Long (2003) proposed ten methodological principles that language instructors can follow when implementing computer-assisted language learning (CALL) activities (see Table 19).

Table 19
Language teaching methodological principles for computer-assisted language learning (CALL)

Methodological principles	
Activities	<ul style="list-style-type: none"> -- Use tasks, not texts, as the unit of analysis -- Promote learning by doing
Input	<ul style="list-style-type: none"> -- Elaborate input -- Provide rich (not impoverished) input
Learning process	<ul style="list-style-type: none"> -- Encourage inductive learning through implicit instruction -- Focus on form through meaning-focused tasks -- Provide negative feedback in order to induce noticing -- Respect “learner syllabuses”/developmental processes -- Promote cooperative/collaborative learning
Learners	<ul style="list-style-type: none"> -- Individualize instruction

After ESL students leave their home countries to pursue further education in the U.S., they become international students. Being physically present in the country of target language does not automatically guarantee authentic interactions with native speakers (Cruickshank, et al., 2012). International students still need scaffolding to practice their spoken English and intercultural communication skills (Sherry, Thomas, & Chui, 2010). Interactive opportunities need to be created to bring both international and domestic students together in informal, social, and non-threatening environments where international students can feel equal, valued, and needed (Campbell, 2012). Recent research has drawn attention to using culturally mixed learning groups to provide international students more meaningful opportunities to interact with host students (Cruickshank, et al., 2012). Based on this study, the researcher would like to emphasize intercultural programming for international students.

Intercultural programming. Previous research indicated that international students who reported adequate oral English skills when they arrived in the United States were better adjusted to American life than those who felt their oral English skills were inadequate (Surdam & Collins, 1984). As Zimmerman (1995) recommended, “While it is useful to teach international students behavioral skills, providing opportunities for them to talk with American students seems to be of greater use in assisting their adaptation” (p. 330). Earlier researchers made similar observations, noting that foreign students need more than verbal language to be able to communicate in a new culture; the ability to understand nonverbal behavior and the intentions of the other are equally important (Locke & Velasco, 1987). The most effective way for international students to gain and hone these kinds of communication skills and intercultural understanding is through personal experiences interacting with American students (Turner, 2009; Volet & Ang, 2012). Peer mentoring (Abe et al., 1998; Glaser, Hall, & Halperin, 2006; Stone, 2000) and “buddy” programs (Campbell, 2012; Devereux, 2004; Devlin, 1997; Westwood & Barker, 1990) have proven to be particularly helpful to newly arrived international students. In one study, for example, international students who participated in peer programs showed significantly higher social adjustment scores than those who did not (Abe et al., 1998). Additionally, peer interaction provides a nonthreatening environment for international students to practice speaking English. International students have reported increased levels of self-confidence in speaking English after participating in peer programs (Campbell, 2012).

In this study, American students demonstrated strong initiative and enthusiasm in volunteering their time to have virtual conversations with international students. The

researcher did not expect the overwhelming interest from domestic American students initially, but after reading their applications that were filled with passion and logic, the researcher realized that the thirst for intercultural interaction from American students was as strong as that from international students. Both international and domestic students need opportunities to connect with each other (Campbell, 2012). With an increasing emphasis on “internationalization” of American college campuses, programs like the VCPP may be just one of many ways to provide opportunities for all students to develop greater awareness and understanding of other cultures in a non-graded, one-on-one, informal setting that places the focus on human interaction between individuals from many cultures. Recent studies indicate that culturally diverse group work facilitates intercultural interactions over time and builds intercultural friendships between international and host students (Hendrickson, Rosen, & Aune, 2011; Rienties & Nolan, 2014). Faculty should create interaction opportunities thoughtfully for students with diverse cultural backgrounds to work together informally or formally. With e-learning becoming a standard practice in higher education, faculty should pay more attention to virtual interactions among students. With less face-to-face classroom interaction, students from various cultural backgrounds need more semi-structured virtual opportunities to interact with each other.

In this study, getting to know someone of a similar age from a different culture proved to be one of the most attractive incentives. This is opposite to previous research that has shown that voluntary contact with international students on average has been reported as rare (Meier & Daniels, 2013; Ward et al., 2009). Local students expect international students to take the initiative to make contact (Brebner, 2008). Maybe there

is a difference between virtual conversations during summers and face-to-face interactions on campus. The international participants commented on the difficulties of engaging and socializing with their American classmates after class. These difficulties seemed to be intensified by everyone's busy schedules and lack of opportunities and initiative. Once the semester begins, the pace becomes more hectic for everyone. If the international participants in this study experienced difficulties interacting with American students after their arrival, the researcher suspects that international students who do not have similar intercultural experiences would experience more frustration and struggles. International students might not have the awareness to take the initiative in approaching American students. Therefore, international students may encounter fewer opportunities outside classrooms to socialize with American students. This, in turn, may obstruct their understanding of American culture and further delay their development of intercultural communicative skills. As a result, they may lack the skills to initiate, build, and maintain intercultural friendships. This might become a vicious cycle that is harder to break once international students settle into a comfortable routine with a circle of fellow citizens (Rose-Redwood & Rose-Redwood, 2013).

This is exactly why intercultural programs like the VCPP are critical because international students can experience what it is like talking to an American peer in a relatively relaxed environment. This also applies in study abroad scenarios. If American students get a chance to talk to someone virtually from their target countries prior to their departure, they might gain a better understanding of that culture. As a result, they might be less anxious and better prepared for their study abroad journey. As demonstrated by the interview findings, this kind of one-on-one pre-arrival interaction leads to confidence

and positive attitudes toward campus life. As a result, some of the students became involved in various campus and community activities. As one participant put it, “The best thing is to give yourself just a little bit security, at least get to know one person, and start from there, this one person you have built relationship with, you know, and move forward, to get to know more people, that was a good start.” The researcher could not express it better than that. If there are planned opportunities to continue the virtual conversations in person, that might continue to facilitate international students’ development in intercultural communicative competence. This is one of a few possibilities for future research.

Implications for Research

In this study, international participants perceived motivation as an important contributor to the meaningfulness of their virtual conversations with domestic American participants. In this case, their awareness of the need to either improve their spoken English or understanding of American culture provided the motivation. Additionally, one change as a result of virtual conversations with American domestic students is international students’ awareness of home culture and cultural differences. Would motivation and awareness statistically relate to international students’ ICC development? Since motivation and self-belief are the building blocks of self-efficacy (Bandura, 1977, 1986, 1997), the researcher recommends studying the correlation between international students’ self-efficacy (Yusoff, 2012) and ICC to explore the role self-efficacy plays in international students’ ICC development. Future researchers could administer both instruments at the beginning and the end of a virtual conversation partner program. Based

on the findings from the study, the researcher expects to see a significant correlation between self-efficacy and ICC scores.

One important finding in this study is that international students' ICC did not change significantly with or without treatment, which indicates that one summer's virtual conversations were not sufficient to change a multi-faceted competence such as ICC. However, number of virtual conversation hours did make a difference and emerged as a predictor to international students' ICC posttest scores. These results combined warrant a longitudinal study on international students' ICC change throughout a school year. Future research could also explore international students' perceptions of their adjustment after one semester and one year, comparing those who participated in the VCPP in the summer and those who did not.

Within this study, it is also important to note the roles that informal learning (Marsick & Watkins, 2001) and contextual learning (Hyland, 2004) play in international students' interpretations and assessments of their communication effectiveness. The virtual conversations on Skype between international and American students were voluntary and informal. These conversations were private and spontaneous between each pair of conversation partners. The international participants who did not drop out along the way, and who completed the post-survey, reported that their conversations were very interesting. That may not have been true for those who did not complete the post-survey. Additionally, the participants were not expected to perform to get a grade or follow any formal instruction to complete a task. This informal setting may have reduced international participants' learning anxieties. Learning anxieties are considered as potential threats to second language development since anxieties erect an affective filter

that blocks language learners' ability to comprehend linguistic input (Krashen, 2003). In this case, each conversation was unique, different and mostly spontaneous, building upon previous conversations and adjusting to the new context. This aligns with Marsick and Watkins' (2001) belief that informal learning is the byproduct of interpersonal interaction. While this study did not include questions associated with informal learning or contextual learning, the researcher suggests that future research should consider and investigate the various aspects of social interaction in an informal intercultural environment.

Conclusion

This study utilized both quantitative and qualitative data to explore the effects of virtual conversations with American students on international students' intercultural communicative competence development. Why do we want to know whether virtual conversations with American students have any effect on international students' ICC? Why is this study important? It is hoped that this study will bring more awareness to the invaluable importance of intercultural interaction between international students and American students. The researcher wants to emphasize previous research that found that being physically present in a target culture does not guarantee an international student's intercultural communicative competence development (Meier & Daniels, 2013; Ward et al., 2009). Meaningful interaction opportunities need to be created to facilitate intercultural interaction between international students and domestic students (Arkoudis et al., 2013; Volet & Ang, 2006). Additionally, it is hoped that this study will raise the following questions to school leaders, ESL instructors as well as students services personnel: Is there a need to change our instructional practice to better meet ESL

students' needs in today's global economy? What is the best way to integrate computer-based virtual technologies into ESL language instruction and intercultural learning? What kinds of social activities can we structure to connect domestic American students with international students to promote intercultural learning? Hopefully, readers can find some answers in this writing.

Appendix A Pre-, Semi- participation Survey: Treatment Group;

Pre-, Post- Survey: Comparison Group

Please provide your W&M email address if you would like to be entered in a drawing for one of five gift cards (\$100, \$50, \$25, \$15, and \$10). All study participants who wish to be entered into the drawing will have equal chances to win a gift card, regardless of the nature of their participation.

Email: _____@email.wm.edu

What is your native/first language?

What is your gender?

When I arrive at W&M, I will be a

- First-year undergraduate student
- Sophomore
- Junior
- Senior
- Graduate student
- Other (please specify) _____

Referring to your most recent conversation in English, using a scale of 1 to 5 (1 = hard to understand and 5 = easy to understand), rate your English skills in the following categories.

	Hard to Understand 1	2	3	4	Easy to Understand 5
My spoken English in general is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My English pronunciation is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My English vocabulary is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My English grammar is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Totally Disagree	Disagree	Not Sure	Agree	Totally Agree
I speak English fluently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have strong English conversational skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am comfortable speaking English with native speakers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am comfortable interacting with English native speakers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at reading English native speakers' non-verbal cues, such as body language.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am aware of cultural differences between the U.S. and my home country.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am open to beliefs and values different from mine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at explaining culture from my home country.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I understand American culture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to make people from other cultures feel respected, valued, and equal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix B Post-participation Survey: Treatment Group

Please provide your W&M email address if you would like to be entered in a drawing for one of five gift cards (\$100, \$50, \$25, \$15, and \$10). All study participants who wish to be entered into the drawing will have equal chances to win a gift card, regardless of the nature of their participation.

Email: _____@email.wm.edu

What is your native/first language?

What is your gender?

When you participated in the Virtual Conversation Partner Program at W&M, were you a

- First-year undergraduate student
- Sophomore
- Junior
- Senior
- Graduate student
- Other (please specify) _____

What is your overall experience participating the VCPP?

- Very disappointed
- Disappointed
- Neutral
- Rewarding
- Very rewarding

How many hours total did you chat with your virtual conversation partner on Skype in the summer 2014?

Total hours:

Referring to your most recent Skype session, using a scale of 1 to 5 (1 = hard to understand and 5 = easy to understand), rate your English skills in the following categories.

	Hard to Understand 1	2	3	4	Easy to Understand 5
My spoken English in general is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My English pronunciation is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My English vocabulary is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My English grammar is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Referring to your most recent Skype session, using a scale of 1 to 5 (1 = totally disagree and 5 = totally agree), rate the following statements.

	Totally Disagree 1	Disagree	Not Sure	Agree	Totally Agree 5
I speak English fluently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have strong English conversational skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am comfortable speaking English with native speakers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am comfortable interacting with English native speakers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at reading English native speakers' non-verbal cues, such as body language.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am aware of cultural differences between the U.S. and my home country.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am open to beliefs and values different from mine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at explaining culture from my home country.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I understand American culture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to make people from other cultures feel respected, valued, and equal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you would like to share your experience with us, please write in the following box.

Would you like to share your VCPP experience with us at the celebration lunch? (a 3-5 minute talk)

- Yes, I'd love to.**
- No, thank you.**

Do you think your understanding of American culture has changed? If so, what facilitated this change?

Do you think you are better at explaining your home culture to American students? If so, what facilitated this change?

Apart from participating in the VCPP, what, if anything, did you do to explore and learn about American culture during the summer of 2014? What, if anything, did you do to enhance your English language skills during the summer of 2014?

Appendix C Evaluation Survey: Domestic Participants

Please provide your W&M email address if you would like to be entered in a drawing for one of five gift cards (\$100, \$50, \$25, \$15, and \$10). All study participants who wish to be entered into the drawing will have equal chances to win a gift card, regardless of the nature of their participation.

Email: _____@email.wm.edu

Referring to your most recent Skype session, using a scale of 1 to 5 (1 = hard to understand and 5 = easy to understand), rate your VCPP partner's English skills in the following categories.

	Hard to Understand 1	2	3	4	Easy to Understand 5
Spoken English in general	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
English pronunciation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
English vocabulary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
English grammar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Referring to your most recent Skype session, using a scale of 1 to 5 (1 = totally disagree and 5 = totally agree), rate the following statements.

	Totally Disagree 1	Disagree	Not Sure	Agree	Totally Agree 5
My conversation partner speaks English fluently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My conversation partner has strong English conversational skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My conversation partner is comfortable speaking English with native speakers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My conversation partner is comfortable interacting with English native speakers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My conversation partner is good at reading English native speakers' non-verbal cues, such as body language.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My conversation partner is aware of cultural differences between the U.S. and his or her home country.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My conversation partner is open to beliefs and values different from his or hers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My conversation partner is good at explaining culture from his or her home country.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My conversation partner understands American culture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My conversation partner tries to make people from other cultures feel respected, valued, and equal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you would like to share anything about your experience with your conversation partner with us, please write your comments in the following box.

The following two questions will only appear on the post-participation evaluation survey.

Do you think your conversation partner's understanding of American culture has changed during the time that you were communicating with each other? If so, what do you think facilitated this change?

Do you think your conversation partner is better at explaining his or her home culture to you now, compared to when you first began communicating? If so, what facilitated this change?

Appendix D Informed Consent Form: Comparison Group

The general nature of this study entitled "Effects of the Virtual Conversation Partner Program on International Students' Intercultural Communicative Competence," conducted by Jingzhu Zhang, has been explained to me.

I understand that I will be asked to take two online surveys. I will take the first survey in May 2014 and I will take the second survey in August 2014. My participation in this study should take a total of about 20 minutes per survey. I understand that my responses will be confidential and that my name will not be associated with any results of this study. I know that I may refuse to answer any question asked and that I may discontinue participation in the study at any time by communicating my wish to the researcher.

I have been told that there are no known risks and/or discomforts associated with participating in this research project. I am aware that being a participant in this study is not an academic requirement, and that not participating will not place me at a disadvantage in my academic program or my future association with the College of William and Mary.

I am aware that I may report dissatisfactions with any aspect of this research to the co-chairs of the dissertation, Dr. Judi Harris (judi.harris@wm.edu or 757-221-2334) and Dr. Carol Tieso (cties@wm.edu or 757-221-2461), and/or the chair of the School of Education's Internal Review Committee, Dr. Tom Ward at 757-221-2358 or TJWard@wm.edu. I am aware that I must be at least 18 years of age to participate in this study. By responding to any or all of the questions in the attached survey, and submitting my response(s) to the researcher, I understand that I am consenting to participate in the study named above.

THIS PROJECT WAS FOUND TO COMPLY WITH APPROPRIATE ETHICAL STANDARDS AND WAS EXEMPTED FROM THE NEED FOR FORMAL REVIEW BY THE COLLEGE OF WILLIAM AND MARY PROTECTION OF HUMAN SUBJECTS COMMITTEE (Phone 757-221-3966) ON AND EXPIRES ON .

Please provide your W&M email address if you would like to be entered in a drawing for one of five gift cards (\$100, \$50, \$25, \$15, and \$10). All study participants who wish to be entered into the drawing will have equal chances to win a gift card, regardless of the nature of their participation.

Signature:

Date:

Email: _____@email.wm.edu

Appendix E Informed Consent Form: Treatment Group

The general nature of this study entitled "Effects of the Virtual Conversation Partner Program on International Students' Intercultural Communicative Competence," conducted by Jingzhu Zhang, has been explained to me.

I understand that I will be asked to take three online surveys. I will take the first survey when I apply to participate in the VCPP. I will take the second survey after one session with my conversation partner on Skype. I will take the third survey in August 2014. My participation in this study should take a total of about 20 minutes per survey. I understand that my responses will be confidential and that my name will not be associated with any results of this study. I know that I may refuse to answer any question asked and that I may discontinue participation in the study at any time by communicating my wish to the researcher.

I have been told that there are no known risks and/or discomforts associated with participating in this research project. I am aware that being a participant in this study is not an academic requirement, and that not participating will not place me at a disadvantage in my academic program or my future association with the College of William and Mary.

I am aware that I may report dissatisfactions with any aspect of this research to the co-chairs of the dissertation, Dr. Judi Harris (judi.harris@wm.edu or 757-221-2334) and Dr. Carol Tieso (clties@wm.edu or 757-221-2461), and/or the chair of the School of Education's Internal Review Committee, Dr. Tom Ward at 757-221-2358 or TJWard@wm.edu. I am aware that I must be at least 18 years of age to participate in this study. By responding to any or all of the questions in the attached survey, and submitting my response(s) to the researcher, I understand that I am consenting to participate in the study named above.

THIS PROJECT WAS FOUND TO COMPLY WITH APPROPRIATE ETHICAL STANDARDS AND WAS EXEMPTED FROM THE NEED FOR FORMAL REVIEW BY THE COLLEGE OF WILLIAM AND MARY PROTECTION OF HUMAN SUBJECTS COMMITTEE (Phone 757-221-3966) ON AND EXPIRES ON .

Please provide your W&M email address if you would like to be entered in a drawing for one of five gift cards (\$100, \$50, \$25, \$15, and \$10). All study participants who wish to be entered into the drawing will have equal chances to win a gift card, regardless of the nature of their participation.

Signature:

Date:

Email: _____@email.wm.edu

Appendix F Informed Consent Form: Interview Group

The general nature of this study entitled "Effects of the Virtual Conversation Partner Program on International Students' Intercultural Communicative Competence," conducted by Jingzhu Zhang, has been explained to me.

I understand that I will be asked to answer some questions during an interview. I will receive the interview questions prior to the scheduled interview by email. I understand the interview will be audiorecorded and transcribed verbatim. I will receive a written summary of the transcripts. I will have an opportunity to review and correct the interview's summary as needed. My participation in this study should take a total of about 90 minutes. I understand that my responses will be confidential and that my name will not be associated with any results of this study. I know that I may refuse to answer any question asked and that I may discontinue participation in the study at any time by communicating my wish to the researcher.

I have been told that there are no known risks and/or discomforts associated with participating in this research project. I am aware that being a participant in this study is not an academic requirement, and that not participating will not place me at a disadvantage in my academic program or my future association with the College of William and Mary. I understand that I will receive a \$15 gift card after I complete the interview, check the transcript summary, and return my feedback to the researcher.

I am aware that I may report dissatisfactions with any aspect of this research to the co-chairs of the dissertation, Dr. Judi Harris (judi.harris@wm.edu or 757-221-2334) and Dr. Carol Tieso (clties@wm.edu or 757-221-2461), and/or the chair of the School of Education's Internal Review Committee, Dr. Tom Ward at 757-221-2358 or TJWard@wm.edu. I am aware that I must be at least 18 years of age to participate in this study. My signature below signifies my voluntary participation in this project, and that I have received a copy of this consent form.

THIS PROJECT WAS FOUND TO COMPLY WITH APPROPRIATE ETHICAL STANDARDS AND WAS EXEMPTED FROM THE NEED FOR FORMAL REVIEW BY THE COLLEGE OF WILLIAM AND MARY PROTECTION OF HUMAN SUBJECTS COMMITTEE (Phone 757-221-3966) ON 5/5/2014 AND EXPIRES ON 5/5/2015.

Signature:

Date:

Appendix G Informed Consent Form: Domestic Participants

1. The general nature of this study entitled "Effects of the Virtual Conversation Partner Program on International Students' Intercultural Communicative Competence," conducted by Jingzhu Zhang, has been explained to me.

I understand that I will be asked to take two online surveys. I will take the first survey after one session with my conversation partner on Skype. I will take the second survey in August 2014. On both surveys, I will be asked to evaluate my partner's intercultural communicative competence. My participation in this study should take a total of about 20 minutes per survey. I understand that my responses will be confidential and that my name will not be associated with any results of this study. I know that I may refuse to answer any question asked and that I may discontinue participation in the study at any time by communicating my wish to the researcher.

I have been told that there are no known risks and/or discomforts associated with participating in this research project. I am aware that being a participant in this study is not an academic requirement, and that not participating will not place me at a disadvantage in my academic program or my future association with the College of William and Mary.

I am aware that I may report dissatisfactions with any aspect of this research to the co-chairs of the dissertation, Dr. Judi Harris (judi.harris@wm.edu or 757-221-2334) and Dr. Carol Tieso (clties@wm.edu or 757-221-2461), and/or the chair of the School of Education's Internal Review Committee, Dr. Tom Ward at 757-221-2358 or TJWard@wm.edu. I am aware that I must be at least 18 years of age to participate in this study. By responding to any or all of the questions in the attached survey, and submitting my response(s) to the researcher, I understand that I am consenting to participate in the study named above.

THIS PROJECT WAS FOUND TO COMPLY WITH APPROPRIATE ETHICAL STANDARDS AND WAS EXEMPTED FROM THE NEED FOR FORMAL REVIEW BY THE COLLEGE OF WILLIAM AND MARY PROTECTION OF HUMAN SUBJECTS COMMITTEE (Phone 757-221-3966) ON _____ AND EXPIRES ON _____.

Please provide your W&M email address if you would like to be entered in a drawing for one of five gift cards (\$100, \$50, \$25, \$15, and \$10). All study participants who wish to be entered into the drawing will have equal chances to win a gift card, regardless of the nature of their participation.

Signature:

Date:

Email: _____@email.wm.edu

Appendix H VCPP International Students Application Form

1. The general nature of this study entitled "Effects of the Virtual Conversation Partner Program on International Students' Intercultural Communicative Competence," conducted by Jingzhu Zhang, has been explained to me.

I understand that I will be asked to take three online surveys. I will take the first survey when I apply for the VCPP. I will take the second survey after one session with my conversation partner on Skype. I will take the third survey in August 2014. My participation in this study should take a total of about 20 minutes per survey. I understand that my responses will be confidential and that my name will not be associated with any results of this study. I know that I may refuse to answer any question asked and that I may discontinue participation in the study at any time by communicating my wish to the researcher.

I have been told that there are no known risks and/or discomforts associated with participating in this research project. I am aware that being a participant in this study is not an academic requirement, and that not participating will not place me at a disadvantage in my academic program or my future association with the College of William and Mary.

I am aware that I may report dissatisfactions with any aspect of this research to the co-chairs of the dissertation, Dr. Judi Harris (judi.harris@wm.edu or 757-221-2334) and Dr. Carol Tieso (cties@wm.edu or 757-221-2461), and/or the chair of the School of Education's Internal Review Committee, Dr. Tom Ward at 757-221-2358 or TJWard@wm.edu. I am aware that I must be at least 18 years of age to participate in this study. By responding to any or all of the questions in the attached survey, and submitting my response(s) to the researcher, I understand that I am consenting to participate in the study named above.

THIS PROJECT WAS FOUND TO COMPLY WITH APPROPRIATE ETHICAL STANDARDS AND WAS EXEMPTED FROM THE NEED FOR FORMAL REVIEW BY THE COLLEGE OF WILLIAM AND MARY PROTECTION OF HUMAN SUBJECTS COMMITTEE (Phone 757-221-3966) ON _____ AND EXPIRES ON _____.

Please provide your W&M email address if you would like to be entered in a drawing for one of five gift cards (\$100, \$50, \$25, \$15, and \$10). All study participants who wish to be entered into the drawing will have equal chances to win a gift card, regardless of the nature of their participation.

Signature:

Date:

2. Email: _____@email.wm.edu

3. Gender

4. Which country are you from (For example: China)? And which city (for example: Beijing)?

5. Are you a

___ first-year undergraduate student

___ graduate student

___ sophomore

___ Language House Tutor

___ junior

___ Scholar

___ senior

___ Other

6. What are you going to study at W&M? In which department (e.g., Physics) or school (e.g., Business)?

7. Do you feel comfortable using Skype?

- Yes. I've used it before.
- No. I've never used it before.
- Not Sure. I need some training.

8. Have you had any experience interacting with Americans?

- Yes
- No

9. Have you had any experience traveling to or living in a foreign country?

- Yes.
- No.

10. Why would you like to become a virtual conversation partner? What would you like to gain from this experience?

11. What would you prefer?

- A male conversation partner.
- A female conversation partner.
- It doesn't matter.

12. Could we contact you to take a short (10 minutes) survey after your participation? If so, you will be entered to win one of five gift cards (\$100, \$50, \$25, \$15, \$10).

- Yes. I'd love to help.
- No. I don't want to fill out a survey.
- Not sure. Please ask me again later.

13. Please choose replies to the following four statements that describe aspects of the expectations and responsibilities of international Virtual Conversation Partner Program participants.

	Do you agree?	
	Yes	No
You may not use your influence as a conversation partner to promote any personal, political, or religious agenda.	<input type="radio"/>	<input type="radio"/>
You will communicate with your conversation partner(s) any cancellations or changes in your scheduled online meeting time.	<input type="radio"/>	<input type="radio"/>
If a problem arises, you will contact jxzhan@email.wm.edu immediately to resolve the problem.	<input type="radio"/>	<input type="radio"/>
You understand that failure to comply with these rules will result in the termination of your services as a conversation partner.	<input type="radio"/>	<input type="radio"/>

Appendix I: Test of Assumptions

Assumption 1: Normality

To test the assumption of normality, the researcher used the Shapiro-Wilk test in conjunction with other measures, such as an examination of histogram, skewness, and kurtosis. The histograms show that the ICC posttest scores were normally distributed in each group.

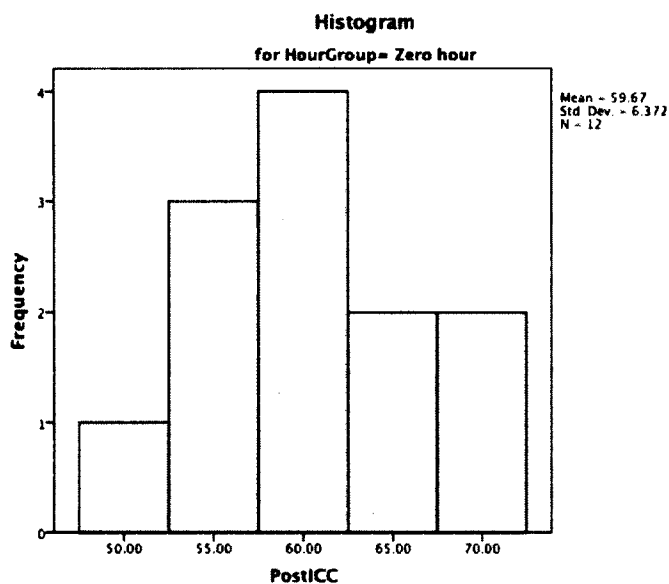


Figure 11. ICC posttest scores for participants in Comparison Group.

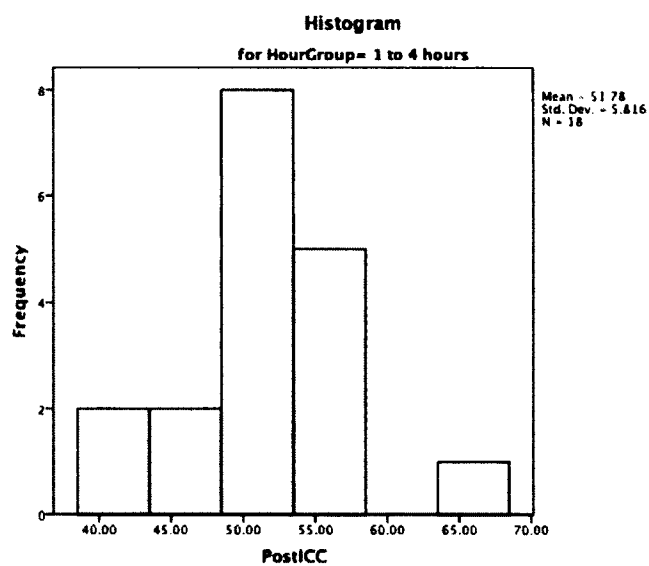
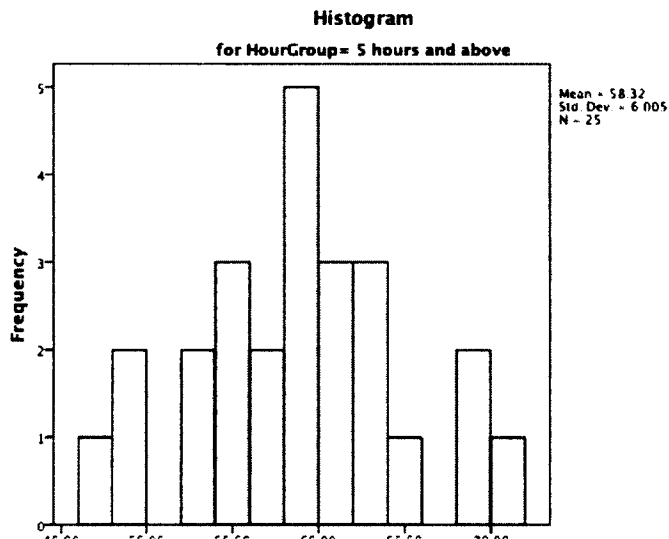


Figure 12. ICC posttest scores for participants in Treatment Group 1.



Standardized residuals for the interventions and for the overall model were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$) (see Table I1).

Table I1

Results of the Shapiro-Wilk Test for Normality on Standardized Residual for Posttest Scores

Source	Group	Kolmogorov-Smirnov			Shapiro-Wilk		
		<i>D</i>	<i>df</i>	<i>p</i>	<i>W</i>	<i>df</i>	<i>p</i>
Standardized Residual for PostICC	Comparison	.18	12	.20*	.95	12	.68
	Treatment 1	.11	18	.20*	.96	18	.50
	Treatment 2	.13	25	.20*	.94	25	.16

According to Tabachnick and Fidell (2007), in examining skewness and kurtosis, concern arises when the skewness (kurtosis) statistic divided by its standard error is greater than $z \pm 3.29$ ($p < .001$, two-tailed test). Table I2 below demonstrates that the standardized residuals for ICC posttest scores were normally distributed.

Table I2

Skewness and Kurtosis

Source	Group	Skewness			Kurtosis		
		<i>Statistic</i>	<i>SE</i>	<i>Statistic /SE</i>	<i>Statistic</i>	<i>SE</i>	<i>Statistic /SE</i>
Standardized Residual for PostICC	Comparison	.82	.64	1.28	.63	1.23	.51
	Treatment 1	.77	.54	1.43	1.85	1.04	1.78
	Treatment 2	.46	.46	1	.88	.90	.98

Assumption 2: Outliers

There were no outliers in the data, as assessed by no cases with standardized residuals greater than ± 3 standard deviations (see Table I3).

Table I3

Predicted Value for Posttest ICC Scores

Group	<i>M</i>	<i>n</i>	<i>SD</i>	<i>M</i> - 3 × <i>SD</i>	<i>M</i> + 3 × <i>SD</i>	<i>Min.</i>	<i>Max.</i>
Zero hours	59.67	12	3.08	50.40	68.91	53.31	63.26
1 to 4 hours	51.78	18	2.48	44.34	59.22	47.50	56.71
5 hours or more	58.32	25	3.13	48.93	67.71	53.47	64.16

Assumption 3: Homogeneity of variance

It is assumed that the variance of the residuals is equal for the different levels of the independent variable. Table I4 shows that there was homogeneity of variances, as assessed by Levene's test of homogeneity of variance ($p = .54$).

Table I4

Levene's Test of Equality of Error Variances

<i>F</i>	<i>df1</i>	<i>df2</i>	<i>p</i>
.62	2	52	.54

Assumption 4: Homogeneity of regression slopes

There was homogeneity of regression slopes as the interaction term was not statistically significant, $F(2,49) = .77, p = .47$ (see Table I5).

Table I5
Tests of Between-Subjects Effects

Source	Type III Sum		M^2	F	p
	of Squares	df			
Corrected Model	1091	5	218	7.64	.000
Intercept	994	1	994	34.7	.000
Group	78.4	2	39.2	1.37	.26
PreICC	483	1	483	16.9	.000
Group * PreICC	43.9	2	21.9	.77	.47
Error	1399	49	28.6		
Total	177896	55			
Corrected Total	2491	54			

Assumption 5: Linearity

The most fundamental assumption for analysis of covariate (ANCOVA) is that there is a linear relationship between the dependent variable and the covariate (Giles, 2002). It is assumed that the covariate, ICC pretest scores, is linearly related to the dependent variable, ICC posttest scores, for all three groups of the independent variable. There was a linear relationship between pre- and post- ICC scores for each hour group, as assessed by visual inspection of a scatterplot (Figure I4).

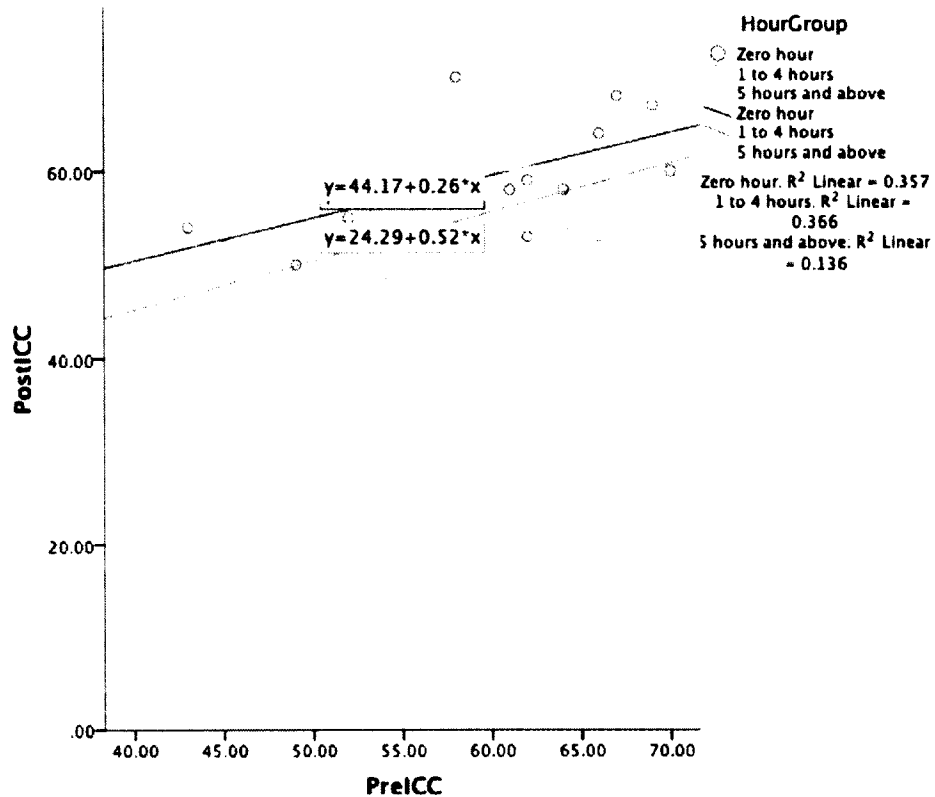


Figure I4. ICC posttest scores as a function of pretest scores.

Assumption 6: Homoscedasticity

It is assumed that the variance of the residuals is equal for all predicted values. To test for this assumption, the researcher plotted a scatterplot of the standardized residuals against the predicted values. There was homoscedasticity, as assessed by visual inspection of a scatterplot (Figure I5).

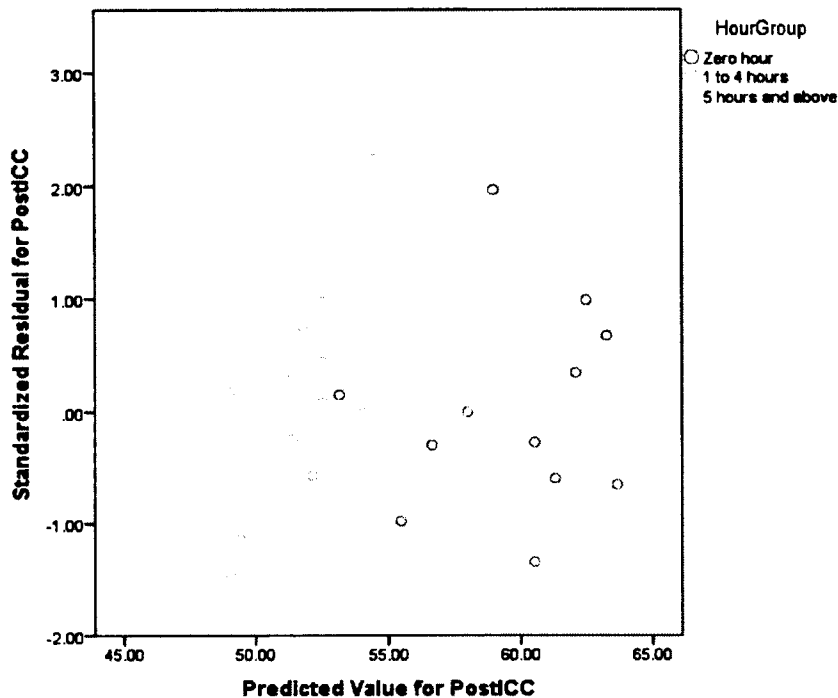


Figure 15. Standardized residual for ICC posttest scores as a function of predicted value for ICC posttest scores.

Assumption 7: Multicollinearity

In multiple linear regression analysis, collinearity might emerge as an issue. Collinearity is the extent to which predictor variables correlate with each other (Gall et al., 2007). If the collinearity between the predictor variables is high, only some of the predictor variables will enter the multiple regression analysis as predictors, even though all of them might predict the dependent variable to some extent. In order to assess for multicollinearity, a correlation matrix of the three predictor variables was examined for correlations of .70 or greater. Correlations of .90 or above, in particular, may be indicative of serious multicollinearity (Cohen et al., 2003). No correlations between the predictor variables surpassed these values, as the highest correlation was -.23 (i.e., between virtual conversation hours and Class rank as shown by Table I6).

Table I6
Intercorrelations Among Three Predictor Variables

Variables	1	2	3
1. Class rank			
2. ICC pretest scores	-.11		
3. Hours	-.23	-.21	

Assumption 8: Independence of errors

The researcher used the Durbin-Watson test to detect possible autocorrelation, which is a problem when running linear regression. Table I7 shows the Durbin-Watson statistic for the data is 1.904, which indicates that there is no correlation between residuals. Therefore it can be accepted that there is independence of errors (residuals).

Table I7
Model Summary

Model	<i>R</i>	R^2	Adjusted R^2	<i>SE</i> of the Estimate	Durbin-Watson
1	.44	.19	.174	6.10	
2	.59	.35	.319	5.53	1.90

Assumption 9: Heteroscedasticity

An assumption of linear regression is that the variance of the errors is constant across the observations. As shown by Figure I6, the “Regression Standardized Residuals” scores (y-axis) approximately constantly spread across the “Regression Standardized Predicted Value” (x-axis) scores, which indicates there is homoscedasticity.

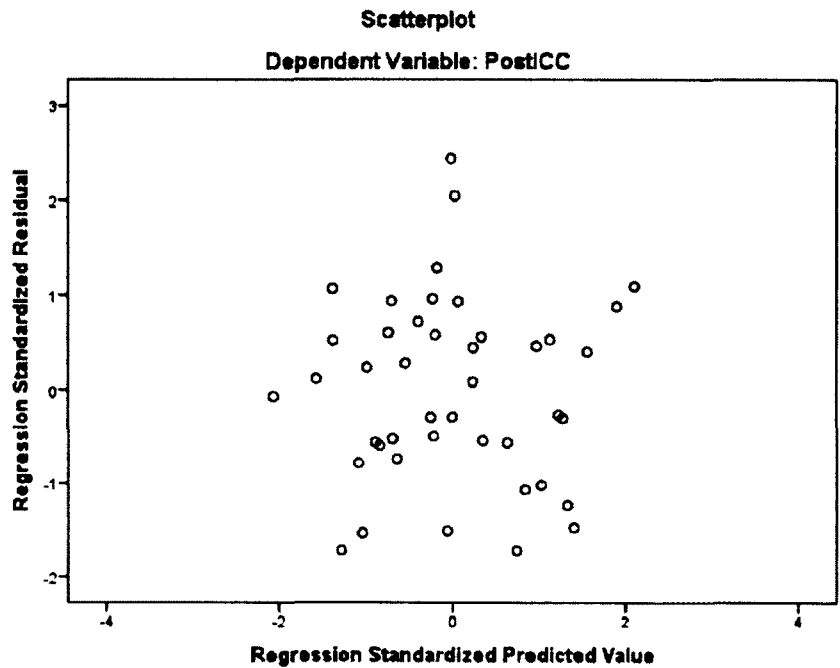


Figure 16. Regression standardized residual as a function of regression standardized predicted value.

Assumption 10: Normality of residuals

As shown by the histogram and the Normal P-P plot below, the standardized residuals are normally distributed.

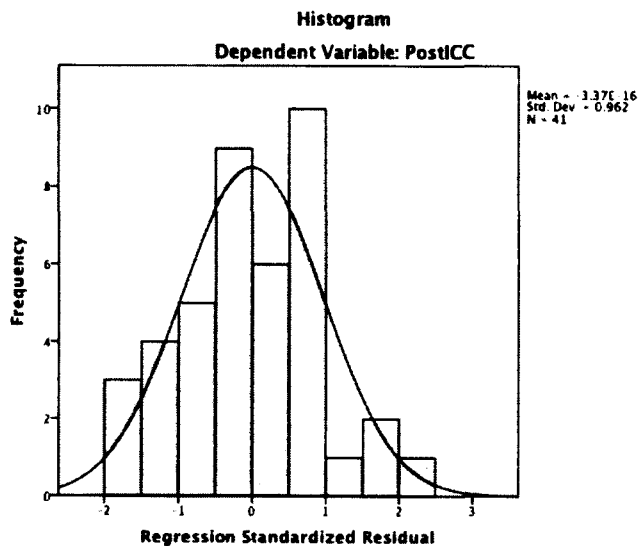


Figure 17. Regression standardized residual

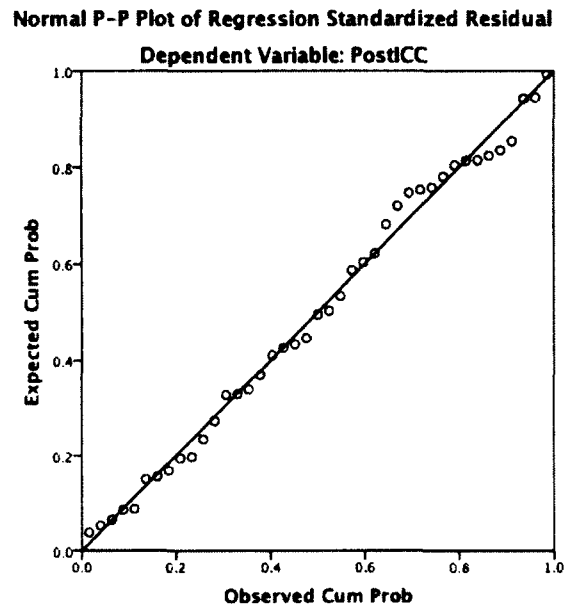


Figure 18. Expected cum prob as a function of observed cum prob.

Appendix J Interview Questions: International Participants

1. Why did you choose to participate in the VCPP? What were your motivations?
2. Please describe your initial conversation with your partner. How did that conversation feel?
3. Describe one conversation with your partner that stands out in your memory. Why is it so memorable?
4. Were there any awkward moments before, during, and/or after your Skype sessions? What caused them to be awkward?
5. Have you talked about American culture and your home culture during your videoconferenced conversations? Please describe those conversations and their value, if any, to you.
6. How many total hours of videoconferencing did you have with your conversation partner on Skype?
7. How, if at all, do you think that your conversations via Skype will affect your spoken English?
8. What, if anything, did you learn about American culture as a result of your conversations with your VCPP partner?
9. How would you describe your current interaction with your partner? Do you think that the interactions will continue after your participation in VCPP ends? Why or why not?

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